

Ocean News & Technology

News for the Ocean Industry

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November 2012

Transporting Super-sized Offshore Platforms



**Floating Production Expenditure
Set to Double**

Feature Story – Page 10



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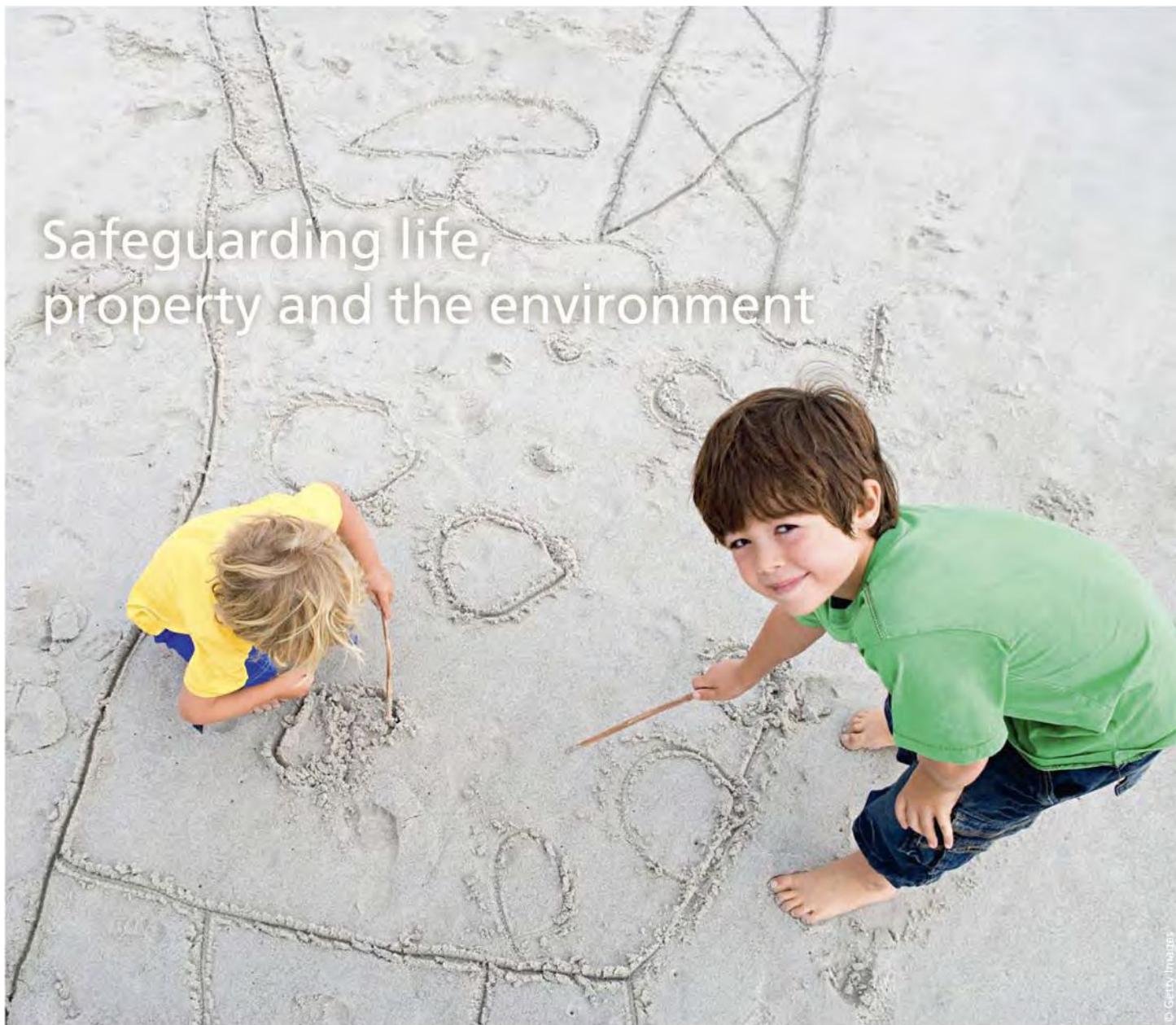
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Offshore Industry



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Launching of the Dockwise Vanguard at Hyundai Heavy Industries Ltd. in Ulsan, Korea.
(Image courtesy Dockwise Ltd.)



Technology Systems Corp.

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By Ray Tyson

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What's next – a permit for every 5 ft drilled?

The U.S. offshore has become a highly risky place to do business. Frankly, if it were me, I would be inclined to take my money elsewhere, to a more friendly oil province where, after investing billions of dollars in leases, rigs, and equipment, I at least would be assured of drilling an exploration or development well within a reasonable period of time.

Unfortunately, the regulatory process in this country has deteriorated to the point where, today, the government treats industry more as a villain than a partner, in exploring for the vast hydrocarbon resources that may lie beneath this nation's territorial waters.

When it comes to government, overreaction to events always leads to more regulation and more financial burden on the oil and gas industry. This scenario has played out time and again for generations and has become particularly acute during the past 4 years.

Take the Gulf of Mexico, for example, where thousands of exploration and development wells have been drilled over the years without a major accident. In response to the April 2010 Macondo disaster – horrible but arguably an isolated event – the current administration saw fit to cancel lease sales and halt permitting, hurting many producers that had nothing to do with the tragedy, while it attempted to improve on an industry with an already stellar safety record. It would have been far less harmful to just identify the problem (primarily a malfunctioning blowout preventer), fix it, and move on without turning industry inside out.

Regulators caused numerous financial hardships for industry. In one case, the drilling moratorium drove one producer, a guiltless bystander, into Chapter 11 bankruptcy. ATP contends the government's stoppage blocked its plans to drill and develop six wells in 2010 and 2011 after it spent more than \$1 billion on infrastructure construction related to five of them, largely financed by debt.

Drilling activity in the Gulf is finally approaching levels seen prior to the oil spill, though production levels are down drastically because of permitting delays, and stiffer regulations have pushed up well costs by about 10%. Time spent testing blowout preventers to meet new government mandates is said to be the primary cause of higher well costs.

These days, the conflict between industry and government has shifted to offshore Alaska, home of the nation's

largest conventional oil and gas discovery at Prudhoe Bay and of perhaps reservoirs with untold billions of barrels yet to be discovered beneath Federal waters of the Chukchi and Beaufort seas.

Royal Dutch Shell plc, a long-time Alaska player, already has spent \$4.5 billion preparing to drill in these two offshore areas. No doubt a substantial amount has gone to acquiring what seems like an endless stream of permits. Meanwhile, one brief Arctic summer after another has passed without a single exploratory well being drilled. For the record, Shell was given the green light to drill this year, as long as the drill bit doesn't penetrate the hydrocarbon zone, until the company's oil containment barge, required in the event of a highly unlikely spill, passes regulatory muster.

So once again, meaningful drilling offshore Alaska will have to wait at least one more year. What's next – a new regulation requiring a permit for every 5 ft drilled?

Of course, this kind of unnecessary government action can have serious ramifications. For one, Norwegian company Statoil recently delayed its exploration plans for the Chukchi Sea for at least 1 year, to 2015 at the earliest. "We're looking at the uncertainty going with regard to Alaska offshore drilling," a spokesman for Statoil said. "We decided to take a prudent step of observing the outcome of Shell's efforts before finalizing our exploration timeline."

No one is arguing that the waters around Alaska are pristine and environmentally sensitive, just as they are in other remote offshore regions. But judging from the news coverage on Shell's plans, you might get the impression that nary a well has been drilled off Alaska. The fact is scores of wells, under previous administrations, have been drilled in the Beaufort Sea without incident. The media also often fails to mention that back in 1990 Shell drilled into a remote Chukchi Sea prospect (Burger) without causing a single environmental problem.

Accidents happen, no matter how many safeguards are in place. Engines fail, and airplanes crash. But we don't shut down the entire airline industry while trying to figure out the cause and then insist on fixing the problem before the fleet is allowed to fly again. Keep in mind that even a minor oil spill due to a failed offshore well is a rare event in the United States.



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Floating Production Expenditure Set to Double

By: Hannah Lewendon

Introduction

Douglas-Westwood forecast that between 2013 and 2017, \$91bn will be spent on floating production systems (FPS)—an increase of 100% over the preceding 5-year period. A total of 121 floating production units are forecast to be installed—a 37% increase.

This growth is driven by multiple factors, such as a larger proportion of newbuilds and conversions compared to redeployments, and a greater degree of local content, which often results in a higher cost base and general offshore industry cost inflation.

Market Forecast

FPSOs represent by far the largest segment of the market both in terms of numbers (94 installations) and forecast Capex (80%) over the 5-year period. FPSSs account for the second largest segment of Capex (10%), with TLPs third (7%).

Latin America accounts for 29% of the 121 installations forecast and 37% of the projected Capex, with the majority of these being FPSOs. The difference between the two figures is due to Latin America having higher than average capital costs compared to some other regions, due to a higher proportion of expensive deepwater projects.

Africa is the second largest region, with forecast Capex of \$18.2bn (20%). Like Latin America, a large proportion of the African installations will take place in deepwater.

Although Asia has more installations (24) forecast than Africa (18), it is due to account for only \$12.5bn, a smaller proportion of global Capex (nearly 14%). This is due to the majority being located in relatively shallow water and benign environments, requiring more straightforward FPS designs sourced from converted vessels, which are usually cheaper than newbuilds.

Although a predominantly shallow water region where fixed platforms are utilized, Western Europe is expected to see a respectable number of FPS installations (20) over the next 5 years. Some of these projects revolve around the rejuvenation of mature producing areas.

Key demand drivers

Three main factors are driving the sustained growth of the FPS sector:

- Move to deepwater;
- Development of complementary production technologies; and
- Marginal field development and early production systems.

As shallow water opportunities become increasingly

scarce, the development of deepwater reserves will accelerate rapidly. For a field in deepwater, FPS is the development method of choice, since fixed platforms are often ruled out on technical and/or economic grounds.

Floating production expenditure in deepwater is expected to total \$58bn over the 2013-2017 forecast period, equating to 63% of the value of the global FPS market. The deepwater market distribution for the next 5 years shows the continued dominance of Latin America and Africa, with Latin America expected to increase its share of forecast Capex from 30% to 50%.

The subsea sector has developed at a remarkable pace in recent years, enabling the economic development of fields in deeper waters further offshore. Furthermore, subsea processing technology is maturing and is now enabling production to FPSOs from challenging reservoirs, including heavy oil.

Considerable versatility enables FPSs to be used for a variety of different applications besides conventional life-of-field production. These include Extended Well Testing (EWT), Early Production Systems (EPSs), and Rejuvenation Projects.

FPSOs are also an attractive solution for marginal field developments, particularly where an existing unit can be renovated, modified, and redeployed at a significantly lower cost than a newbuild.

Supply-side considerations

Three main factors will affect the supply of units in the FPS sector:

- Financing;
- Local content; and
- Leasing.

Financing remains a challenge for leasing contractors and smaller E&P companies as a result of the debt crisis in Europe. At the same time, local content requirements are pushing up prices and extending lead times, particularly in Brazil.

For the oil company field operator, FPS ownership becomes the more cost-effective option where production extends over a long period. Alternatively, the decision to lease an FPS can be seen as a trade-off between the lower up-front Capex and the increased Opex as a result of the leasing charges. However, leasing also brings advantages in terms of the cost of field abandonment (Abex).

The top three leasing contractors are BW Offshore, MODEC, and SBM Offshore—which collectively account for 34% of the leased fleet. The FPSO leasing sector remains

Forecast

weak, with 85% utilization at present compared to 89% at the time of the 2011 edition of this report. Contractors are reporting poor returns on existing projects and write-downs on new projects due to cost over-runs.

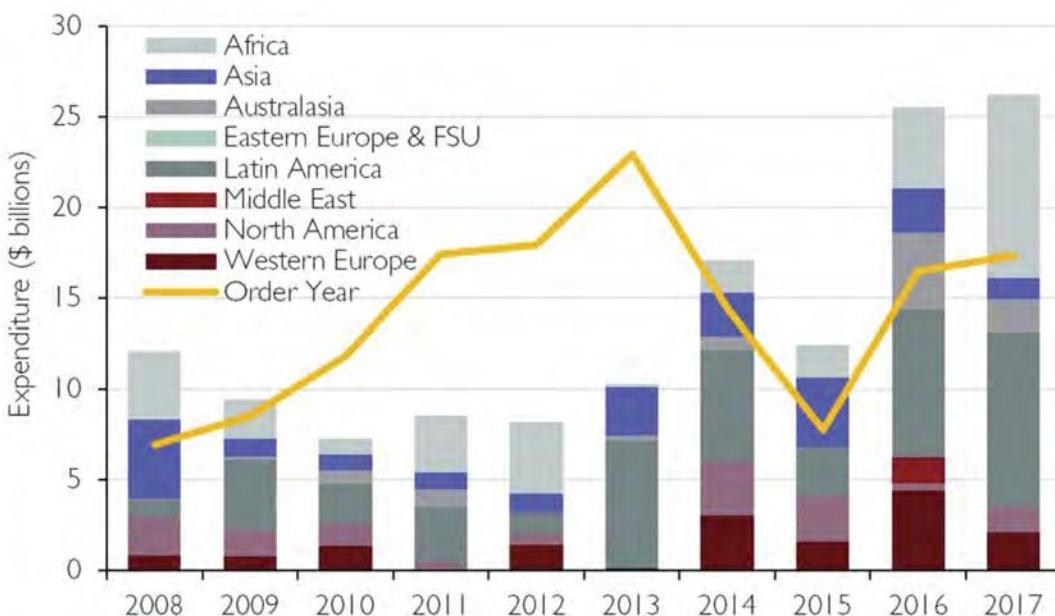
Conclusions

The FPS sector recovery, following the 2008/2009 downturn, continues steadily. A total of 25 units were ordered in 2011 vs. 24 in 2010. We note that orders in 2012 are 13 units

opportunities for OEMs and engineering firms.

Local content requirements are causing delays in project execution and cost overruns. The ambition of creating value and employment locally will need to be balanced with the need to have an efficient, competitive, and competent supply chain. These ambitions may continue to prove to be mutually exclusive.

The FPS leasing sector needs a sustainable business model. Poor financial performance from leasing contractors is



as of September, suggesting that this year is unlikely to show spectacular improvement without a surge of orders in Q4. Analysis of the order book shows 51 FPSs in-build at present – a slight increase compared to last year's edition of the Douglas-Westwood report. However, over the entire forecast period, the outlook is considered positive, with the value of annual installations projected to grow from \$10.2bn in 2013 to \$26.2bn in 2017.

The E&P industry is mature and needs to access offshore and deepwater reserves. Energy demand is growing as a function of population and economic growth. The upstream E&P business is increasingly reliant on offshore reserves to achieve incremental production as most of the easy-to-access reserves onshore have already been exploited.

Floating production systems are a key enabler for offshore production in deepwaters and for economically marginal fields.

The lingering European sovereign debt crisis presents two significant risks to the sector. First, that projects do not go ahead due to lack of available finance for either the FPS contractor or the operator. Second, the crisis will bring further economic downturns and depress oil demand and prices – in turn impacting new E&P activity.

The technological complexity of field developments is increasing and this will benefit oilfield equipment suppliers. Deeper waters, challenging reservoirs (e.g., very high or low pressure, sour hydrocarbons, high water content), and aging fields will all present problems for operators of FPSs and

being blamed on taking similar downside risk to operators (e.g., reservoir performance, construction risk, political risk) but without any of the upside that operators are exposed to (e.g. high oil and gas prices and total production being greater than forecast). Lease contractors need to work with operators to find sustainable contractual arrangements for mutual long-term benefit.

Political risk has always been present in the E&P business, and this is unlikely to change. Boundary disputes, threats of civil unrest and war, and changes in taxation regimes are all ever-present challenges that the oil and gas industry is well-used to encountering. A “portfolio approach”, avoiding excessive exposure to a single risk area, is likely to continue to be the approach for E&P and oilfield services companies.

The medium and long-term outlook is, however, very positive. Douglas-Westwood is confident that the underlying long-term growth drivers will overcome the near-term issues. It is tracking over 200 potential future FPS deployment opportunities and, over the period to 2017, forecast that 121 installations will occur with associated Capex spend doubling compared with the previous 5-year period.

This is a complex, dynamic industry that is exiting a period of weakness and is now entering a new up-cycle. DW's five-year outlook vs. the 2011 edition of its report shows an improvement in market size of some \$23.6 billion—a 35% uplift. In terms of timing, the next 12 months could present a superb entry opportunity to FPS-related business sectors.



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OCEAN INDUSTRY

MTS announces annual award winners

Among the top awards presented at the Annual Meeting held at OCEANS'12 MTS/IEEE Hampton Roads, Virginia in October 2012 were those sponsored by Ocean News and Technology, Lockheed Martin, and Compass Publications.

The **Ocean News and Technology Award** recognizes a member of our 'Next Generation' who has already demonstrated excellence in their profession and made significant contributions to MTS. The award recognized Jeremy Childress, who was also awarded \$1000. Childress works at Sexton Company, providing engineering and design services in the development of custom underwater enclosures used in marine research applications. He is the founder of the MTS Oregon Section and is very active in organizing and planning events for the regional marine technologists.

The **Compass (Publications) Distinguished Achievement Award** was presented to Robert Winokur, honoring his nearly 5-decade service to both the private and public sectors as a researcher and technical program manager. Winokur led national and international policy activities, including the team that formulated the policy initiatives that reinvigorated naval oceanography. In addition to his award, Rolex Watch, who has been a part of this award for 39 years, presented Winokur with a watch. The **Compass (Publications) International Award** honored EDT Offshore, Ltd. for their outstanding contributions to marine technology. EDT has been instrumental in the success of numerous high-profile research, exploration, discovery, and offshore development/production activities around the world. Their powerful ocean-going capability has enabled many key oceanographic expeditions as well as numerous deepwater recoveries for the U.S. Navy. The **Compass (Publications) Industrial Award** recognized Sonardyne International, a leader in the design, development, and manufacture of advanced acoustic systems for positioning, communication, imaging, and other specialized acoustic applications. In addition, they were recognized for their new systems that represent true advances in design, including their tsunami detection system and the Sentinel IDS for the detection of divers in high-risk areas.

The **Lockheed Martin Award for Ocean Science and Engineering** was presented to Franz Hover. A world leader in the design and implementation of complex marine robotic systems, Franz led the creation, control system development, and field testing of several autonomous underwater vehicle designs, including the hovering autonomous vehicle for precision under-hull inspection.

Also honored at the Annual Meeting was Teledyne RD Instruments, recognized with the **MTS Outstanding Service Award**. A longtime MTS member, Teledyne RD Instruments has been ever ready to support MTS Initiatives and activities. The company directly contributes to the encouragement and nurturing of the industry's "Next Generation" by paying the dues each year of 100 student members, sponsoring MATE ROV competitions, and taking part in other student and Society activities.

The MTS Hawaii Section was recognized as **Outstanding MTS Section** for their exceptional OCEANS'11 Conference, organized and coordinated in addition to the Section's regular activities. The College of William and Mary Student Section was recognized with the **Outstanding Student Section Award**. Although relatively new, the MTS Student Section has already become one of the College's top science-related student organizations.



MTS member and editor Ladd Borne and MTS board of director Jerry Boatman presents Jeremy Childress with the Ocean News & Technology Young Professional Award. (Photo credit: Don Monteaux Photography)

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Forum Energy Technologies, Inc. acquires Syntech Technology, Inc.

Forum Energy Technologies, Inc. announced that it has acquired Syntech Technology, Inc. (Syntech). Located in Lorton, Virginia, Syntech is a manufacturer of syntactic foam buoyancy materials used for remotely operated vehicles (ROVs) and other deepwater flotation applications. Details of the transaction were not disclosed. Cris Gaut, Forum's chairman and chief executive officer, remarked, "Syntech is a welcome addition to our Forum Subsea Technologies product line and integrates an important part of the ROV supply chain. We plan to continue Syntech's long legacy of providing top quality buoyancy materials to all of Syntech's customers, while investing in the company to expand capacity and to serve new markets." Founded in 1985, Syntech is a leading manufacturer of syntactic buoyancy foam for a variety of applications, including buoyancy foams for deep underwater flotation and underwater acoustic materials. The company serves the marine and oceanographic industries worldwide.

Rear Adm. Jonathon White appointed Oceanographer of the Navy

Rear Adm. Jonathon White has assumed the title of Oceanographer of the U.S. Navy, replacing Rear Adm. David Titley who retired in July. Assigned to the staff of the chief of naval operations, White is now head of the Oceanography, Space and Maritime Domain Awareness directorate (OPNAV N2N6E). He also serves as head of the Navy's Positioning, Navigation and Timing Directorate and he holds the title Navigator of the Navy. In addition, White serves as director of the Navy's Task Force on Climate Change, the naval deputy to the National Oceanic and Space Administration, and director of the Office of the DoD Executive Agent for Maritime Domain Awareness. As the senior oceanographer in the Navy, White advises naval leadership on all issues related to oceanography, meteorology, hydrography, climatology, precise time, and geospatial and celestial referencing. His staff provides policy guidance and resourcing for the operational oceanography program, and he serves as the senior policy advisor for issues relating to national ocean policy and governance. The operational oceanography program provides naval, joint, and coalition warfighters understanding of the maritime environment to ensure safety and readiness for unencumbered global operations, and it provides timing and reference information to support precision navigation, maneuvering, and targeting.

Remembering Chris Lokuciewski



Sadly Chris Lokuciewski passed away on 28th September, aged 59. Many would have known Chris as not only the MD and founder of specialist subsea tooling company, Hydro-Lek Ltd, but also as a leading figurehead in the deep sea submersibles industry.

Born on the Isle of Wight, Chris started his career at 17 as an apprentice for BOAC and continued to work for them until 1974. He then started a new career as a manned submersible pilot for Pisces V, Aquarius 1 and PC9 and it was here that his passion for all things underwater began. The following decade saw Chris working his way up to become an ROV pilot and eventually an ROV designer. His children will tell you tales of having ROVs in the back garden instead of climbing frames and going for a swim in the test tank rather than a municipal pool. There were many ‘Eureka’ moments where Chris would rush to commit his ideas to paper – such was his love of his industry.

In 1996 Chris set up Hydro-Lek to provide what he saw as a growing need for small but highly articulate subsea tooling and over the past 16 years he developed Hydro-Lek into a successful business with a worldwide reputation for simple, solid and cost-effective solutions for smaller ROVs.

Chris will be remembered by his staff as a great friend and mentor who would give them every encouragement to develop their potential.

Chris’s legacy lives on and Hydro-Lek, under the auspices of his only daughter Charlotte Mott.

DNV launches innovation concept for efficient offshore power generation

Depending on how it is implemented, the cost savings may also be complemented by enhanced production capacity. The power generation arrangement may reduce CO₂ emissions by approximately 40%.

The concept, Offshore Power system for a new era (OPera), provides several potential benefits for the connected units. The need for topside processing power generation at each and every unit is eliminated, and available deck space can be increased. Significant increases in revenue could potentially be achieved with the installation of additional processing capabilities, resulting in more oil production from the same size installation.

With its centralized location, OPera allows improvements in operational logistics by consolidating the location of power generation personnel, maintenance, and spare parts.

The power hub has a gas fired combined cycle power plant that increases power generation efficiency by more than 15%, compared with conventional gas turbines alone. By consolidating power generation, the power hub also allows equipment to run at more optimal load. This is a major benefit, as it further reduces fuel consumption and overall emissions. The power hub is fueled by associated gas or parts of the export gas produced.

The OPera power hub can be designed in different variants and can also serve as a logistical hub, a centralized CO₂ removal unit, or part of offshore LNG production.

The OPera concept is highly flexible in size and configuration, making it relevant for different types of fields. The power plant consists of modular gas and steam units of 50- and 100-MW capacities, allowing the combined capacity to be tailored.

Depending on water depth, different platform and hull-designs can support the power plant. The power hub can connect with different numbers and types of installations.

DNV invests 6% to 7 % of its revenue in research and innovation every year. While the majority is spent on long-term research and development, the CEO directly finances a portfolio of extraordinary innovation projects.

For more information, visit www.dnv.com.

Acteon Group announces change in ownership

Acteon Group Ltd (Acteon) announced the acquisition of a majority interest in the company by an affiliate of Kohlberg Kravis Roberts & Co. L.P (together with its affiliates, KKR) from First Reserve, with management retaining a significant holding in the company. The executive management team will remain in place. Further terms of the transaction were not disclosed.

Acteon has built a significant subsea services business in the oil and gas sector. This latest investment will support the continued delivery of its ambitions and of its goal to define the market in this relatively new and expanding part of the upstream industry. As part of the transaction, the Houston-based private equity firm White Deer Energy will be investing alongside KKR and management.

Will Honeybourne and Jeff Quake, First Reserve managing directors, said “We have enjoyed working with the company’s talented management in their relentless goal to build an industry leader, and we are delighted with the impressive success the company has achieved. Since our initial investment in 2006, Acteon has completed eight acquisitions, quadrupled its operating profits, and significantly expanded its geographic footprint. We thank the entire Acteon team and wish them every success for continued growth in the future.”

For more information, visit www.acteon.com.

World Economic Forum names Liquid Robotics as technology pioneer for 2013

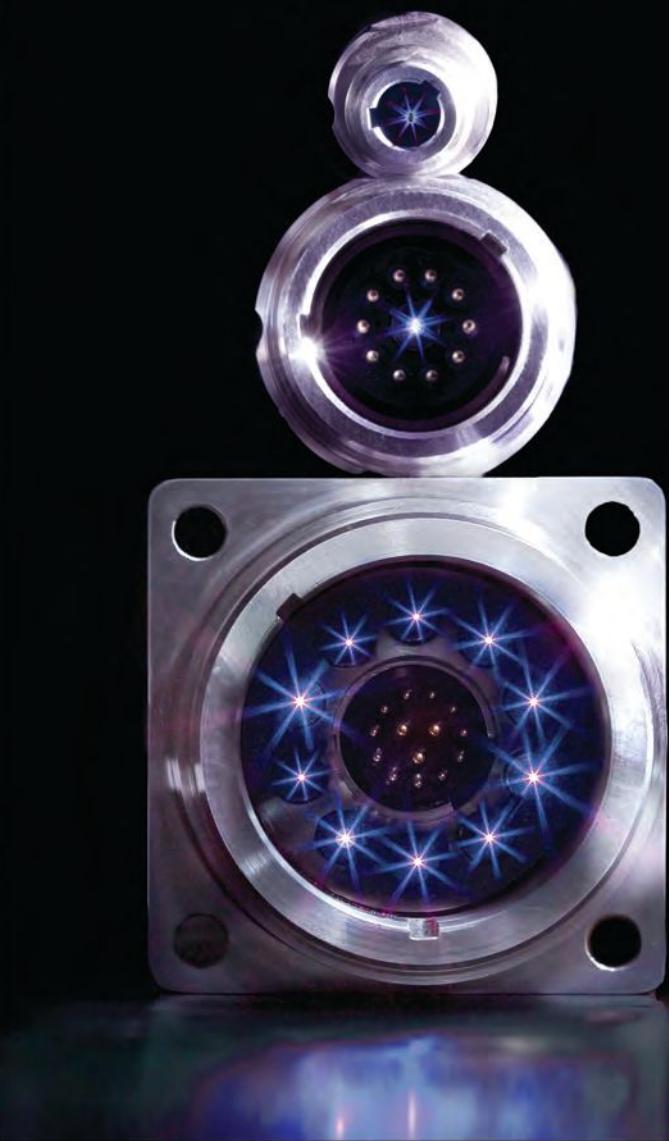
Liquid Robotics’ CTO Roger Hine recently traveled to the busy metropolis of Tianjin in northern China to accept the distinction of being named one of 23 Technology Pioneers for 2013 by the World Economic Forum. Each year, the World Economic Forum selects an elite group of technology start-ups based on innovation, leadership, and the potential for their work to transform business and society. The Wave Glider, the first autonomous marine robot designed to operate solely on renewable energies (wave and solar power), was selected based on its ability to revolutionize the way the world monitors, explores, and operates in our oceans. A proud achievement for Liquid Robotics!

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CSA launches real-time ocean sound website

CSA International, Inc. (CSA) is pleased to introduce an Internet-based, global, real-time software solution for the detection, classification, mitigation, monitoring, and archiving of natural, biological, and artificial sounds.

The www.oceansound.com website, developed through a partnership with SONSETC, is the latest addition to the

rapidly expanding CSA Marine Sound business line. The website provides real-time monitoring and interpretation of sounds from a variety of ocean observatories around the world; it is designed to provide ocean users with an automated and user-friendly tool, applying the latest in acoustic technology with a wide variety of applications.

"Our system provides acoustic data in real-time to the marine industry

through an advanced state-of-the-art technical solution," explains John Young, director of the CSA Marine Sound business line. "This will be of significant benefit to the oil and gas industry, including seismic, exploration, or production activities. It will also be of interest to port and harbor authorities, renewable energy companies, engineering firms, government bodies, or anybody requiring marine acoustic data—whether it is for mitigation, security purposes, or to demonstrate a commitment to the marine environment."

CSA specializes in consulting services for Federal, State, and private industry clients in multidisciplinary projects, integrating science and technology to evaluate environmental activities throughout the world. CSA offers a wide variety of services related to environmental management and community planning to support clients working in marine, estuarine, wetland, freshwater, and terrestrial habitats throughout the United States and overseas.

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ABB wins \$35M order for next generation icebreaker in Russia's arctic

ABB, the leading power and automation technology group, recently won an order worth \$35 million from the Baltic Shipyard Ltd. to supply powerful propulsion and energy-efficient electrical systems for a new icebreaker vessel under construction for Russia's state shipping company Rosmorport FSUE. The order was booked in the third quarter of 2012. The 25-MW line diesel-electric icebreaker is the next-generation multi-functional diesel electric icebreaker. The navigation area of the icebreaker is the Northern Sea Route, the Arctic seas, and estuaries of rivers discharging into the Arctic Ocean. The icebreaker is able to proceed continuously both ahead and astern at the speed of 2 kts in compact ice field up to 2 m thick with 20 cm of snow cover and temperatures as low as minus 35°C. Considerable gains in energy efficiency can be achieved using an Azipod® propulsion system, with up to 20% fuel reduction.

Wärtsilä awarded major power generation and propulsion system order for six Brazilian drill ships

Wärtsilä, the marine industry's leading solutions and services provider, has been awarded the contract from Jurong Shipyard Pte Ltd, a subsidiary of Sembcorp Marine to supply main generating engines and thrusters for six new deepwater drill ships to be built in Brazil at Estaleiro Jurong Aracruz. The contract was signed at the end of September. The Jurong Aracruz shipyard, a wholly owned subsidiary of Singapore based Sembcorp Marine, will build the vessels for Sete Brasil, an investment company that manages asset portfolios in the oil and gas sector. The drill ships to be used in the pre-salt, deepwater drilling program of the Brazilian energy giant, Petrobras will be operated by drilling contractors Seadrill and Odfjell. This milestone order is a testimony to the company's competitive position in a rapidly developing market. Each of the six ships will be powered by 16-cylinder Wärtsilä 32 main generating sets and FS3510/NU underwater de-mountable thrusters, with the first deliveries scheduled for 2013. The first vessel is scheduled for delivery in the second quarter of 2015. Wärtsilä's strong presence and support capabilities in Brazil, together with its considerable experience in supplying propulsion equipment for operations in demanding offshore conditions, were cited as being important considerations in the award of this contract. Wärtsilä has had operations in Brazil for more than 20 years and currently employs more than 600 people there.

Seacor Marine chooses Kongsberg Maritime Systems for world's first DP3 class crew boats

Leading U.S. offshore marine support vessel operator SEACOR Marine LLC (SEACOR Marine), located in Houma, Louisiana, has chosen Kongsberg Maritime to supply sophisticated dynamic positioning systems for two new 190-ft CrewZer Class Crew boats (also known as fast supply vessels). SEACOR Lynx and SEACOR Leopard are under construction at Gulfcraft Shipyard, located in Franklin, Louisiana, and are scheduled for delivery in the first half of 2013. The SEACOR Lynx and SEACOR Leopard will be the first crew boats to operate using an ABS Class DP3 system, affording them the highest degree of maneuvering safety available. As a pioneer in DP Crew boat design, SEACOR Marine is keen to ensure that its latest generation of CrewZer Class vessels meet the highest possible safety standards. ABS Class DP3 allows for significant DP operational safety, including full protection of the system in case of fire and flooding. Kongsberg Maritime Inc., located in Houston, Texas, will install the pinnacle in DP system technology aboard the new vessels in the form of a triple redundant KONGSBERG K-Pos DP3 system integrated with proprietary position reference and environmental sensor systems.

Wilson, Sons delivers two Damen-designed platform supply vessels

Damen Shipyards is further strengthening its involvement in the Brazilian offshore market with six platform supply vessels (PSVs), type PSV 4500, built under license by Wilson, Sons (Santos, Brazil) for Wilson Sons Ultratug Offshore (WSUT). Two vessels have been recently delivered; the remaining four will be delivered throughout 2013.

Damen and Wilson have enjoyed a business relationship for 20 years, and the new vessels will be supplied to WSUT, a joint venture between Brazilian operator Wilson, Sons and the Chilean Ultratug group for long-term charter to Petrobras. To date Wilson, Sons has built 16 Damen PSVs – all for their own fleet.

As one of the BRIC (Brazil, Russia, India, and China) countries, Brazil is very much an expanding market; in particular, the offshore sector is demonstrating exceptionally strong growth. Local manufacturing is a key factor, and the service through Damen Technical Cooperation (offering ships in kit form for completion locally) ensures that the shipbuilder complies with the 60% local content threshold imposed by the government.

Wilson, Sons is the largest operator of harbor tugs in Brazil and already has a large fleet of Damen vessels comprising Azimuth Stern Drive (ASD) tugs and PSV.

The 4500 DWT vessel has a LOA of 87 m, 16-m beam, and maximum draught of 6.19 m, providing a large deck area amounting to 840 m². A diesel electric propulsion system comprising four Caterpillar 3512C generator sets, each of 1,570 ekW at 1,800 rpm, power two Rolls-Royce azimuth thrusters of 2,500 kW. Fixed pitch propellers of 2,800 mm diameter, with nozzle, deliver a speed of 13 kts (at 5 m draught). A Caterpillar C9 genset of 238 ekW at 1,800 rpm is for emergency use. Twin bow thrusters ensure good maneuverability, and the vessel has a dynamic positioning DP2 classification. There is accommodation for 14 crew and up to six passengers.

Currently, Damen is engaged in the design of a new range of PSVs. Based on operational studies, feedback and questionnaires from crew and operators of the Damen PSV 3000, 4500, and other non-Damen PSVs operating in the area, analyses are made to refine the specifications of the new design.

For more information, visit www.damen.nl.

H2X wins contract to build second and larger survey vessel for leading Saudi Arabian university

H2X, a member of iXBlue's marine works division, has been awarded a contract to build a 43-m monohull survey vessel by a leading Saudi Arabian university specializing in hydrographic and oceanographic studies.

The vessel will be of a standard design with various modifications to meet defined operational needs. Constructed mainly from lightweight composite materials, the vessel will be propelled by two diesel and two classical shaft lines for transits and by a pump-jet azimuthal stern thruster. It will have a bow thruster to ensure maximum maneuverability, and it will also be fitted with a dynamic positioning capability. The vessel will be handed over to the owners, complete with all the navigational, positional, and survey equipment necessary to conduct scientific work from day one at water depths to over 2,000 m.



H2X president Sébastien Grall, added, "The contract consolidates H2X's position in the professional workboat market. In the past 2 years, we have been asked to build a total of six workboats, including three for scientific use. Before this, we were absent from this market."

The vessel will be built at H2X's La Ciotat shipyard in the south of France, near Marseille. Design work is almost complete, and construction of the vessel should start later this year. Delivery is scheduled for the second half of 2014. Contracts for the supply of the various onboard systems are expected to be awarded in the coming months.

For more information, visit www.h2x.com.

Crowley christens new petroleum tank vessel in Tampa

Crowley Maritime Corporation christened the 16,000-hp tugboat Legend and 330,000-barrel tank barge 750-2 in Tampa, Florida. Together, the vessels comprise the company's newest articulated-tug-barge (ATB) and will be

used to transport petroleum products between the U.S. Gulf and East Coasts, making regular port calls in Tampa where Crowley currently discharges nearly 163 million gallons of product each month.

The Legend/750-2 is the second of three petroleum tank vessels in its class in terms of size, speed, and capacity in the Crowley fleet. Together, they measure 674 ft in length, which is 95 ft

taller than the Florida Gulf Coast's tallest skyscraper, Tampa's own 100 North Tampa. Crowley employs 14 American crewmembers on the vessel and four people shoreside in Tampa, a port growing in importance to Crowley. Five to seven Crowley vessels call the Port of Tampa weekly to deliver cargo and petroleum products.

For more information, visit www.crowley.com.



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Second LNG booking for Damen Shiprepair Brest



Damen Shiprepair Brest (France) has been awarded a second firm booking for the drydocking, maintenance, and repair of the LNG carrier Lalla Fatma N'Soumer. The Hyproc Shipping owned and managed 80,920 dwt vessel will arrive straight after the shipyard has completed the Bonny Gas Transport LNG SOKOTO contract.

Jos Goris, managing director of Damen Shiprepair Brest, says, "We are very pleased with this order, which followed very quickly after the LNG SOKOTO because it ensures the uninterrupted continuation of our LNG activities. The yard's workforce has shown their LNG skills and experience in executing the high-quality, safe, and secure works on this contract.

For more information, visit www.damenshiprepairbrest.com.

Bollinger awarded six OSV conversions from Hornbeck

Bollinger Shipyards, Inc. has been awarded a contract by Hornbeck Offshore Services (HOS) to convert six 200 class DP1 offshore supply vessels (OSVs) to 240 class DP2 OSVs.

The announcement was made by Bollinger executive vice president, Ben Bordelon, who said, "We are very pleased to announce the award of the HOS Super 200 conversion program. Our relationship with Hornbeck Offshore goes back many years, and we are proud to be a part of their continued commitment to better service their clients with this advancement of their fleet."

The news of the conversion program was announced by HOS, stating they have decided to implement a retrofit program to stretch and upgrade six 200 class DP-1 OSVs into 240 class DP-2 OSVs. The designated vessels for the program are six of Hornbeck's 10 Super 200 class DP1 units, four of which are the vessels that recently completed 2-year charters with Petrobras in Brazil.

In order to meet the aggressive

delivery schedule required by HOS, Bollinger will carry out the conversions at two separate Bollinger facilities, Bollinger Larose, L.L.C. and Bollinger Morgan City, L.L.C. Both facilities have long-standing business relationships with HOS, and both facilities have serviced the super 200s for regulatory and routine maintenance over the years. Built in 1999 and 2000, the vessels were acquired by HOS in 2007. Due to their 56-ft beam, the planned 40-ft mid-body extensions and DP upgrades will bring each vessel's capacity up to approximately 2,850 tons of deadweight and roughly double their liquid mud carrying capacity to approximately 8,000 barrels.

Bollinger Shipyards, Inc., owns and operates 10 shipyards strategically located between New Orleans and Houston with direct access to the Gulf of Mexico, Mississippi River, and Intracoastal Waterway.

For more information, visit www.bollingershipyards.com.

Kongsberg Maritime introduces new training course

With over 80 orders already taken for its sophisticated K-Master aft- and forward-bridge workstation, Kongsberg Maritime has completed development and the pilot course for a specialized training course designed to enable offshore support vessel crew to enhance operational safety and efficiency using this sophisticated control solution. The course is now part of Kongsberg Maritime's growing global training portfolio.

Kongsberg Maritime held the K-Master training pilot course at its training center in its headquarters in Kongsberg, Norway this August. With owners and yards worldwide accepting the K-Master solution as a next generation control technology for innovative vessels, Kongsberg Maritime has taken the "training-in-a-box" approach, first pioneered on courses for the K-Chief automation system, for this new course.

"Training for K-Master lends itself to the portable training course approach, as we are able to mimic its touch screen control system using tablet computers, which are small and very easy to transport," comments Arnstein Bugge, instructor and course designer, Kongsberg Maritime. "We have developed a portable classroom that can accommodate a full session with eight participants, all while being compact enough to be carried in a small suitcase. This helps us to be flexible as the course can literally be carried out anywhere in

the world at quite short notice."

K-Master is a complete and independent work station, designed to meet strict aft- and forward-bridge ergonomic considerations regarding the arrangement of working places, instrumentation, and the operability of the equipment itself. K-Master sets a new standard in the integration of navigation, control, and maneuvering functions of ship's bridges. It provides unique access to all major control systems within easy reach of the seated operator and ensures complete situational awareness.

The aim of the new course is to teach operators how to use the two-touch control panels that are integrated with the K-Master chair. From these screens, the operator has access to a wide variety of information and functionality for DP maneuvering and operation of a number of main vessel subsystems. A prerequisite for operating K-Master and taking part in the training course is having basic DP operation knowledge in addition to familiarity with Kongsberg Maritime's K-Chief automation system.

OceanWise adds scale independent, seamless feature layers to Marine Themes

Independent marine data management and publishing specialist, OceanWise Ltd, has established off-the-shelf marine mapping datasets that meet the needs of the most demanding applications. These datasets include Raster Charts, Marine Themes, and the recently released Marine Themes DEM. All are available online for immediate download from established digital mapping providers emapsite.com and FIND Mapping. Offering exceptional value, OceanWise mapping and data management products are being widely used across central and local government, NGOs, and the commercial sector.

OceanWise has now added scale independent, seamless feature layers to its acclaimed vector dataset, Marine Themes. These feature layers are based on the appropriate scale of Electronic Navigational Charts (ENC) or source datasets available and include data on administrative and management units, industrial facilities, and transport. The wrecks and obstructions theme has been scale independent for some time, while the elevation theme will continue to be available as three scale bands to facilitate enhanced performance in GIS and Web GIS due their complexity.

For more information, visit www.oceanwise.eu.

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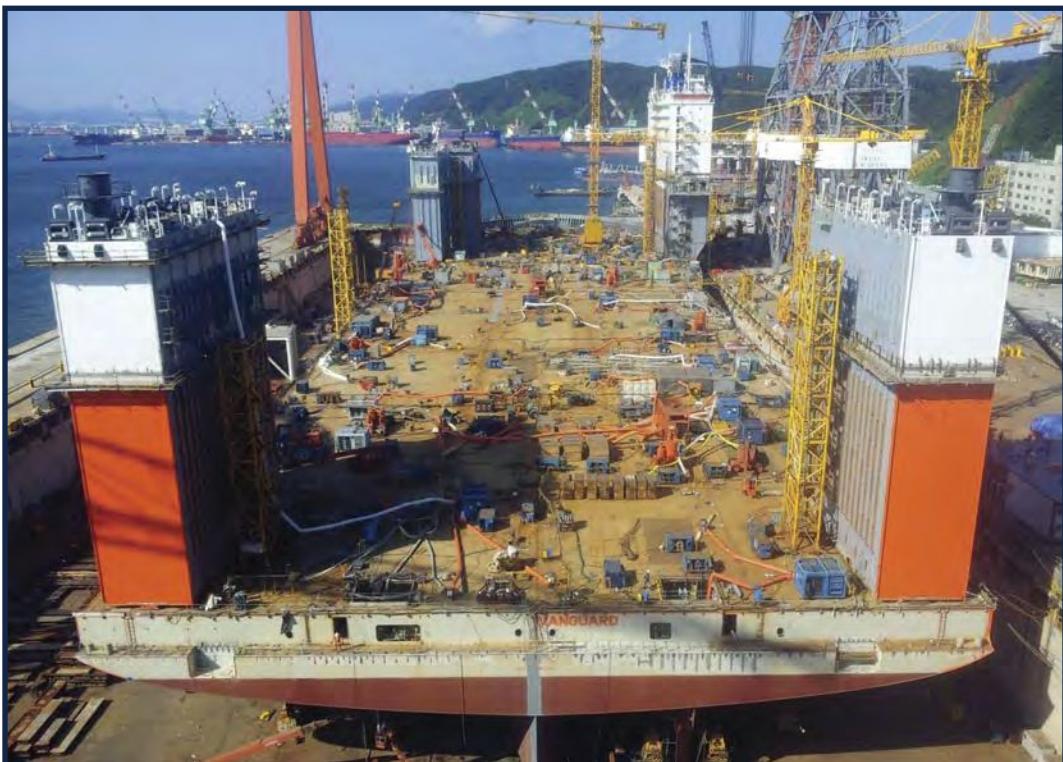
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Transporting Super-sized Offshore Platforms



It's not every year that a new vessel is recognized as a true game-changer. The Dockwise Vanguard has been designed to enable operators and contractors to consider opportunities for mega offshore units that were, until now, considered unthinkable. The Dutch marine contractor Dockwise's new generation vessel—currently under construction—will enter the heavy marine transport market to transport the larger and much heavier top-tier offshore platforms.

Next generation requirements

The next decade is expected to see a growing demand for transportation and installation projects, particularly for the transport of integrated offshore units to remote locations. Today, these fully integrated offshore units such as TLPs and semisubmersibles structures are currently transported separately. Other units, such as spar buoys and FPSOs, can only be transported up to a certain size and are usually wet-towed to their destination.

Existing semisubmersible heavy-lift vessels cannot transport the next generation of platforms. The world's current largest semisubmersible heavy-lift vessel, the Blue Marlin—also owned by Dockwise—can carry structures of up to 76,000 metric tons. While capable of transporting some mega struc-

tures (such as BP's Thunder Horse), the Blue Marlin is limited in its ability to transport larger and heavier units. Many of these newer units require a new type of vessel with a significantly increased carrying capacity, along with an increased deck size and flexibility.

In light of next generation requirements, Dockwise decided to invest in a completely new vessel capable of transporting super-sized offshore structures.

Innovative design

The Dockwise Vanguard was engineered to surpass current heavy marine transport limitations. The vessel's accommodation block and navigation bridge are located on the extreme starboard side. The vessel has no bow, and this, along with other design features, gives the vessel a unique appearance. Furthermore, the deck covers a surface of 275 m by 70 m and is equipped with movable casings suitable for overhang in all directions.

In addition, the vessel has a dedicated design for ultra-heavy units weighing up to 110,000 metric tons. Optimized deck strength and extreme wide-load capabilities are at the heart of the design philosophy, as are the vessel's stability

Offshore Vessels

characteristics. It is equipped with a 27-MW redundant propulsion system consisting of two fixed propellers at the aft and two retractable azimuth thrusters at the bow. These can reach a maximum transit speed of 14 kts, which translates to average service speeds of 11 to 13 kts with cargo. In addition, the vessel allows for 16 m of water above deck, accommodating cargoes with a higher draft.

New opportunities

The Dockwise Vanguard's capabilities present new opportunities that were unthinkable until now. Companies in the oil and gas industry can now specify much larger and heavier offshore structures, and these can be integrated at a single fabrication site. These mega structures can then be transported onboard the vessel to remote offshore locations, even in harsh climates where no commissioning facilities are available. This feature can help reduce costs and optimize the overall project. In essence, the new vessel will play an important role in the field development philosophy of oil and gas majors, since it will be capable of transporting fully integrated mega offshore units.

The vessel's design is also expected to help operators and developers create value. With its capabilities, timely and risky phases of offshore projects can be managed prior to hookup and commissioning. Interface optimization, a higher degree of risk mitigation, lower insurance premiums, improved schedule flexibility, and reduced time-to-production—as well as reduced offshore man-hours—are a few examples of opportunities. In addition, the vessel's advanced technical capabilities enable it to offer a completely new service: offshore dry-docking.

Offshore dry-docking

Increasingly, FPSOs are being located in remote areas that lack support infra-

structure. In this circumstance, an offshore dry-docking service can be specially valuable. The Dockwise Vanguard's FPSO dry-docking capacity offers inspection, maintenance, and repair opportunities (amongst others) at different conditional modes. The FPSO could remain connected to its mooring and turret system while

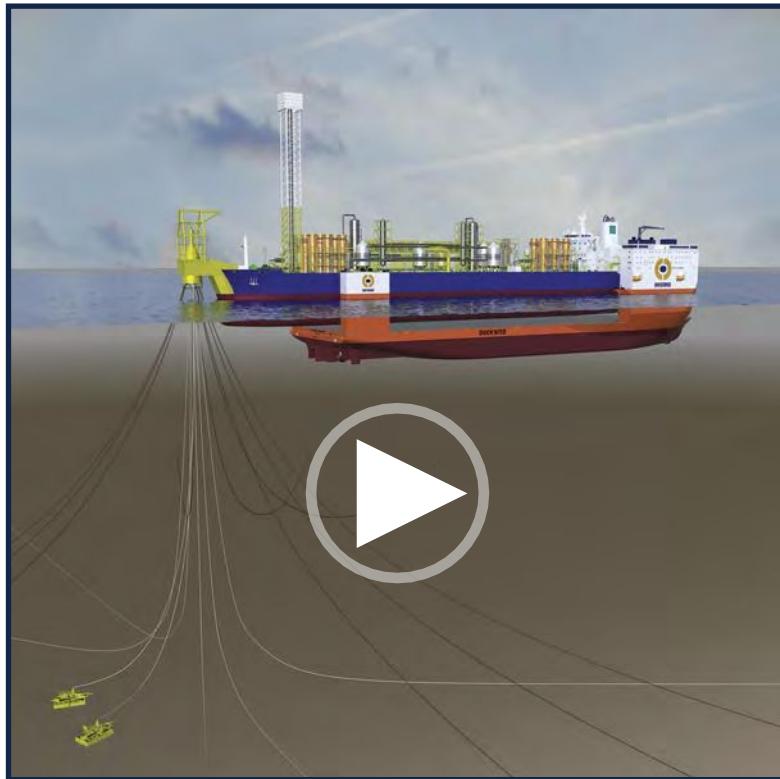
of experts and representatives from two oil and gas majors.

Industry anticipation

The Dockwise Vanguard continues to capture the interest of oil and gas majors. Three contracts have been agreed upon, each transporting behemoth-sized platforms. The maiden assignment will load and transport Chevron's Jack/St.Malo 50,000-ton semisubmersible hub production facility from the Samsung yard to Kiewit's Corpus Christi facility on the U.S. Gulf Coast. Upon completion, it will return to Korea for its second assignment to transport Eni's Goliat FPSO—52,000-ton cylindrical Sevan type platform—from Hyundai Heavy Industries to the Eni Norge Goliat Field in the Barents Sea. The third assignment consists of transporting a 45,000-ton spar buoy for Statoil. The platform, measuring approximately 200 m in length with a 50 m diameter, will be transported from either Korea or Finland—subject of yard choice—to Aasta Hansteen (ex Luva) field in the Vøring area.

The vessel's design philosophy received two awards by maritime organizations. The first award was from the Royal Association of Dutch Ship Owners for the KVNR Shipping Award 2011. This award recognized the Dockwise Vanguard as the most innovative vessel. The second recognition, an OTC Spotlight on New Technology Award bestowed at this year's conference, also recognized the vessel's innovative design. In selecting a new technology winner, the jury's decision was based on the following criteria: new, innovative, proven, broad interest, and significant impact.

With its innovative design, the Dockwise Vanguard is a game changer symbolizing the future of exceptional heavy marine transport. This next generation vessel is uniquely capable of offering a new world of opportunities.



keeping the riser systems intact, with the possibility of continuing limited production. In this scenario, the FPSO will still be able to freely weathervane around the turret mooring, with controlled heading made possible by the vessel's propulsion system.

The success of FPSOs in the past few decades has led to many units in need of service. Today, there are about 180 active FPSOs—all of which will require service in the coming years. Dockwise is now positioned to offer FPSO operators and developers an alternative solution for service requirements set by classification societies.

In order to fully realize this new offshore service, Dockwise received an "approval in principle" from ABS Consulting following the commissioning of a Hazard Identification (HAZID) safety assessment. This assessment took place in the presence of a multidisciplinary team

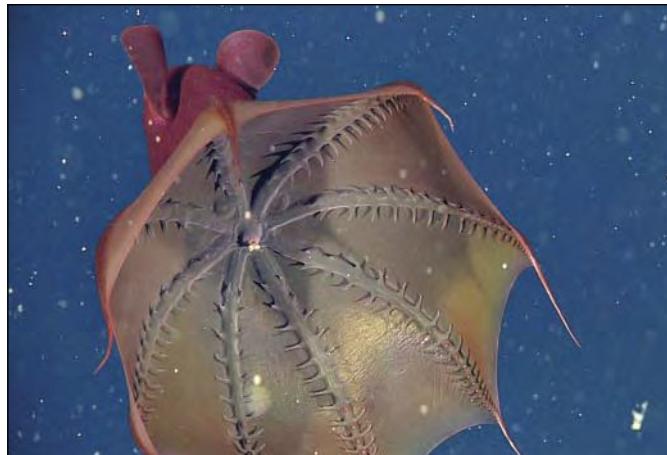
NOAA announces \$4.9M to help coastal communities manage effects of climate change
NOAA and the University of New Hampshire have announced more than \$4.9 million to fund nine collaborative research projects aimed at making coastal communities and environments more resilient to rising sea levels, changing weather patterns, extreme storms, and ocean warming and acidification. The grants, made by NOAA's National Estuarine Research Reserve System (NERRS) Science Collaborative through its partnership with the University, will fund projects in South Carolina, Maryland, Massachusetts, New Hampshire, Maine, Rhode Island, Alabama, Oregon, and California. Over the next 2 years, NERRS-led project teams will bring community stakeholders together with scientists, using the best science to make important resource management and public safety decisions. Projects will address community adaptation to sea level rise, implementation of low-impact development land use practices, oyster and wetland restoration, and river and watershed management.

New funding propels UVIC's world-leading ocean observatory into the future

Completion of the world's largest deep-sea tsunami array, new instruments to improve marine safety in the Strait of Georgia, and the first sub-sea instrument platform in the Arctic—these are three exciting developments underway at the University of Victoria's world-leading Ocean Networks Canada Observatory. The governments of Canada and British Columbia announced a total of \$41.7 million in new funding to support the operating costs of the observatory, which is managed for the University of Victoria by the nonprofit organization Ocean Networks Canada (ONC). The funding is awarded through the Canada Foundation for Innovation's (CFI's) Major Science Initiatives Fund, which supports a portion of the operating costs of selected big science projects across Canada. Of the total, CFI is contributing \$32.8 million and the BC government \$8.9 million. The ONC Observatory pioneers a new generation of advanced ocean observation systems that, using power and the Internet, provide continuous 24/7 monitoring of ocean processes and events, as they happen.

Guy Harvey donates \$200,000 for marine research

Dr. Guy Harvey, the renowned marine wildlife artist, scientist, and conservationist, recently donated \$200,000 to the Guy Harvey Research Institute (GHRI) at Nova Southeastern University to conduct research on large marine fishes such as sharks and marlins. Given on behalf of the Guy Harvey Ocean Foundation, the funding will be used to support ongoing research projects at the GHRI, which is housed at NSU's Center of Excellence for Coral Reef Ecosystems Research at John U. Lloyd Beach State Park. GHRI director Mahmood Shivji, Ph.D., who is also a professor at NSU's Oceanographic Center, and his GHRI graduate students and collaborators use a combination of DNA and field-based research methods to obtain a holistic understanding of open-ocean and coral reef fishes and how they use their ecosystems. The Guy Harvey Ocean Foundation, created by Dr. Guy Harvey, funds inspired scientific research and innovative educational programs to encourage conservation and best management practices for sustainable marine environments.

MBARI researchers discover what vampire squids eat

This frame grab from video taken by one of MBARI's ROVs shows a vampire squid with its web open, revealing a bit of marine snow in its mouth (the white spot at center of arms). Other bits of marine snow appear as white specks in the water around the animal. The soft, finger-like projections on the animal's arms (cirri) may help the animal transfer food to its mouth. Image credit: ©2011 MBARI

A new paper by MBARI Post-doctoral Fellow Henk-Jan Hoving and Senior Scientist Bruce Robison shows, for the first time, that, unlike its relatives the octopuses and squids, which eat live prey, the vampire squid uses two thread-like filaments to capture bits of organic debris that sink down from the ocean surface into the deep sea. In a recent article in the *Proceedings of the Royal Society B: Biological Sciences*, Hoving and Robison show that vampire squids eat mostly "marine snow"—a mixture of dead bodies, poop, and snot. The dead bodies are the remains of microscopic algae and animals that live in the waters farther up in the ocean, but sink down into the depths after they die. The poop consists of fecal pellets from small, shrimp-like animals such as copepods or krill. The snot is mostly debris from gelatinous animals called larvaceans, which filter and consume marine snow using mucus nets.

In addition to looking at the stomach contents of vampire squids from museum collections, the researchers used MBARI's ROVs to collect live vampire squids and study their feeding habits in the laboratory. They also examined high-definition videos of vampire squids taken by MBARI's ROVs. Finally, they examined vampire squid arms and feeding filaments under optical and scanning electron microscopes.

One key to Hoving and Robison's discovery was that they used MBARI's ROVs to collect living vampire squids and were able to keep them alive in the laboratory for months at a time. Hoving soon found that if he placed bits and pieces of microscopic animals into a tank with a vampire squid, the food particles would stick to one of the string-like filaments that the animal sometimes extends outward from its body. The vampire squid would then draw the filament through its arms, removing the particles from the filament and enveloping them in mucus. Finally, the squid would transfer the glob of mucus and particles to its mouth and consume it.

Using MBARI's video annotation and reference system (VARS), Hoving also identified every MBARI ROV dive

over the last 25 years during which researchers had seen a vampire squid. He then reviewed 170 of these video clips (over 23 hours of footage) to look for additional clues as to what and how the animals ate.

The videos showed that vampire squids often drift motionless in the water, extending one of their thin filaments—up to eight times as long as the animal's body—like a fishing line. In many cases, Hoving saw bits of marine snow sticking to the filament. He also saw vampire squids slowly pulling in their filaments and scraping off the accumulated marine snow using their arms.

This research was sponsored by grants from the David and Lucile Packard Foundation and the Netherlands Organization for Scientific Research (NWO).

For more information, visit www.mbari.org.

CSA successfully completes seagrass restoration project

CSA International, Inc. (CSA) is pleased to announce that it was recently retained by Maritime & Transport



Services, Ltd. (MTS) to assist in providing ecological support services to Jamaica's National Environment and Planning Agency (NEPA) associated with the completion of a seagrass restoration project in Negril, Jamaica (Westmoreland) as part of NEPA's Climate Change Adaptation and Disaster Risk Reduction Project – Increasing Resilience of Coastal Ecosystems. CSA staff provided field oversight and guidance support to NEPA for the identification and demarcation of the proposed seagrass transplanting donor and recipient areas.

Additionally, CSA assisted NEPA in the transplanting of 692 planting units primarily consisting of shoalgrass (*Halodule wrightii*) with lesser manatee grass (*Syringodium filiforme*) into two individual recipient areas totaling approximately 1,000 sq.m. The seagrass restoration activities occurred within a 2-km stretch

of Long Bay in Negril, Hanover/Westmoreland. A deepwater variation (water depths greater than 2 m) of the "modified shovel method," which was initially developed by CSA staff in 2001 for the Port Manatee Seagrass Mitigation Project, was selected due to its proven track record of successful implementation and economical feasibility.

To date, CSA staff has cumulatively transplanted over 181,000 individual planting units consisting of five different seagrass species from four genera utilizing the modified shovel method.

For more information, visit www.csaintl.com.

Fishery collapse near Venezuela linked to climate change

Even small increases in temperature from global warming are causing climatology shifts harmful to ocean life, a new study in the Proceedings of the National Academies of Science shows. Modest changes in temperature have significantly altered trade wind intensity in the southern Caribbean, undercutting the supply of key phytoplankton food sources and causing the collapse of some fisheries there.

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"Global warming isn't occurring uniformly over the earth's surface – it's been much greater at the high latitudes in the Northern Hemisphere than it has been for the low latitudes," said co-author Robert Thunell, a University of South Carolina researcher. "Because of that, some people have said, 'Well, we're probably not going to see much biotic change at low latitudes,' but we show nicely in this paper that even when the climatological changes are relatively modest, they can have a big impact on the marine ecosystem."

The paper is the product of nearly 15 years of observations in a highly collaborative NSF-funded effort between researchers at USC, Stony Brook University, the University of South Florida, and several Venezuelan institutions. Since late 1995, monthly observations of a range of variables, from nutrient and chlorophyll concentrations to meteorological readings, have been collected at a single location off the coast of Venezuela to establish a long-range record.

The sea surface temperature was found to have increased somewhat, about 1°C, over the last 15 years. But the effect on the sea life was much more pronounced: beginning in 2006, the popula-

tion of microscopic diatoms, dinoflagellates, and coccolithophorids plummeted, along with the local harvest of sardines.

The team thinks the drastic change in ecology results from climatology shifts that go beyond a small temperature increase.

For more information, visit www.pnas.org.

Scientists uncover vast differences in Earth's polar ocean microbial communities

An international team of scientists, including a University of Michigan graduate student, has demonstrated that a clear difference exists between the marine microbial communities in the Southern and Arctic oceans, contributing to a better understanding of the biodiversity of marine life at the poles.

The most comprehensive comparison of microbial diversity at both of Earth's polar oceans showed that about 75% of the organisms at each pole are different. This insight sheds light on newly recognized biodiversity patterns and reinforces the importance of studying Earth's polar regions in the face of a changing climate. Also it highlights the

need for further research on the impacts of sea ice, seasonal shifts and freshwater input in both regions.

"We believe that significant differences in the environmental conditions at each pole and unique selection mechanisms in the Arctic and Southern oceans are at play in controlling surface and deep-ocean community structure," said Alison Murray, leader of the international team and an associate research professor at the Desert Research Institute in Reno, Nevada.

The team reported its findings online in the Proceedings of the National Academy of Sciences.

The scientists found that the differences between the two poles were most pronounced in the microbial communities sampled from the coastal regions, which is "likely a result of the significant differences in freshwater sourcing to the two polar oceans," said Jean-François Ghiglione, first author of the report and research professor at the French Microbial Oceanography Laboratory.

For more information, visit www.umich.edu.

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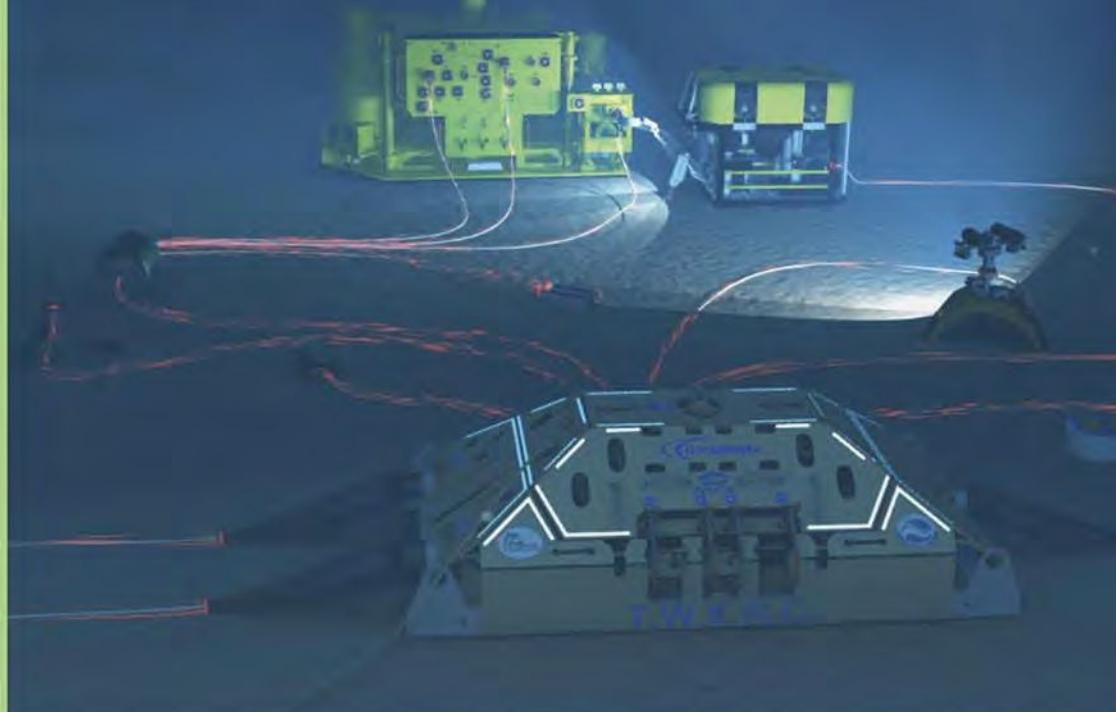
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EXHIBITING AT SUBSEA TIEBACK 2013
EXHIBITING AT OFFSHORE MEDITERRANEAN CONFERENCE 2013

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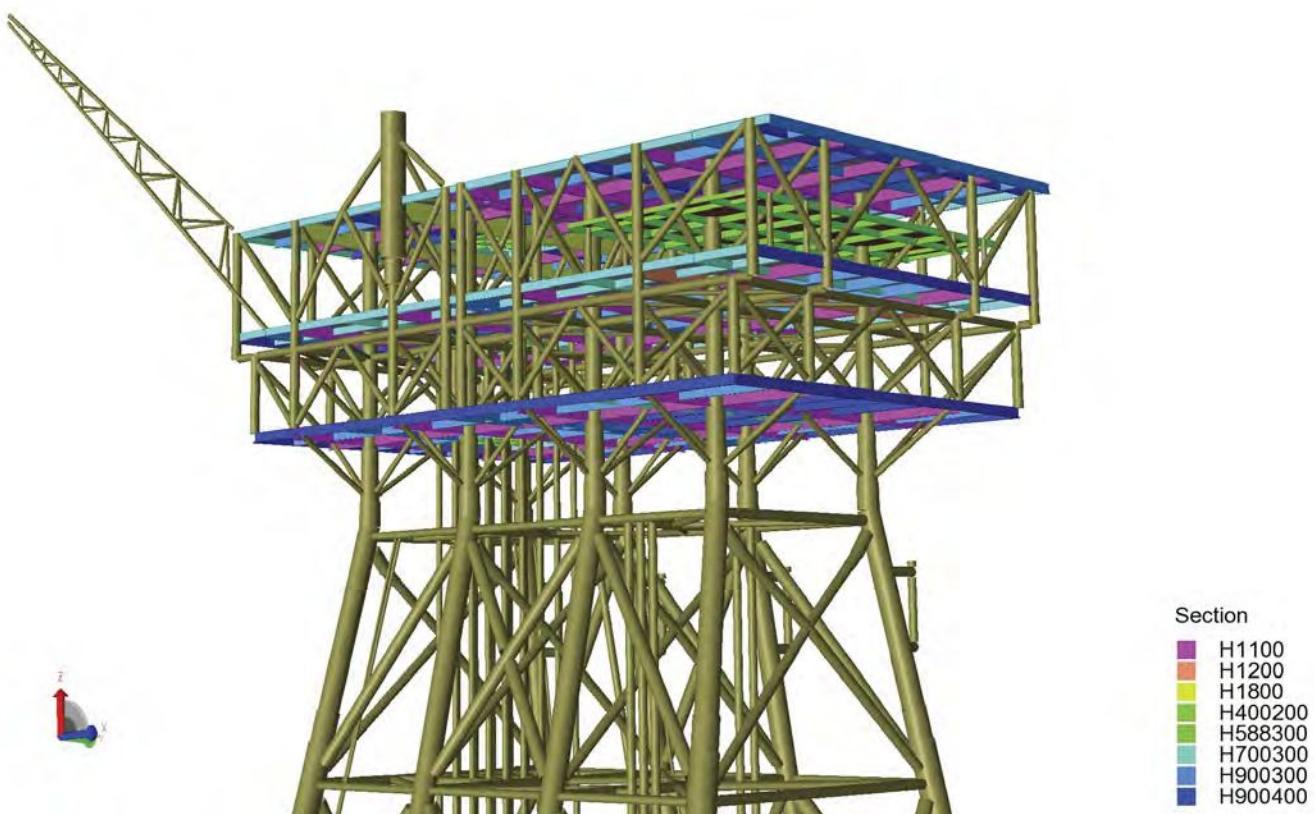
Meeting the needs for a wide range of spatial, power or bandwidth requirements, the OCB serves research, industrial and government applications, providing the infrastructure needed to deliver power in support of continuous 24/7 monitoring; delivering data and providing command and control on-shore via satellite or shore-ended cable.

Typical Projects Served

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

DNV Software's Sesam GeniE Offers Improved Solution for Strength Analysis of Jackets

Efficient strength analysis throughout all stages of the lifecycle of an offshore structure—construction, transportation/installation, in-place, modification, and life extension—has been a significant challenge in the marketplace. With the latest release of Sesam GeniE, DNV Software introduces an innovative method that lets users easily reuse all of the model data from every stage of a jacket's lifecycle, including modification and life extension projects.



T

The new solution in Sesam GeniE improves the efficiency and reliability of the critical data handling. If your current software does not support reuse of the same model data through all these stages, analysis becomes both inefficient and imprecise.

"By importing data into Sesam GeniE, the user will save the time that would have been spent remodeling from scratch. In addition, Sesam GeniE will have the information on the quality of the model and will help understand previous modeling. In other words, modification and life extension projects are simplified, and the impact on investment security and profitability is significant," says Ole Jan Nekstad, DNV software product director Sesam.

Existing model data from other CAD/CAE-systems can easily be imported to the new version of Sesam GeniE. This includes data from older versions of Sesam or from competitors such as Sacs and StaadPro. This means that previous investments are secured. Sacs import supports models with general loads as well as wave loads. Pile soil analysis will be covered in the near future.

The new release (version 6.3) includes a range of other new features for strength analysis of fixed and floating structures, supporting its position as the most complete solution on the market. Examples are rendered faster, and the modeling of guiding geometries for the purpose of making surfaces is more precise. Sesam GeniE 6.3 can import NURBS curves from DXF and Rhino and has a more complete XML data storage, including code checking of beams.

"We are proud to launch an innovative solution which will have a big impact in the market in addition to making life easier and more profitable for our thousands of users. We have invested in this software for 40 years, and this new version supports our position as the world's leading provider of complete and user-friendly software for managing risk within maritime and offshore structures," says Are Føllesdal Tjønn, DNV software managing director.

Sesam GeniE for optimized performance

Sesam GeniE is developed based on feedback from users through more than 4 decades in use by the industry. Sesam GeniE optimizes design and engineering efficiency, providing lower building and operational costs for the assets, ensuring full compliance with regulatory requirements, optimizing performance, reducing downtime, and extending lifetime.

Sesam GeniE integrates stability, loading, strength assessment, and CAD exchange and is performed from the same graphical user interface. Conceptual modeling employed in Sesam GeniE makes the engineer more productive and, at the same time, increases quality when creating models consisting of beams and/or plates. The productivity and quality gains are achieved by using a range of features, including intelligent modeling of structure and load, integrated analysis and results processing, code checking of beams and plates, and data exchange with standard office reporting products.

Sesam GeniE is ideal for use in design since the program allows for frequent changes in the structural layout and loading arrangement. The analysis model is automatically updated such that results may easily be produced for each change in the design.

Sesam GeniE—part of the Sesam suite

DNV Software has more than 200 Sesam GeniE customers across the globe, including some of the biggest names in the industry and leading research and educational institutions. Sesam GeniE is part of DNV Software's Sesam suite of programs, and the data exchange between these is seamless. The Sesam suite is a complete lifecycle system delivering strength assessment management for fixed and floating structures from concept design to operation, life extension, and finally to decommissioning.

Sesam allows users to easily integrate the use of modules such as Sesam HydroD (hydrodynamic and hydrostatic analysis) and Sesam DeepC (moorings and risers) with use of Sesam GeniE.

While Sesam has evolved as a market-driven modular system enabling users to invest in a package of selected modules, integrated packages have also been developed to cover specific needs. This allows for tailor-made Sesam installations to maximize features in a cost-efficient way. All packages cover in-place, installation, transportation, accidental conditions, and operational aspects.

Sesam GeniE in brief

- One software tool for engineering of both floating and fixed structures
- Concept modeling makes it possible to focus on real structures instead of analytical models
- Flexible in naming, the user may use same names as the real structure
- Automatic creation of an analytical model (a finite element model) based on the rules defined by the designer or using the system default settings. A new model is created each time the structure model or equipment configuration has been changed
- All operations are logged using a command language (Jscript); these files may be used and edited by others to create new models
- Easy to verify all steps in the design process either from producing 2D/3D graphical files or from exporting tabulated reports viewed in spreadsheets or a windows explorer
- The program comes with a help system, including user manual, tutorials, and how-to-do-videos.
- 24-hour support services from experienced support staff across the globe
- DNV and DNV Software have a unique combination of expertise in both software and engineering
- As a non-profit company, DNV Software can invest more resources into further product development, ensuring a market and customer-driven development

About DNV Software

DNV Software is a leading provider of software for managing risk in the energy, process, and maritime industries – offering solutions for design, engineering, strength assessment, risk and reliability, QHSE, and asset integrity management. DNV Software is part of DNV, and almost 300 DNV offices in 100 countries enable us to be close to our customers and share best practices and quality standards throughout the world.

Statoil and Statkraft acquire Dudgeon Offshore wind power project

Following a successful partnership in developing the Sheringham Shoal Offshore Wind Farm off the coast of North Norfolk, Statoil and Statkraft will now work together to develop the Dudgeon Offshore Wind Farm. The project could deliver many hundreds of jobs during the construction phase and, once in operation, will provide renewable energy to the UK market. Dudgeon has recently received an offshore consent that allows for up to 560 MW of installed generation capacity. The North Sea project site is located 32 km offshore, north of the town of Cromer in North Norfolk, and is 20 km northeast of the Sheringham Shoal Offshore Wind Farm. Statoil and Statkraft will optimize the project, secure the final consents, and engage with suppliers and local stakeholders with the aim of bringing the project to Final Investment Decision (FID). The project will be developed by a joint project team, with Statoil leading the project towards FID. Statoil will hold a 70% share and Statkraft a 30% share in DOW.

SMD and BOS sign joint venture

Soil Machine Dynamics Limited (SMD) and Blade Offshore Services Limited (BOS) have completed a deal that sees the creation of a joint venture, SMD-BORD, and joint development of a novel technology for the installation of marine renewables devices on the seabed. The unique technology makes use of a sacrificial, double-skinned annular drill, which cuts more quickly than traditional full-bore cutting methods. This will allow piles and anchors used in the growing marine renewables industry to be installed more efficiently and within tidal windows. The technology offers an alternative to expensive gravity foundations. Signature of the joint venture follows a series of dry trials in which the performance of the technology exceeded expectations. SMD will add its expertise in subsea engineering, remotely operated systems, and seafloor tractors to the innovative drilling technology developed by BOS in order to bring a range of remotely operated subsea drill rigs to the market. These will be tailored for different sizes and types of device and deployment methodologies.

Norway's Crown Prince opens Sheringham Shoal offshore wind farm

His Royal Highness, Crown Prince Haakon of Norway, officially opened the Sheringham Shoal offshore wind farm built off the coast of Norfolk, UK by the owners Statoil and Statkraft. The Crown Prince opened the wind farm at an official ceremony at historic Holkham Hall in North Norfolk, with support from UK secretary of state for energy and climate change Edward Davey, Norwegian petroleum and energy minister Ola Borten Moe, Norwegian trade and industry minister Trond Giske, and the owners' presidents and CEOs Helge Lund (Statoil) and Christian Rynning-Tønnesen (Statkraft). Sheringham Shoal is owned equally by Statoil and Statkraft through the joint-venture company Scira Offshore Energy Limited. The opening took place 4 years after Scira was granted consent by the UK government and 3 years after the initial construction works began.

World-leading tidal energy system achieves 5-GWh milestone



SeaGen, the first commercial-scale tidal stream energy system, has achieved a new milestone of 5 gigawatt-hours (GWh) of tidal power generation since starting operation at Strangford Lough in Northern Ireland. That equals the annual power consumption of 1,500 British households. The Siemens-owned system is one of the largest tidal stream power projects.

This latest milestone, adding an additional 2 GWh of power since January this year, is an exciting development for this proven technology, whose potential for commercial deployment as part of the future energy mix is now recognized. Global carbon reduction commitments are increasing demand for reliable marine current power. Experts are expecting double-digit annual growth rates for this sector up to 2020. The worldwide potential for power generated by tidal power plants is estimated at 800 terawatt-hours (TWh) annually. This is equivalent to between 3% and 4% of global power consumption.

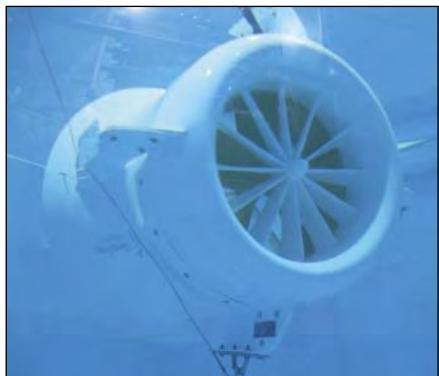
The 1.2MW SeaGen system was first deployed in 2008 and it was the world's first commercial-scale, grid-connected tidal stream turbine. SeaGen, which works much like an "underwater windmill," currently has the capacity to generate power for the equivalent of about 1,500 homes. Since its deployment, the efficiency and performance of SeaGen has been tested and improved and is expected to be deployed more widely in coastal regions with strong tidal currents, such as the UK, over the next 5 to 10 years. The two initial tidal array projects, the 8-MW Kyle Rhea project in Scotland and the 10-MW Anglesey Skerries project in Wales, are now in an advanced stage of development.

Tidal turbines are part of Siemens' Environmental Portfolio. In fiscal 2011, revenue from the Portfolio totaled about €30 billion, making Siemens one of the world's largest suppliers of eco-friendly technologies. In the same period, our products and solutions enabled customers to reduce their carbon dioxide (CO₂) emissions by nearly 320 million tons, an amount equal to the total annual CO₂ emissions of Berlin, Delhi, Hong Kong, Istanbul, London, New York, Singapore, and Tokyo.

For more information, visit www.marineturbines.com.

Darwin tidal energy industry attracts global interest

Elemental Energy Technologies (EET) has recently signed a ground-breaking agreement with Tenax Energy Pty Ltd (Tenax Energy) to install and trial their SeaUrchin™ device in Darwin's Tropical Tidal Energy Testing Center (T³C), signalling the start of a tidal energy industry in Darwin.



The project will see the establishment of a 2-MW pilot plant and an associated research and tropical tidal testing center.

It is envisaged the pilot plant will then move towards a 10-MW pilot array (multiple devices) test followed by the development of a generation facility that will deliver affordable power into Darwin. The project is expected to be generating electricity by 2015 and reach commercial scale before the end of the decade.

"Elemental Energy Technologies is the first company to formally sign on to test their innovative tidal energy device with Tenax in Darwin," said Alan Major, managing director of Tenax Energy.

According to EET chairman Kim Lyle, "This agreement represents a major milestone in Australia's progress to become one of the world's leading tidal energy generators. "The T³C assists local companies like ours to develop their technology using Australia's highly trained workforce and to develop world-leading products in Australia. The T³C will help keep expertise in Australia and generate future royalty earnings for Australia."

Darwin has good infrastructure and strategic regional proximity to growing Southeast Asian export market.

For more information, visit www.eettidal.com.

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Acquisition to expand Austal's defense support capability in Asia Pacific

Recognizing the growing significance of Asia Pacific to United States and Australian defence forces, Austal has entered into agreements to substantially expand its capability in Darwin, Australia through the acquisition of Hydraulink NT and its associated business KM Engineering (HKME). KME is a leading engineering service provider in northern Australia, with well-established operations supporting the Royal Australian Navy (RAN) and Australian Customs and Border Protection Service. HKME also has strong relationships with oil and gas sector participants. Austal and HKME have shared a close and complementary relationship that has benefited these core customers for many years. This relationship underpins the expected synergies and value unlocked through the acquisition. Austal chief executive officer Andrew Bellamy said the acquisition signals Austal's commitment to supporting RAN and Customs and Border Protection operations. As part of the transaction, Austal's existing operations in Darwin will merge with HKME. Austal will acquire an 80% stake in the resulting business for A\$8.0 million split between cash and restricted equity, with further deferred entitlements of up to A\$2.0 million available to the vendors subject to satisfaction of agreed performance-based conditions.

General Dynamics awarded \$100M by U.S. Navy for Virginia-class submarine work

General Dynamics Electric Boat has been awarded a \$100.4 million contract modification by the U.S. Navy to provide lead-yard services for Virginia-class, nuclear-powered attack submarines. Electric Boat is a wholly owned subsidiary of General Dynamics. Under the contract, Electric Boat will develop, maintain, and update design drawings and data, including technology insertions, for each Virginia-class submarine throughout its construction and post-shakedown availability periods. The contract has a potential cumulative value of \$881 million through 2014 if all options are exercised and funded. This work will engage Electric Boat's engineering and design organization, which comprises more than 4,000 employees. Possessing proven technical capabilities, these employees work on all facets of the submarine lifecycle – from concept formulation and design through construction, maintenance, and modernization and eventually to inactivation and disposal.

SAIC awarded contract by U.S. Navy Space and Naval Warfare Systems Center Pacific

Science Applications International Corporation (SAIC) announced it was awarded a prime contract by the U.S. Navy Space and Naval Warfare Systems Center Pacific (SSC Pacific) to provide in-service engineering agent (ISEA) functions support services. The single-award indefinite-delivery/indefinite-quantity (IDIQ) contract has a 1-year base period of performance, two 1-year options, and a total contract value of approximately \$56 million, if all options are exercised. Work will be performed primarily in San Diego, California. SSC Pacific is the Navy's premier research, development, test and evaluation laboratory for command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR). Under the contract, SAIC will provide ISEA functions support services for shipboard and submarine tactical networks. Work will include assisting SSC Pacific with sustainment of fielded systems through End-of-Life (EOL) replacement, distant support, on-site repair, and system analysis to ensure networks are performing at peak capabilities.

Navy commissions USS Michael Murphy

U.S. Navy photo by mass communication specialist 2nd Class John Scorza/Released

USS Michael Murphy (DDG 112), the Navy's newest guided-missile destroyer, was commissioned during a formal ceremony at Pier 88 in Manhattan 6 October.

The newest destroyer honors Lt. (SEAL) Michael P. Murphy, a New York native who was posthumously awarded the Medal of Honor for his heroic actions during Operation Red Wings in Afghanistan on 28 June, 2005.

Thousands of spectators, veterans, and invited guests gathered in front of the ship to witness the ceremony, which included distinguished guests such as the Mayor of New York, the Honorable Michael Bloomberg; Adm. Jonathan Greenert, Chief of Naval Operations (CNO); and Adm. William McRaven, commander, U.S. Special Operations Command.

The Secretary of the Navy, the Honorable Ray Mabus, delivered the principal address and spoke of the ship, her crew, and her namesake's heroic actions.

"This ship honors the courage, service, and sacrifice of Lt. Michael Murphy, his Red Wings brothers, fellow SEALs, special operators, and service members around the world who answer the call of duty every day," said Mabus. "It is absolutely fitting that the USS Michael Murphy bears a SEAL trident on her crest because, much like Michael and every Navy SEAL who has earned the honor of wearing the trident, this ship is designed to counter threats from above and below the surface of the oceans, in the air, and on land."

"USS Michael Murphy, the most flexible, lethal, and multi-mission capable ship of its kind, represents the backbone of our surface combatant fleet," Greenert said. "It is one of the best destroyers in the world. This ship will operate forward around the globe, assuring allies, projecting power and defending our nation. And, like its namesake Lt. Michael Murphy, this ship will serve to protect, influence, and win in an era of uncertainty."

At the conclusion of the remarks, Murphy's mother and ship's sponsor Maureen Murphy gave the order to "man our ship and bring her to life!"

Cmdr. Thomas E. Shultz, a native of El Cajon, California, is the commanding officer of the ship and will lead the crew of 279 officers and enlisted personnel. The 9,200-ton Michael Murphy was built by General Dynamics Bath Iron Works. The ship is the 62nd ship in the Arleigh Burke class of Navy destroyers and the last of its class. It is 509 ft in length, has a waterline beam of 59 ft, and has a navigational draft of 31 ft.

HII awarded \$296M contract modification for John F. Kennedy

Huntington Ingalls Industries has received a \$296 million contract modification, under a previously awarded contract, for continuation of long-lead-time material procurement for and advance construction of the nuclear-powered aircraft carrier John F. Kennedy (CVN 79). The company's Newport News Shipbuilding (NNS) division is the prime contractor.

This award enables NNS to continue preparations for the construction of John F. Kennedy, including engineering and planning efforts along with additional advance material procurement and complex component manufacturing. Long-lead-time materials include advanced weapons elevators, pumps, propellers, steel plate, piping, and fittings.

John F. Kennedy is the second ship in the Gerald R. Ford class, the Navy's newest class of nuclear aircraft carriers. The Ford class incorporates many improvements in capability and is designed to reduce total ownership cost over that of the Nimitz class. The ship's first steel was cut in December 2010, and delivery to the Navy is scheduled no later than 2022.



Cost reduction measures include maximizing work in earlier stages of construction where it can be done more efficiently, resequencing unit construction to build similar units repetitively, decreasing the number of lifts required to erect the ship, increasing overall ship completion levels at major key events, and improvements to processes and tools that increase productivity.

For more information, visit www.huntingtoningalls.com.

Non-lethal defense against maritime piracy unveiled

A team of technology boffins has unveiled what it believes is the most effective way to end maritime piracy and save lives and billions of dollars each year.

The WatchStander system was originally developed for the U.S. naval fleet, but has been modified and adapted over the past 2 years for use by commercial vessels, cruise ships, and yachts.

A significant advance in anti-pirate technology, WatchStander is a fully automated and integrated system that detects and identifies pirates before launching a series of non-lethal, but highly effective counter measures.

It is currently undergoing an Audit and Performance Assessment by maritime security and operations consultants from Flag Victor.

The system has already received praise from several senior naval personnel, including Admiral Mark Fitzgerald (Ret.), former Commander of the U.S. Naval Forces Europe and U.S. Naval Forces Africa, who recently joined the company as a special adviser. He said, "I've been aware of this type of surveillance, recognition and defence technology for some time. The fact that it can now be used to defend the world's commercial fleets is a major leap forward in the fight against maritime piracy. It is a perfect example of how military innovation can crossover to deliver a very important new civil purpose. The development teams have shown the benefits to be derived from collaboration."

For more information, visit www.watchstander.com.

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After the Storm: UCT-2 Returns to Maintain “War-at-Sea” Underwater Playground

By: CMC (SCW/FMF/DV) Ellisa Correa



Adam Glista inspects deepwater target buoy at 100 ft of sea water

The bone-crushing waves sweep across the long Na’Pali coast during the winter months. On average, there are four storms per winter season, lasting 2 to 4 days each. The swell heights associated with these storms can reach an impressive 25 ft. The spectacular waves roll in with no mercy and ravage the seafloor with their persistent ebb and flow. When the storms settle, men and women of Underwater Construction Team TWO (UCT TWO) home ported at Port Hueneme, California, arrive to commence their annual maintenance and repair of the Pacific Missile Range Facility (PMRF) at Barking Sands Kauai, Hawaii. UCT TWO, has been supporting the underwater range annually since the early 1980s. This year, the 12 weeks of maintenance support fell to Construction Diving Detachment ALFA (CDD/ALFA).

PMRF is the world's largest instrumented, multi-dimensional testing and training missile range covering over 1,200 square miles of seafloor, instrumented with 200 hydrophones and underwater communications devices, and 42,000 square miles of controlled air-space. "If you [were to] lay this range on the United States, it would cover the area from the entire west coast to over 20 states east of it," said Construction Mechanic First Class (SCW/DV) Jeffrey Niblo, project supervisor. "It's huge!" Using the sensors of the PMRF, an object can be tracked, real time, within 10 m from the surface to the bottom of the ocean floor. The instrumentation is cabled through the surf zone to the shore along one narrow corridor of beach. Additionally, near the island of Nihue, submerged deepwater target buoys hover at 100 ft tethered securely to anchors that lie in over 400 ft of sea water.

Approximately 400 m of cast iron split pipe was installed on the seafloor

chafe split pipe preventing imminent failure. None of this effort could have been accomplished without the professionalism, hard work, and persistence of this team."

Preventive maintenance on PMRF is the key to successful training for the Fleet. Builder Chief (SCW/DV) Jeremy Taylor, CDD/ALFA officer in charge explains, "The training facilities give the war fighter the ability to track and analyze open-ocean 'war-at-sea' scenarios. It tests the combat readiness and battle tactics capabilities of Fleet forces."

The PMRF range is the facility used to train the crews of submarines, surface ships, and Anti-Submarine Warfare (ASW) aircraft around the Fleet. Exercises, such as Prospective Commanding Officer Submarine training, Submarine Exercise (SUBEX), Air Anti-Submarine Warfare Exercise (AIRASWEX), and Theater Ballistic Missile Defense (TBMD), are also conducted throughout the year.

Amphibious Resupply Cargo (LARC) with SCUBA diving and underwater hydraulic equipment to set the stage for repair efforts. "Having the LARC for this project is very important," said Equipment Operator First Class (SCW/DV) Leroy Schnathorst. "The convenience of entering the water from anywhere and mobilizing our heavy hydraulic equipment to the job site is priceless."

A total of six moorings were put in place. This included a combination of Danforth anchors and 5-ft by 4-in. all-thread rod, which required drilling into the seafloor and securing with epoxy. "We designed a special drill stand to house the Stanley Hydraulic Sinker Drill 58 in order to drill the holes straight for our all-thread to be placed," CM1 Niblo explained. Installed anchor points on the ocean floor allowed the cable splice ship to moor.

Fulfilling their mission of supporting the Fleet and Marine forces in the Pacific Command Area of Responsibility,

Khiaro Promise recoils the repaired cables following a splice repair at 100 ft of sea water



Dave Hofacker installs chafing material and articulating split pipe at 110 ft of sea



Craig Claudio drills 4-ft hole with Sinker Drill 58 for the seafloor anchor



cables. This pipe acts to prevent chafing of the cable in rocky areas. Damage is inevitable due to the abrasion, corrosion, and sand scouring during the storm season. Four failed cables were repaired this summer, with new sections of spare cables using task-tailored injection molded splicing techniques. According to Michael Dick, the Naval Facilities Engineering Service Center (NFESC) engineer in charge of the repair project, "11 other cables near failure due to abrasion and chafing were repaired with the application of anti-

The sailors who have been involved in these endeavors have found them to be positive, enjoyable deployments.

"[I] enjoyed saving the Navy money, contributing to the big Navy mission, while doing some of the most beautiful diving in the world," said Builder Second Class (SCW/DV) Khiaro Promise.

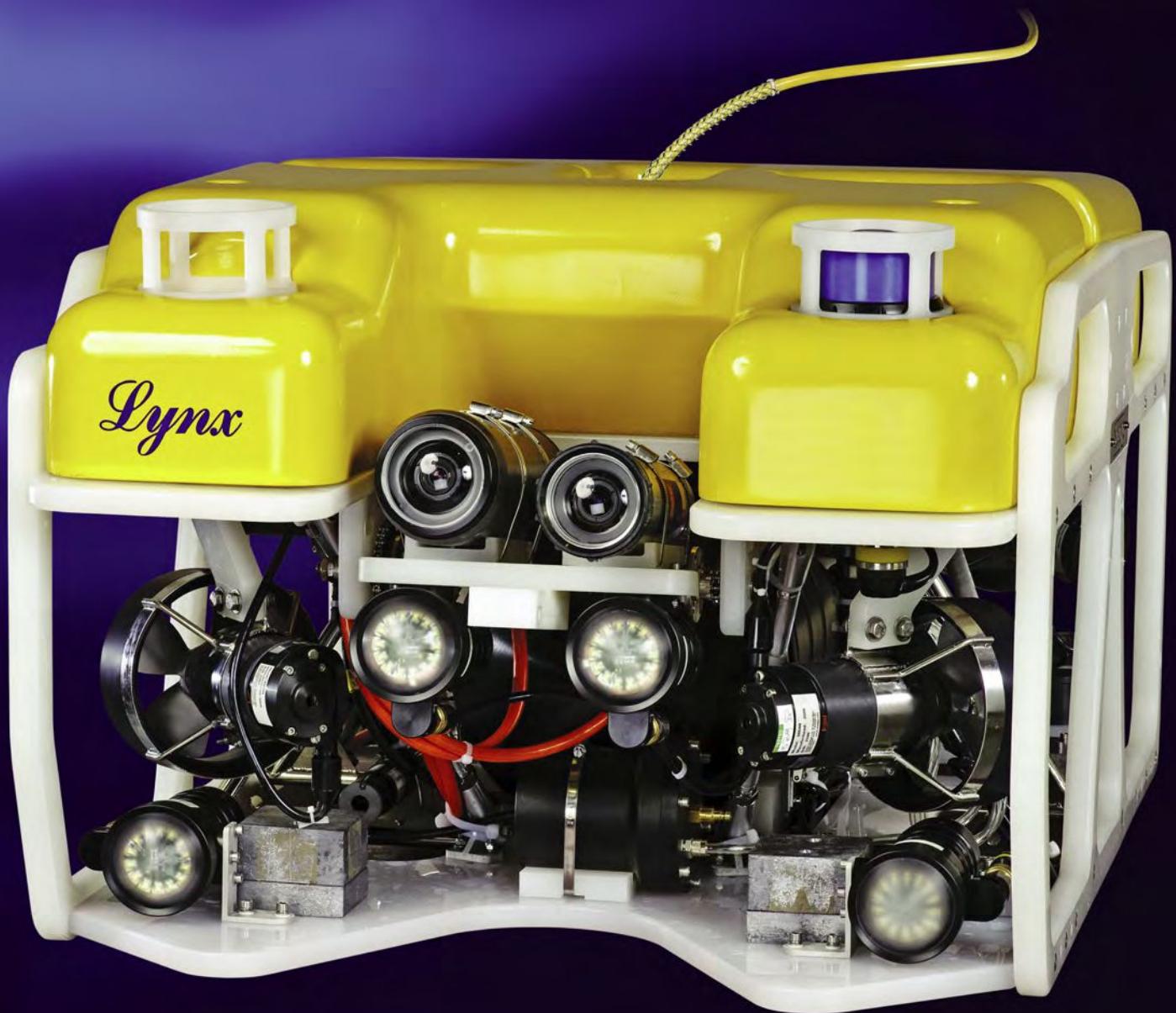
Engineering Aid Second Class (SCW/DV) Craig Claudio stated, "Great learning experience as a diver. Good to help out the readiness of the Fleet while honing our diving skills."

Seabee divers load the Lighter

Seabees from UCT 2 were at PMRF on their second stop during a 6 month deployment across the Pacific that took them from the Philippines to Kauai to Diego Garcia. UCT 2 provides responsive inshore and ocean underwater construction, inspection, repair and maintenance to ocean facilities for Navy, Marine Corps and Joint Forces engaged in military operations.

Photo Credits: Ryan Irvine, Khiaro Promise, Jeff Niblo UCT-2, and Mike Dick NFESC

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OFFSHORE INDUSTRY

Global floating production capital spending expected to double

Douglas-Westwood projects that between 2013 and 2017 \$91 billion will be spent on floating production systems (FPS), an increase of 100% over the preceding 5-year period. This growth is driven by factors such as a larger proportion of newbuilds and conversions compared to redeployments, a greater degree of local content resulting in increased costs, and general offshore cost inflation.

FPSOs represent by far the largest segment of the market both in numbers (94 installations) and forecasted capital expenditures (80%) over the 2013-2017 period. FPSOs account for the second largest segment of capex (10%), followed by TLPs, then spars.

Latin America accounts for 29% of the forecasted installations and 37% of the projected capex. Most installations to date have been in Petrobras-operated fields off Brazil, and this is likely to continue though substantial delays are expected for Petrobras' offshore E&P investment. Asia is the next most important region in numerical terms (24), while Africa is the next most important in terms of forecasted capex (\$18.2 billion).

Alaska producers agree on plan to send North Slope gas to Asia

Alaska's three major producers have agreed on a plan for a pipeline that would send North Slope natural gas originally intended for the Lower 48 states to Japan and South Korea. ExxonMobil, ConocoPhillips, and BP as well as pipeline firm TransCanada Corp. set a timeline for constructing one of the world's largest natural gas pipelines, an estimated \$65 billion endeavor.

The plan is for the pipeline to bring North Slope natural gas reserves to a port in Alaska's southern coast. It would then be liquefied for tanker ocean travel so it could be exported to Asia. The project puts the administration's role in exporting natural gas back in focus, as it would need to approve pacts with South Korea and Japan.

The Federal government set aside loan guarantees for pipeline construction when the North Slope's natural gas was destined for the Midwest. But the flush of domestic natural gas reduced the need for



LNG tankers are part of Alaska's latest plan to sell its vast natural gas resources

that pipeline, in turn locking the North Slope's reserves in Alaska. Now, Alaskans and their Congressional delegation see the pipeline to Asia as the State's best bet for making use of their reserves.

"No other single project is as important to Alaska's economic future as a gas line," Sen. Lisa Murkowski (R-Alaska) said in a statement.

Independence? Deloitte report says it's really about security

A report released by Deloitte argues that U.S. energy policy should focus on energy security rather than on energy independence. And, it said that is a realistic and achievable goal.

The report, Energy Independence and Security: A Reality Check, argues that the real issue is to reduce petroleum imports from unfriendly nations. It concludes with a list of recommendations, starting with "prudent" onshore and offshore development and exploration.

The report by Branko Terzic, executive director of the Deloitte Center for Energy Solutions and former commissioner of the Federal Energy Regulatory Commission, also calls for government policies to support greater energy efficiency and increased support for energy production by U.S. allies.

"While U.S. energy independence may be unattainable in the foreseeable future, energy security is a realistic and achievable goal," the report says.

Much of the report focuses on petroleum, noting that the United States hasn't produced all the crude oil it consumes for decades.

"Our need to import crude oil is the single most important factor behind all policy discussions of energy security and 'independence,'" Terzic wrote.

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Gulf of Mexico production to rise 43% by 2019: Wood Mackenzie

An exploration and production resurgence in the U.S. Gulf of Mexico 2 years after a 6-month drilling shutdown because of the BP Plc oil spill is expected to increase output nearly 43% by 2019, energy consultancy Wood Mackenzie said.

Exploring new discoveries between now and then, the forecast sees current output of 1.4 mmboe/d jumping to a new peak of 2 mmboe/d.

"We expect to see 37 floating rigs in the Gulf by the end of 2012, a 5-year high," deepwater Gulf analyst Lauren Payne said at a briefing on the forecast. There are currently 48 operators in deepwater Gulf of Mexico.

The U.S. government shut down drilling in the Gulf for 6 months after BP's Macondo well ruptured in April 2010. BP capped the well about 3 months after the blowout, and the government lifted the ban in October of that same year. However, no drilling permits were approved until late February 2011.



By early October 2012, the U.S. Bureau of Safety and Environmental Enforcement, which regulates Gulf oil and gas activity, had approved 385 deepwater drilling permits, up 38% from the 278 approved in 2011. But that is 18% fewer than 454 approved in 2007, the 20-year high.

"We expect more than US\$70 billion to be spent on exploration in the region by 2030, more than all the other key deepwater provinces combined," noted Julie Wilson, senior analyst for Wood Mackenzie's exploration service. From that investment, Wood Mackenzie expects over 12 Bboe to be found by 2030, creating around US\$30 billion of value.

"These results are materially surpassed only by Brazil, which has enormous potential in its pre-salt play," Wilson added.

Offshore drilling in the Americas spreads to the south: GBI Research

According to a new report by GBI Research, the offshore regions of Trinidad and Tobago, the Falkland Islands, and Suriname are expected to be on the list for exploration for many international oil companies who aim to drill within the next few years, boosting offshore drilling expenditure in the South American region.

Despite political uncertainties, oil and gas giants are moving in on South American countries in order to profit from their relatively unexploited resources, GBI said, noting that the offshore drilling expenditure in the South and Central American region is expected to grow at an average annual growth rate of around 7.8%, from \$12.04 billion in 2011 to around \$16.74 billion in 2016.

The major offshore oil and gas fields in the Americas are the Gulf of Mexico, the Newfoundland and Nova Scotia oil fields off the Canadian coastline, and the Campos and Santos basins off the coast of Brazil.

However, the offshore basins of the islands of Trinidad and Tobago are rich in natural gas reserves, as are the Carina Aries and Perla oil field shallow water blocks off the Argentine and Venezuelan coasts, respectively.

Other places in the Americas with offshore drilling investment potential are Suriname, the Falkland Islands, Uruguay, Cuba, Peru, and Ecuador, as recent exploration attempts branch out in search for new oil and gas reserves.

Ecosse completes major seabed clearance project west of Shetland

Ecosse Subsea Systems has completed a major seabed clearance project on the Laggan-Tormore project west of Shetland on behalf of Total E&P Ltd and its partner Dong E&P (UK) Ltd.

The Aberdeen subsea technology company deployed its SCAR1 trenching tool to remove up to 1,000 boulders that were delaying progress on cable laying and umbilical installation work.

The SCAR1 cut a 10-m wide swathe over a 67-km route, displacing boulders up to 2 m in diameter and removing soil to leave a flat seabed for pipe laying to commence.

Typically, seabed clearance is done using a "boulder grab" device and is a slow process as it displaces rocks one by one, with operators reluctant to tackle boulders larger than 0.5m in size.

The SCAR system was originally developed as a subsea plough but was



SCAR1 being deployed on Laggan-Tormore field, Shetland

redesigned and fabricated to suit Total's requirements and mobilized within a 10-day window. The clearing plough worked at depths of 640 m, believed to be a record for this type of equipment, and at optimum performance was clearing up to 1,000 m of seabed per hour.

Ecosse Subsea Systems managing director, Mike Wilson, said he hoped the success of the project has created a fresh solution for other exploration companies faced with complex seabed clearance issues.

"Boulder clearance during seabed preparation is a real problem for some operators and is so arduous and expensive that often they opt to move the route of the pipeline. Our method, including preparation, vessel charter, and deployment, is considerably less expensive than the traditional alternative methods," he said.

"Our SCAR system is extremely robust, easily mobilized, can work in the harshest environments and in up to depths of 3,000 m."

Total, Exxon Mobil swap range of North Sea assets off Norway

Total and ExxonMobil Corp. have agreed to exchange interests in a range of assets on the Norwegian Continental Shelf. The deal will see Total's interest in the Oseberg field, one of the largest oil and gas fields in the Norwegian North Sea, including a number of satellite fields under development, rise to 14.7% from 10%, the French oil major said.

Its holding in the Dagny field, whose reserves are estimated by the Norwegian Petroleum Directorate to be 205 mmbbl, will rise to 39.54% from 6.54%. Total will also pay a "minor cash compensation" to Exxon as part of the deal, which is expected to close before the end of the year.

"It has been a long-standing objective of Total to rationalize its portfolio in

Norway and strengthen its interests in assets considered to have upside potential," Total said. "This exchange with ExxonMobil allows us to focus our efforts on fewer and larger assets."

Industry touts expanded drilling, efficiency as ways to cut deficit

A new industry-backed report says expanding fossil fuel production and energy efficiency measures could help close the deficit and foster North American energy "self-sufficiency." The Consumer Energy Alliance, a coalition of oil companies and groups representing energy-consuming industries such as chemical manufacturing and trucking, is said to have released the report.

The report says opening more U.S. and Canadian onshore and offshore lands to drilling could bring in \$803 billion in revenue for the Federal government and create 1.4 million jobs by 2030. That, along with demand-reducing technologies such as wind power and biofuels as well as policies such as vehicle fuel economy standards, would bring North America closer to energy self-sufficiency, it said.

"In order to significantly and effectively lower U.S. imports of overseas crude, the United States must focus on both decreasing the demand for transportation fuels and increasing North American supply of fuel," the report said, noting that one of the biggest hurdles to achieving energy self-sufficiency is the ability to tap "undiscovered, technically recoverable oil resources."

DeepOcean FEED study to test trenching system for Arctic

DeepOcean will deliver a front-end engineering and design (FEED) study as part of a program to develop a trenching system for subsea pipelines, flowlines, and umbilicals in ice scour environments.

The project will be undertaken in four phases on behalf of Canadian-based INTECSEA, and will investigate and develop a commercially ready pipeline trenching system for the burial of pipelines, flowlines, and umbilicals in various soil types.

A 4-month first phase study will be undertaken by DeepOcean, which will define its proposed technology solution for Arctic trenching.

The trenching system must meet a number of stringent criteria, including for use in harsh marine conditions, operations in water depths beyond the majority of current trenching requirements, trenching in difficult and highly variable soil conditions, and trenching to depths greater than current industry norms.

STATS Group successfully installs first BISEP™ isolation in Malaysia

The successful deployment of STATS Group's BISEP™ isolation technology prevented the costly shutdown of a Malaysian pipeline and allowed it to maintain uninterrupted gas production at full operating pressure of 78 barg.

Pipeline engineering specialist STATS was approached by Petronas Carigali to provide double block and bleed isolation services to allow the replacement of two welded flange valves at the Onshore Slug-Catcher (OSC) at Terengganu.

The OSC forms part of the Angsi field, which is situated off the east coast of Peninsular Malaysia in the South China Sea and is a joint venture between Petronas subsidiary Petronas Carigali Sdn Bhd and ExxonMobil Exploration & Production Malaysia Inc. Dehydrated compressed gas from the Angsi complex is transported 166 km via the 32-in. pipeline to the OSC in Kertih, Terengganu.

To allow gas production to be maintained, STATS was required to provide two simultaneous isolations to ensure the receiver, valves, and 18-in. kicker line, were fully isolated to facilitate the valve replacement workscope without interrupting production flow. STATS positioned a 32in Tecno Plug™, which was pushed to the set location with a hydraulic extension and tether control system.

This purpose-built system was installed into the receiver and then activated once inside the closed receiver. The Tecno Plug™ was positioned with millimeter accuracy in a short section of pipe spool inboard of the production tee; and once successfully set and tested, STATS installed an 18-in. BISEP™.

This patented technology was deployed through a single hot tap penetration complete with slab valve into the receiver kicker line, which fully isolated the launcher and enabled easy replacement of two 18-in. kicker valves.

These simultaneous double block and bleed isolations enabled the two 32-in. motor-operated valves to be renewed with zero interruption to production. All isolation tools deployed in this workscope were designed, manufactured, and factory acceptance tested (FAT) at STATS' headquarters in Aberdeen, Scotland.

STATS' comprehensive, in-house certification of all equipment included hydraulic function testing and pressure testing of the isolation tools. The FAT was performed in a purpose-built test fixture to replicate the client's pipeline, including system configuration and pipe schedule. All testing was witnessed by an independent verification body.



STATS workers move BISEP™ to position

UK engineers believe government is failing industry: Confidence Index

A new Confidence Index from Matchtech, an engineering recruitment company in the UK, has revealed that over half (53%) of UK engineers have lost confidence in government policy towards the industry.

The Confidence Index, which surveyed more than 1,000 engineers in the UK, indicates a strong sense of unease in the industry. Not only have engineers lost confidence in the government, over half (56%) fear that organizations will stop investing locally, and two in five (43%) would be willing to desert the UK and move abroad for work.

Engineering has, for many years, been the backbone of the UK economy. The Index examined confidence levels on a selection of engineering career and industry related issues. Now, nearly three quarters (74%) of UK engineers do not believe enough is being done by the government to encourage innovation in the UK, and over two thirds (67%) do not feel confident that the UK will be a world leader in engineering in the future.

Keith Lewis, managing director of Matchtech, said, "It is evident that there are a number of critical issues here that need to be addressed to remove the sense of trepidation within the industry. The Index shows this needs to start with the government, but there is a lot to be done in

a short space of time. Perceptions need to change fast, and the government needs to reassess its priorities urgently to prevent a further shift of attitude that could come with hugely detrimental consequences."

Other significant findings: more than three quarters (78%) do not believe enough is being done by the government to attract new blood into the industry and nearly half (46%) of UK engineers are less confident they will have a job for life compared to when they first started in engineering.

Recent oil and gas discoveries reveal Africa's eastern potential

A series of hydrocarbon discoveries across Eastern Africa has established the region as one of the key emerging areas for fossil fuel development in the world, states the latest report from natural resources group GlobalData.

The business intelligence firm's new research says that 64 oil and gas discoveries have been made in the continent's emerging markets over the last 5 years, the majority of which were made in the East African nations of Uganda, Mozambique, and Tanzania.

The number of finds in the area has either increased or matched the previous figure each year during the period of 2007 to 2012, with 13 discoveries alone this year through August. Such an impressive rate of discovery is, in turn, drawing greater upstream investment from oil and gas firms looking to capitalize from East Africa's massive hydrocarbon potential.

At present, Tullow Oil Plc and Total S.A are the leading companies in exploration and production in the emerging markets of Africa. UK-based Tullow Oil is estimated to have the largest number of exploration blocks in Africa(20). The company plans to make Uganda one of the top 50 oil producing countries in the world by investing \$10 billion for the development of assets there and has already made 15 oil discoveries.

Total S.A, on the other hand, is the continent's hydrocarbon leader in terms of net production and operates in nations including Kenya, Uganda, and the Republic of the Congo—the latter producing 123,000boe/d in 2011 alone.

However, despite the realization of Africa's growing oil and gas wealth, political and economic uncertainties continue to mar the development of Africa's huge oil and gas wealth progress. Shifting price policies, taxation changes, and threats of vandalism by rebel groups are among the major concerns for international oil companies, GlobalData says.

Samsung to construct FSU for Heidrun field
Samsung Heavy Industries has received an engineering, procurement, and construction contract worth \$230 million to construct a new permanent floating storage unit (FSU) for the Heidrun field in the Norwegian Sea. The contract was issued through a letter of intent by Statoil on behalf of the licence owners and includes options to buy two additional units. The floating storage unit will replace the existing buoy loading system on the field, which has been on stream since 1995. Oil from the field will be exported through a new buoy loading system consisting of two buoys and purpose-built shuttle tankers. Shuttle tankers will be used to lift oil from the FSU.

Aker wins Brunei Shell Petroleum contract
Aker Solutions has received a contract worth \$400 million from Brunei Shell Petroleum (BSP) to provide offshore construction and maintenance services for BSP's assets located offshore Brunei. The first offshore campaign to be managed by Aker Solutions in Brunei is anticipated to start in 2013. The company will serve as the management contractor for a total period of 5 years, and will gradually transfer responsibility to local businesses, thereby helping to build competence. The contract duration comes with an option of 2 additional years. Work on the project was expected to begin immediately.

Smit Lamnalco secures Iraqi O&M contract
Smit Lamnalco has secured the turnkey contract to support single point mooring(SPM) operations for the Iraq Crude Oil Export Expansion Project (ICOEEP). The scheme, 20 km off the Al Fao Peninsula, looks to triple oil exports from Iraq.

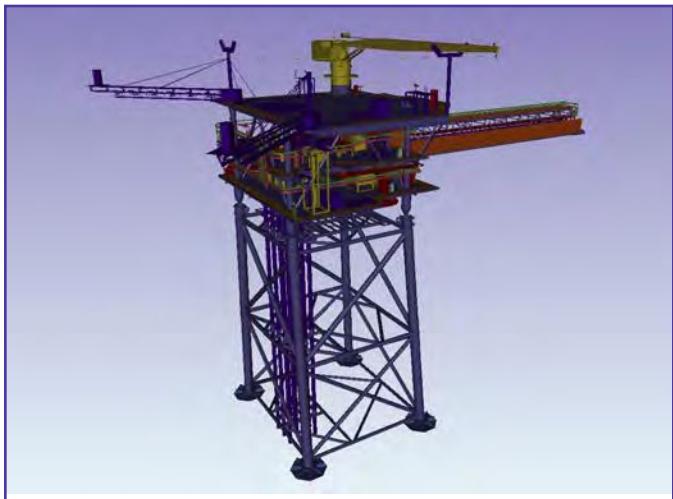
The SPM contract covers operations and maintenance of four SPM systems and runs for up to 3 years, a term that would generate over \$200 million for Smit Lamnalco.

The agreement follows hard on the heels of an overarching support and maintenance agreement reached between Iraq's South Oil Co. and oil and gas service provider Petrofac in August. Smit Lamnalco will be responsible for the majority of the work scope and will purchase seven new vessels to support the contract.

GE inks deal of nearly \$1.1B with Petrobras
GE Oil & Gas and Brazilian energy company Petrobras have signed the world's largest subsea wellhead production contract, worth nearly \$1.1 billion. This includes the delivery of about 380 subsea wellhead systems and the installation tools needed in oil well exploration—more than 75% of the parts will be made in Brazil. Petrobras plans to install the subsea wellhead systems in various oil and gas fields in Brazil, including sub-salt. The equipment will be produced at the GE plant in Jandira.



Four new topsides for the Cygnus field



Artist impression of the GDF Cygnus Alpha wellhead platform

Heerema Fabrication Group's Hartlepool yard in the United Kingdom received a frame contract from GDF SUEZ E&P UK for the fabrication and commissioning of four topsides for the Cygnus gas field development on the UK Southern North Sea.

The total expected scope of the Cygnus project for execution at Heerema's Hartlepool yard will represent about 10,500t fabrication work and consists of the 3,900t Process & Utilities (PU) module, two bridges of 200t and 250t and a 250t flare, a 1,600t wellhead module, and a 1,500t compression module (which will be installed onto the PU module)—all destined for the Cygnus Alpha three bridge-linked complex. Fabrication work of the remote Cygnus Bravo development will consist of the 2,800t wellhead module.

Fabrication of the Cygnus Alpha Wellhead topsides is due to start in December 2012 is scheduled for completion in March 2014. This is to be followed by expected commencement of fabrication in June 2013 of the Cygnus Alpha PU module, bridges, and flare as well as the Cygnus Bravo Wellhead topsides—all scheduled for completion in April 2015. Subsequently, in December 2013, the fabrication of the Cygnus Alpha Compression module will start, which will also be ready for installation onto the PU topsides in 2015.

"This assignment will possibly be our single most important award for Heerema Hartlepool, especially in the context of the current economic turmoil," said Tino Vinkesteijn, chief commercial officer of Heerema Fabrication Group. "It will generate approximately 3 years of work at our Hartlepool facility, creating in excess of one million man hours and additional supply-chain jobs being created for other companies in the North East region and further afield. Having been able to secure this work for our Hartlepool facility is a tremendous boost for the stability of quality jobs in the North East."

"A significant project, not only for GDF SUEZ and the UK as it is the sixth largest gas field in the UK Southern North Sea, but also for the continuation of employment of our people at Heerema Hartlepool. We look forward to working closely again with GDF SUEZ and contribute to the goal to get Cygnus on stream in 2015," said Remco van Gilst, vice president of business development and sales for Heerema Fabrication Group.

Gulf of Mexico

EPL to acquire shallow water GoM properties from Hilcorp

EPL Oil & Gas, Inc. has acquired shallow-water Gulf of Mexico shelf oil and natural gas interests from Hilcorp Energy GOM Holdings, LLC for \$550 million. The assets are currently producing about 10,000boe/d, about 50% of which is oil. Estimated proved reserves as of the 1 July 2012 economic effective date totaled approximately 36.3mmboe, 54% of which is oil.

The properties include three fields that Hilcorp had acquired from Chevron Corp. in Ship Shoal Block 208, South Pass 78, and South Marsh Island 239, which are all on the Central Gulf of Mexico shelf in the vicinity of EPL's existing core field areas.

These three fields account for 64% of the current proved reserves, and approximately 82% of the total proved acquisition PV10 value estimated at \$626 million using strip prices as of 31 August 2012. The currently estimated asset retirement obligation to be assumed by EPL in the acquisition is expected to total around \$120 million.

W&T Offshore buys Newfield's GoM assets for \$228M

W&T Offshore Inc. is buying Newfield Exploration Co.'s exploration and production properties in the Gulf of Mexico for \$228 million. W&T said the deal gives it new oilfields with proved reserves of 6.6mmboe and 1.2Bboe in probable reserves. W&T will take over about 90% of the production in the oilfields.

The transaction includes 78 Federal offshore lease blocks, with 65 deepwater blocks. Newfield, based in The Woodlands, Texas, said it has now sold all of its Gulf of Mexico assets for about \$300 million in total proceeds. The company said it has made about \$580 million in 2012 from sales of non-core assets.

Murphy to get deepwater GoM umbilicals from Aker Solutions

Murphy Exploration & Production Co. USA has ordered two production control umbilicals and three umbilical termination assemblies from Aker Solutions. The umbilicals are destined for the Dalmatian field in the Gulf of Mexico's De Soto Canyon area.

The main control and injection umbilical will tie the host facility to Murphy's De Soto Canyon Block 4 well over 21 mi away. The second umbilical is an infield umbilical that will connect two blocks 5 mi apart. The umbilicals

will be used in water depths of approximately 6,000 ft. Installation is planned for the fourth quarter of 2013.

Pemex makes new deepwater oil discovery in the GoM

Pemex has discovered light oil in deepwater Gulf of Mexico at the Trion 1 exploration well. The reservoir is in the province of the Perdido fold belt. At 110 mi offshore Tamaulipas, the well

was drilled in 8,202 ft water depth to 14,764 ft. Reservoir thickness is given as 320 m with porosity of 18 to 25%, permeability of 250 md, and estimated flow of as much as 10,000 b/d. The preliminary evaluation of this first objective has 3P reserves at 350 mmboe.

Earlier this year, Pemex reported a deepwater gas find in the Kunah 1 well at the Catemaco fold belt in the Gulf of Mexico.

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Keppel Offshore taps GE to support Petrobras initiatives offshore Brazil

To support Petrobras' initiatives for pre-salt drilling offshore Brazil, GE's power conversion business was selected by Keppel Offshore & Marine Ltd. to supply the electrical power generation, thruster, and drilling drive technology for six new semi-submersible drilling rigs.

One of the major benefits of power conversion's diesel electric power and propulsion technology is the flexibility to place components, such as diesel generator sets, switchboards, and drives, at their most efficient location. Besides an efficient layout, it is also easy to create separated compartments to fulfill safety and redundancy requirements.

Combined with redundant power and control cabling to and from all electrical systems, this creates an optimal installation that will meet the most stringent regulatory requirements. It is possible to design a vessel so that flooding or fire in a specific compartment will not lead to a blackout of the total propulsion system or power supply system. Controlled-specified operation can continue to ensure the safety and availability of the vessel.



Keppel's DSS38E semi-submersible rig

"The flexibility and configurability of our electric power and propulsion system means that operators can grab all the advantages of multiple levels of redundancy and convert them into improved vessel availability without having to pay an unreasonable penalty in terms of weight, machinery space, and capital equipment cost," said Paul English, marine leader of GE's power conversion business. "Our advanced power generation, motor, and drive technologies, like

those being used in this project with Keppel FELS, are being harnessed to help improve today's marine and offshore processes for a cleaner, more productive vessel."

Significant elements of the equipment delivery for these rigs will be delivered locally through GE's Brazilian manufacturing units to provide timelier, cost-effective solutions to the expanding Brazilian offshore and shipbuilding industries. GE's equipment will be delivered in phases between 2012 and 2016.

This new project will enable the development of the pre-salt area in Brazil, which is a part of the Petrobras Initiatives. Extending 500 mi across the Santos, Campos, and Espírito Santo basins, Brazil's pre-salt fields hold an estimated 10 to 16 billion barrels. Exploration and recovery of these reserves will require the construction of around 40 new drilling vessels through 2020. It is called pre-salt because the rock has formed under an extensive layer of salt, which, in certain areas of the coast, can be as much as 2,000 m thick. The "pre" expression is used because through time, these rocks were deposited before the salt layer.

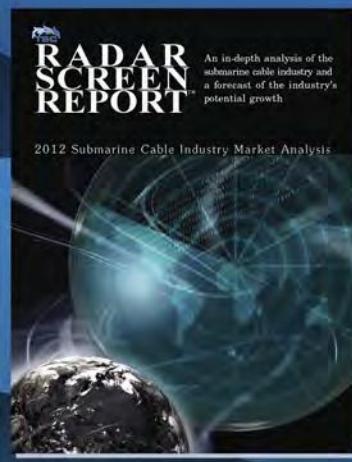
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Transocean sells shallow-water drill rigs to Shelf Drilling

Transocean Ltd. has agreed to sell 38 shallow-water drilling rigs to Shelf Drilling International Holdings, Ltd. for approximately \$1.05 billion. The transactions are expected to close in the fourth quarter of 2012, subject to conditions.

Shelf Drilling is a newly formed company sponsored equally by Castle Harlan Inc., CHAMP Private Equity, and Lime Rock Partners.

"This agreement marks an important milestone in our asset strategy to increase our focus on high-specification floaters and jack-ups, improving our long-term competitiveness," said Steven L. Newman, president and chief executive officer of Transocean.

"Our strategy will be to maintain an exclusive focus on shallow water drilling..." added David Mullen, president and chief executive director of Shelf Drilling.

Rowan exercises option for newbuild drillship from HHI

Rowan Companies plc it has exercised its option to build a fourth GustoMSC P10,000 design ultra-deepwater drillship with Hyundai Heavy Industries Co. Ltd. (HHI) Delivery is scheduled for March 2015. Cost, including commissioning, project management, and spares, but excluding capitalized interest, is estimated at \$620 million.

Rowan plans to equip its drillships with 2,000 ft of additional riser to enable operations in water depths up to 12,000 ft upon delivery. Each drillship will have a second blowout preventer (BOP) to minimize non-productive time. Expected costs for the additional riser, BOP and training, and ramp-up costs will be approximately \$75 million.

The agreement with HHI also includes an option for a similar fifth drillship exercisable in the fourth quarter of 2012 for delivery in the third quarter of 2015.

Deepwater drillship to start in East Med for Noble

Noble Energy, Inc. has entered into a 36-month contract with Atwood Oceanics Inc. for the newbuild drillship Atwood Advantage. This will support Noble's global new venture efforts in deepwater exploration and development. The unit's first well will target a deep oil prospect in the Eastern Mediterranean Sea.

DSME is currently building the Atwood Advantage in South Korea. Features include dual BOP stacks, enhanced offline capabilities, 12,000-ft water depth, and 40,000-ft drill depth ratings. Noble anticipates delivery in the fourth quarter of 2013, at which point the agreed day rate of \$584,000 will begin.

DNV develops new class notation for seismic vessels

DNV has developed a new class notation for seismic vessels in consultation with key industry players such as WesternGeco, PGS, and Fugro-Geotom. The need to have enhanced redundancy and proper deck arrangements to ensure continuous operation without loss of speed is the backbone of these new technical requirements.

Seismic vessels contain high-end computerized technology to find resources below the seabed and represent a key element in the value chain leading to future offshore field developments. Any interruptions in the ships' forward movement can complicate the seismic data processing, and continuous operations with a focus on avoiding any downtime of key functions are of utmost importance. With expensive seismic streamer equipment mobilized at sea, sudden loss of service speed may lead to severe consequences as damage to cables impairing the whole seismic vessel operation.

Statoil, partners sign \$1.6B in rig charters

Statoil and its partners have signed contracts worth \$1.6 billion regarding rig charters for three drilling vessels expected to be used on the Norwegian continental shelf.

The three rigs—Bideford Dolphin, Stena Don, and Scarabeo 5—will be deployed on several fast-track developments.

"The rig capacity we have secured in these contracts will contribute to achieving our production targets towards 2020, through production drilling on several of our legacy assets and starting production from fast-track developments," said Øystein Michelsen, Statoil's executive vice president of development and production.



Bideford Dolphin

Statoil head of drilling Arvid Håland added, "Increasing recovery from existing fields is important for Statoil. Drilling and well maintenance provide the greatest contribution to improved recovery; and it is, therefore, very positive that we have secured this rig capacity."



Stena Don

The company entered into a contract with Dolphin Drilling for the Bideford Dolphin rig, worth \$515.9 million for the fixed period, excluding potential options. Bideford Dolphin is expected to be used for drilling on the Tordis and Vigdis fields, as well as the Statfjord field in the North Sea, from 2014

until the first quarter of 2017. Statoil said it has also secured a potential option for 2 more years.

The company also entered into a contract with Stena Drilling for Stena Don, worth \$521 million for the fixed period, excluding potential options. The rig will be employed for drilling on the Troll field, as well as the fast-track development Fram H-Nord, in the North Sea from the fourth quarter of 2013 until the fourth quarter of 2016. Statoil has also secured a potential 1-year option.

The company's other contract is with Saipem for the Scarabeo 5 rig, worth \$521 million for the fixed period, again with a potential 1-year option.

Statoil said the Scarabeo 5 rig will be employed for drilling and completion of production wells on various NCS fields.



Scarabeo 5

Statoil discovers oil at the Utsira High offshore in the North Sea

Statoil has found oil at the Geitungen prospect on Utsira High in the North Sea. Well 16/2-12, drilled by the Ocean Vanguard, has proven a 115-ft oil column from a Jurassic reservoir.

Well 16/2-12, the eighth well in production license 265, was drilled to a vertical depth of 6,709 ft below sea level in 377 ft of water. Statoil estimates the recoverable oil equivalent to be 140 to 270 mmbbl. Geitungen is about 1.8 mi north of the Johan Sverdrup discovery and was defined as a separate prospect in the license PL 265. Well data indicate that there probably is communication between the two discoveries.

There is an extensive appraisal program going on in the Johan Sverdrup discovery, both in PL265 operated by Statoil and PL501 operated by Lundin. As the pre-unit operator, Statoil plans to communicate a volume range for the Johan Sverdrup pre-unit at a later stage.

Statoil is operator for production license PL265 with a 40% interest. The license partners are Petoro AS (30%), Det norske oljeselskap ASA (20%), and Lundin Norway AS (10%).

Chevron awarded deepwater interest offshore Sierra Leone

Chevron Corp. subsidiary Chevron (SL) Ltd. was awarded participation in two deepwater blocks located offshore Sierra Leone. The two blocks, SL-08A and SL-08B, have been combined into one concession and are located between 75 and 110 mi southwest of the capital of Freetown and cover a combined area of about 2,100 sq mi. The new blocks have average water depths ranging from about 4,900 to 9,800 ft.

Under the award, Chevron (SL) Ltd. will be operator with a 55% interest, along with Noble Energy, Inc. (30%) and Odye (SL) Ltd. (15%). This is before a Sierra Leone National Oil Co. optional back-in of 15% at final investment decision.

Exxon plans to drill big Dunquin prospect west of Ireland next year

ExxonMobil plans to drill the huge Dunquin gas-condensate prospect out to the west of Ireland early next year using the Eirik Raude semi-submersible rig owned by Norwegian group Ocean Rig UDW. Subject to satisfactory contract and corporate and co-venturer approvals, the rig is scheduled to spud the Dunquin-1 well during the first quarter. The program is expected to last up to 6 months.

The deepwater Dunquin project consists of two main prospects, Dunquin



Gulf of Thailand offshore oil drilling target set for Q4

The first exploration drilling in permit B2/48 of the Gulf of Thailand, also known as the Gulf of Siam, was scheduled to begin in the fourth quarter of 2012.

Pearl Oil has contracted the Enso 85 for a multi-well campaign, and the Sainampueng 1 is included on the list.

MEO Australia Ltd. said the 174-sq mi 3D seismic survey targeting the southern Rayond graben identified about two dozen prospects and leads in multiple possible plays at several depths. Sainampueng 1 is intended to establish whether the permit is oil generative.

MEO acquired a 50% participating interest in the block earlier this year.

South and Dunquin North, both anticipated to be gas-condensate bearing. Located in the Porcupine Basin in 5,000 ft of water, Dunquin holds an estimated 14 tcf of gas and 500 mmbbl of condensate.

Covering 172,974 acres, it's believed Dunquin could turn out to be one of the biggest fields in the world if its reserves are proven.

Adjoining multiple blocks (44/18, 44/23, 44/24, 44/29, and 44/30), Dunquin is operated by ExxonMobil. It was in February 2006 that Providence with partner Sosina signed a farm-out agreement with the company to conduct substantial exploration work on the prospect and receive 80% ownership in return. Providence, therefore, retained a 16% interest and Sosina 4%. Shortly after, ExxonMobil farmed-out half of its percentage to Eni and Repsol.

Apache Corp. to plug and abandon discovery well offshore Kenya

Apache Corp.'s Mbawa-1 exploration well offshore Kenya has reached a total depth of 10,338 ft, according to partner Tullow Oil.

The well, in the L8 license area, encountered about 170 ft of net gas pay in the primary target, but there were no hydrocarbons in the deeper, secondary target. Apache is running wireline logs and plans to plug and abandon the well.

"This is the first hydrocarbon discovery offshore Kenya and gives a clear demonstration of a working petroleum system. Although the deeper targets at this location were unsuccessful, these results will be vital in evaluating the still significant prospectivity of this block," Tullow exploration director Angus McCoss said.

Australia grants seven new oil exploration permits for round two

Australia has granted seven new oil exploration permits off the coasts of the Northern Territory and Western Australia as part of round two of the 2011 Exploration Acreage Release.

Tangiers Petroleum was awarded the NT/P83 permit in the Money Shoal Basin of the Arafura Sea, while Shell Development (Australia) won the WA-477-P permit off the coast of Broome, Western Australia.

Pathfinder Energy won the WA-479-P permit north-northeast of Port Hedland; Repsol Exploration was awarded WA-480-P north of Dampier; and Liberty Petroleum was granted the WA-482-P permit extending across the north-eastern Exmouth Plateau and the Beagle Sub-Basin.

Meanwhile, Woodside Energy and Japan Australia LNG were awarded the WA-478-P permit offshore the coast of Western Australia on the Exmouth Plateau. Murphy Australia, Oil Kufpec Australia, and Samsung Oil & Gas Australia were granted the WA-481-P permit offshore of the northern Perth Basin. It is expect that the permit holders will spend around \$290 million during the next 3 years on exploring these areas.

Australia Energy Security and Economic Growth Minister Martin Ferguson AM MP said that the awards will help maintain Australia's energy security and economic growth.

"Exploration is vital for the future of Australia's resources sector, and the Australian government is committed to working with industry to enhance our international competitiveness and ensure the long-term growth of this important industry," Ferguson said.

Exploration

Uruguay signs production sharing contracts with four companies

Uruguay's government has signed production sharing contracts with four oil and gas companies for eight deepwater exploration blocks offshore of the country. The four companies—BP, BG Group, Total, and Tullow Oil—will invest a total of \$1.65 billion during the next 3 years for exploration activities in the block, located in water depths ranging from 500 to 2,500 m.

State-owned energy company Ancap will also join in the exploration work, reported The Wall Street Journal.

Uruguay Industry, Energy and Mining Minister, Roberto Kreimerman, was quoted in a statement as saying, "We have the chance for a country that is not an oil producer to have new wealth through this exploratory work, which will be done over the next 3 years, as well as the exploitation that follows."

BP and BG Group will explore three blocks each, while Total and Tullow will explore the remaining two blocks.

BP's exploration contracts includes Blocks 11 and 12 in the Pelotas basin and Block 6 in the Punta del Este basin,

which cover an area of almost 26,000 sq km, located about 50 to 100 km off the Uruguayan coast, southeast of Montevideo. 2D and 3D seismic acquisition will be carried out on the blocks during the initial 3-year exploration phase of the contracts, and drilling work is expected to begin in mid-2013.

Chevron makes gas discovery in Gorgon area offshore Australia

Chevron Corp. announced further drilling success by its Australian subsidiary in the Greater Gorgon Area, located in the Carnarvon Basin. The Satyr-2 exploration discovery well confirmed 128 ft of net gas pay.

The well is located in the WA-374-P permit area roughly 75 mi northwest of Barrow Island off the Western Australian coast. The well was drilled in 3,570 ft of water to a total depth of 12,454 ft. Satyr-2 is Chevron's 15th discovery in Australia since mid-2009.

Melody Meyer, president, Chevron Asia Pacific Exploration and Production Company, said, "The continued exploration success in the Carnarvon Basin could help underpin expansion opportuni-

ties at our LNG projects in Australia ... Chevron Australia is the operator of WA-374-P with a 50% interest, while Shell and ExxonMobil each hold 25%."

PanAtlantic reaches TD at Sabia 1X, Santos Basin offshore Brazil

Vanco Brasil Exploração e Produção de Petróleo e Gas Natural Ltda, a wholly owned subsidiary of PanAtlantic Energy Group, said that the Sabia 1X exploration well drilled on Block BM-S-72 offshore Brazil has successfully reached a total depth of 4,200 m. Wire line logs, reservoir pressures, and fluid samples confirm that the well penetrated multiple hydrocarbon bearing zones of interest.

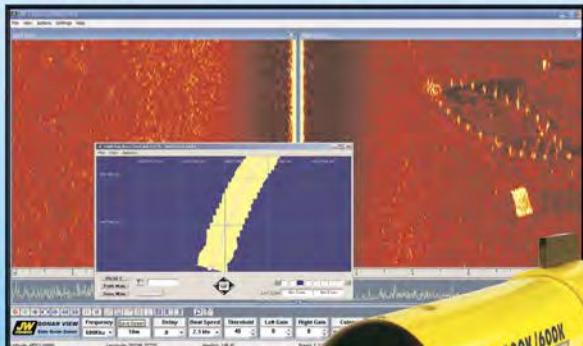
Further analysis will be conducted over the next several months to properly assess the potential for commerciality. The well will be abandoned in accordance with ANP requirements.

Sabia-1X was drilled in a water depth of 195 m using the GSF Arctic I, a moored semi-submersible drilling unit. The rig was to be moved to the Canario prospect in BM-S-63. Pan Atlantic holds a 70% working interest in three concessions—BM-S-72, BM-S-63, and BM-S-71.



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Fabricom awarded North Sea contract by EnQuest

Newcastle-based facilities engineering company, Fabricom Offshore Services, has been awarded a major contract valued at more than \$1.6 million by EnQuest Britain Ltd, one of the UK's leading independent oil and gas players.

Fabricom is to support Aberdeen-based EnQuest in undertaking a significant program of modifications and upgrades as part of a project to extend the operating life of the Thistle Alpha platform, which is located 275 mi north-northeast of Aberdeen. The work is part of EnQuest's Late Life Extension (LLX) strategy. To execute this work, Fabricom will use a team of engineers from its engineering office in Newcastle.

EnQuest, the largest UK independent producer in the UK North Sea, builds on Fabricom's increasing portfolio of clients such as Maersk Oil UK and Talisman Energy (UK).

Allan Cairns, managing director of Fabricom, said, "Securing this contract award opens up another exciting opportunity for Fabricom. EnQuest is an exciting, forward-thinking production company which is playing a lead role in ensuring the long-term sustainability of the North Sea, and it is a key milestone for Fabricom to become involved in supporting them with this work."

"The contract also reinforces the growing reach of Fabricom's dedicated engineering expertise—particularly



Extending the life of Thistle Alpha

in Aberdeen's offshore brownfield sector where resources are considerably constrained.

"We have developed a proven team of engineers and technical consultants who are rapidly earning a reputation for consistent and robust delivery of a range of technical services and solutions through the life-cycle of assets. We are continuing to build on our talent pool, which is integral to the company's success."

Fabricom specializes in multi-discipline engineering, design, procurement, and project management supporting offshore construction, installation, and commissioning. The company has a growing employee base of around 320 in its three locations, which include Newcastle, Teesside, and Aberdeen.

Reaming tools to assist well program offshore Côte d'Ivoire

CNR International has contracted Deep Casing Tools to supply well construction equipment for the Espoir development offshore Côte d'Ivoire. The award follows successful deployments for CNR in the North Sea.

Deep Casing Tools will supply its Turbocaser Express technology for high-speed reaming to land casing at target depth, reducing operational risk and saving time.

Landing casing in highly deviated wells and unstable formations can be challenging, the company said, and can lead to potential budget overruns and production delays. The tools provide reamer shoe rotation without casing rotation, with a unique internal assembly that offers rapid drill-through.

It will also deploy its Turborunner

technology for high-speed rotational reaming to land completions or liners. The system operates with low pressure and protects the completion from vibration, reactive mechanical torque, and uncontrolled pressure spikes.

Effectively, the technology combines a wiper trip with the running of the completion, without any string rotation.

Technip awarded North Sea Gullfaks tie-ins for Statoil

Statoil has contracted Technip to construct, install, and tie in flowlines for the Gullfaks South field development in the northern Norwegian North Sea. The location is 118 mi northwest of Bergen in water depths of 426 to 722 ft.

Development calls for two manifolds tied back to the Gullfaks South infrastructure via 12.4 mi of flowlines and involves use of direct electrical heating and pipe-

in-pipe flowline technology. Technip's operating center in Oslo will manage the program, with the company's spoolbase in Orkanger, Norway fabricating the flowlines. Offshore operations, scheduled for the first quarter of 2014, will be performed by the Apache II pipelay vessel and a newbuild construction vessel.

Pipelay, platform programs said to be in progress offshore Iran

Infield pipelay operations have started on the South Pars Phase 19 development offshore Iran, according to Pars Oil and Gas Co. (POGC). The 71-mi, 32-in. pipeline will export gas from the Phase 19 platforms to process facilities onshore, with a 4-in pipeline from shore taking glycol to the platforms.

Over the next 3 months, Iran also expects to install the first two (main) platforms for South Pars phases 17 and 18. Development drilling was nearing a conclusion on both projects.

Operations have also started for preparation of the third and fourth (satellite) platforms for the two phases, which will jointly deliver 1.77 bcf/d of treated natural gas for injection to the national grid; 75,000 b/d of gas condensates for export; 1 mmr/yr of ethane for use as petrochemical feedstock; 1.05 mmr/yr of liquefied gas; and 400 t/d of sulfur for export.

Well results from C/175 will help to determine locations of future wells

Dragon Oil has completed the Dzheitune (Lam) C/175 development well in the Turkmen sector of the Caspian Sea. The well was drilled as a single producer to a depth of 8,927 ft, testing oil at an initial rate of 1,420 b/d from the deep layers.

The shallow layers contained oil-bearing sands as predicted by the geological model; however, these zones were between gas and water formations, and, therefore, Dragon has opted to perforate these sands at a later stage.

Results of this well should help to optimize locations of future wells from this platform. The drilling rig has since mobilized to the Dzheitune (Lam) A platform and is currently drilling the Dzheitune (Lam) A/176 development well. The Dzheitune (Lam) 13/171 development well, drilled on the Dzheitune (Lam) 13 platform to a depth of 9,491 ft, did not yield commercial oil and may be converted into a water injector-type well. This would be the second water injection project after the pilot Dzheitune (Lam) 75 area scheme, which has been producing for many years and is due for pressure support to further enhance the production potential and reserves in this area.



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InterMoor finishes conductor work for Papa Terra

InterMoor, an Acteon company, has completed installation of the drilling and production conductors for the Papa Terra project, global president Tom Fulton said. Petrobras serves as the operator of the Papa Terra concession, with a 62.5% interest. Chevron holds the remaining 37.5% interest.

InterMoor was responsible for the design, procurement, fabrication, and installation of 15 conductors for the project. Fabricated at InterMoor's 24-acre, Morgan City, Louisiana facility, the conductors are 36 in. in diameter and 187 ft long.

InterMoor chartered the Skandi Skolten, DOF Subsea's construction anchor handling vessel, and the installation barge with



A load of 36-in. 187 ft-long conductors for Papa Terra project

a customized conductor launch system. For conductor driving, InterMoor used MENCK's MHU-270T DWS, which included a deepwater hydraulic hammer capable of providing a driving energy of 270 kJ at a water depth of 3,281 ft combined with MENCK's girdle-type electro-hydraulic power pack and umbilical support system. Generating hydraulic power at depth rather than at the surface means no hydraulic hose, therefore minimizing environmental impact and energy loss.

The conductors were installed in water depths of 3,937 ft in the southern Campos Basin off the coast of Brazil. The installation took place in April 2012. InterMoor's conductor services optimize conductor design to meet project-specific load and fatigue requirements, and the patented installation method allows installation without the need of a construction vessel. A standard anchor handling vessel is sufficient, leading to a more economical installation off the rig's critical path.

"We are proud to have successfully completed this important installation for Petrobras and to be part of the first offshore tension-leg, wellhead platform in Brazil," said Fulton. "Our collaboration with sister company MENCK proved to be an effective partnership, and InterMoor remains the only company worldwide to offer a full conductor installation service in deep water."

"InterMoor has been developing its strength in the Brazil market through our office in Rio de Janeiro, and this project completion confirms the breadth of our capabilities in the region," added John Riggs, managing director for InterMoor do Brasil.

Expansion work halted on Snøhvit in Barents Sea

Consortium partners involved with the Snøhvit license have announced plans to halt expansion work on the license, located in Barents Sea, because current gas discoveries indicate expansion is not commercially viable. Project operator Statoil said work will now be focused on optimizing and upgrading the existing LNG facility on Melkøya (Train I) and further developing Snøhvit through phases 2 through 4 for Train I.

The partners have not yet decided whether to go ahead with LNG or a pipeline solution for the planned expansion in the future. Studies have been carried out for the expansion of the gas exportation capacity from Melkøya during the last 18 months. Statoil said an increase in capacity will enable the accelerated gas production of increased reserves in the Snøhvit license in line with other existing discoveries in the area.

Producing increased reserves in existing trains has been considered, along with the probability of increased capacity owing to new gas discoveries. The company intends to install five new subsea templates and drill a total of 12 production wells in the license.

Partners include Statoil, which has 36.79% interest; Petoro with 30%; Total E&P Norge with 18.40%; GDF SUEZ E&P Norge with 12%; and RWE Dea Norge with 2.81%.

Palestinians seek permission for Gaza Strip gas fields

The Palestinian National Authority (PNA) is currently in negotiations with Israel, seeking permission to develop natural gas fields off the coast of the Gaza Strip, Reuters reported. The development may ease PNA's fiscal crises caused by shortfalls in international aid.

Peace envoy and former UK Prime Minister Tony Blair has initiated the talks on behalf of PNA, which will levy tariffs on any revenues generated from private pumping in the earmarked area. The Israeli Foreign Ministry, in a report, said,

"Development of the Gaza Marine gas field will generate revenues that could contribute dramatically to Palestinian fiscal sustainability."

Blair is a representative of a so-called Quartet of Middle East peace brokers—the United States, European Union, Russia, and the United Nations.

Israel has been developing its own gas fields in the Mediterranean to secure its energy independence. It earlier secured 40% of its gas from neighboring Egypt, which is marred by political instability and pipeline sabotage. Israel currently keeps Gaza under maritime blockade.

Xodus Group, Promon team up on subsea sector

International energy consultancy Xodus Group will partner with Promon, one of the foremost Brazilian engineering companies, to build on its subsea operations in the region, Xodus said, noting that Promon is looking to move into the subsea sector.

Xodus and Promon plan to work side-by-side to actively bid for work in the area and will also engage in driving forward business for the rapidly growing deepwater center of excellence in Houston.

This arrangement will allow both companies to expand their operations and capabilities in the subsea sector in South America. Promon and Xodus will work together to support project development and provide a full suite of services in all phases, from full field development and conceptual engineering to EPCI (engineering, procurement, construction, and installation) to operational and asset support.

The partnership will be coordinated from Xodus' office in Houston, and a senior engineer from the company has been seconded to work in Promon's headquarters in Rio de Janeiro, where he will share technical experience and knowledge in subsea projects and coordinate the joint offering.

Oilfield Equipment**TDW Offshore completes subsea pipeline isolation in Gulf of Mexico**

TDW Offshore Services (TDW) has successfully completed a subsea pipeline pressure isolation operation in the Gulf of Mexico. Carried out at a depth of 370 ft against 870 psig, this isolation enabled the safe and effective tie-in of a pigitable wye to the Mississippi Canyon Gas Pipeline, a 30-in. natural gas line running between the West Delta 143 platform, a hub facility for deepwater oil and gas production, and the Venice Gas Plant in Louisiana.

The isolation project utilized two remote-controlled 30 in. SmartPlug® dual module pressure isolation tools to isolate 45 mi of pipeline.

"The SmartPlug® isolation tool is certified to 'Safety Class High' in accordance with OS-F101 for submarine pipeline systems and is uniquely suited for use in connection with diving operations," said Bjørn-Olav Gilje, project manager for TDW.

Each tool was composed of two plug modules and two pigging modules. One of the tools provided double block isolation on the high-pressure side of the tie-in location. The first module on the second

tool provided a hydraulic-locked barrier of the high-pressure side for the divers installing the wye. The second module on the second tool was used to perform a leak test to verify integrity of the new wye after installation.



Following launch, TDW technicians aboard dive support vessel Norman Commander used the remotely-operated SmartTrack™ tracking and pressure monitoring system to continuously monitor the locations of the SmartPlug® tools as they traveled to their subsea set destinations. The SmartTrack™ system uses two-way, through-wall, electromagnetic communication between a transponder and a receiver to track tool progress. Once the tools were set, the isolation period was about 2.5 weeks.

"TDW worked with the client and their contractors over several months to

ensure that associated risks were evaluated and mitigated," Gilje added. "This thorough up-front planning resulted in a successful tie-in operation for our client. Working together achieved a result that we are proud to have been part of."

For more information, visit www.tdwilliamson.com.

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InterMoor says 32-km chain is the largest order by length in years



InterMoor has placed the largest chain order by length of any provider in recent years with one of the world's largest chain manufacturers, the company said. More than 32 km of 84- and 76-mm chain is on order for delivery at the end of the year, which will be added to already the largest holdings of mooring equipment in the world.

The chain, available to customers worldwide, will be used to renew and supplement InterMoor's inventory of mooring equipment and will be used primarily to support the company's preset mooring programs or add on to the mooring components of drilling rigs.

In addition to the chain purchase, orders for buoyancy and ancillary equipment have also been placed to support the growing needs of InterMoor's regional locations.

"Renting equipment speeds up the mobilization of drilling rigs, reduces capital investment requirements, and enables our clients to concentrate on their core work," said Tom Fulton, InterMoor president.

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

Schlumberger releases new Rhino on-demand borehole reamer

Schlumberger has released its next-generation Rhino XC on-demand reamer. The tool provides unlimited activation of the flow actuation to reliably enlarge boreholes, the company said.

The XC builds on the Rhino XS technology to control reamer cutter-block deployment regardless of well inclination, and the flow activation system elim-

inates the need for pumpdown actuation.

In an application offshore Norway, a 9½-in. x 10¼-in. section with the potential for several hole-related issues was reamed. For flexibility in handling borehole instability, the operator required on-demand capability to close reamer flow to the annulus.

The Rhino XC was run, allowing cycling of the reamer multiple times during the course of the run by changing the pump flow rate in a predetermined sequence. The resulting 9,283-ft run was completed in just over 300 circulating hours to set a new run-length record for the client.

For more information, visit www.slb.com.

VESTAMID® NRG used in more than 400 unbonded flexible pipes

VESTAMID® NRG 1001, a high-performance polymer, can already be found in a total of more than 800 km of pipeline. The polyamide 12 made by Evonik Industries has gone into the making of more than 400 unbonded flexible pipes to service the oil production industry. Oil companies have been using these pipes in their offshore projects for years now. Together with Wellstream International Ltd., Evonik conducted intensive testing to demonstrate compliance with the international norms API 17J for flexible risers and ISO 13628-2. The tests praised the creep performance, ductility, thermal expansion, methanol compatibility, and hydrolysis resistance.

The molding compound has since been used commercially for the manufacture of flexible pipes. Specially developed VESTAMID® NRG combines its



technical advantages with extraordinarily consistent product quality, which ensures outstanding processability, thus reducing setup times, scrap, and the risk of extrusion faults.

The new name, VESTAMID® NRG, stands for a whole range of polyamides -- employed, most notably, in the energy sector. And that range includes VES-

TAMID® LX9020, a product that has been well established on the market for years.

Cargotec's offshore electric winch series offers improved performance

Cargotec has introduced a new range of electrically-driven offshore winches that offers proven safety and reliability with improved operability and reduced environmental impact. The company said it can now offer electrically driven versions of its proven range of offshore MacGregor anchor handling-towing winches (eAHT).

The eAHT series comprises winches with line pulls ranging from 200 to 600t, with an initial speed up to 25 m/min and with a brake holding capacity up to 800 t.



Each winch is available in double- or triple-drum configuration to meet various designs and operational requirements.

The drums are designed to carry a huge capacity of steel wire rope as well as large diameter, low specific weight fiber rope. The extended shaft connections at both ends of the winch are suitable for fitting chain wheels to handle chains ranging from 76 mm diameter up to 160 mm diameter.

The winches are driven by an AC variable frequency electric motor through an enclosed helical bevel gearbox. They also feature a freshwater-cooled hydraulic or pneumatic disc brake system allowing smooth changing between operational speed modes, from static to dynamic and during dynamic-lowering operations.

They also have a regenerative multi-drive system, which offers various benefits including space savings, reduced wiring, and greater redundancy when compared with traditional single-drive solutions. The regenerative energy can be easily fed back into the ship's main power system using Active Front-End (AFE) technology, which has ultra-low harmonics capability; alternatively it can be dissipated through the braking resistor.

For more information contact Francis Wong, sales director, winches, Tel, +65 68 688 501, or e-mail francis.wong@cargotec.com.

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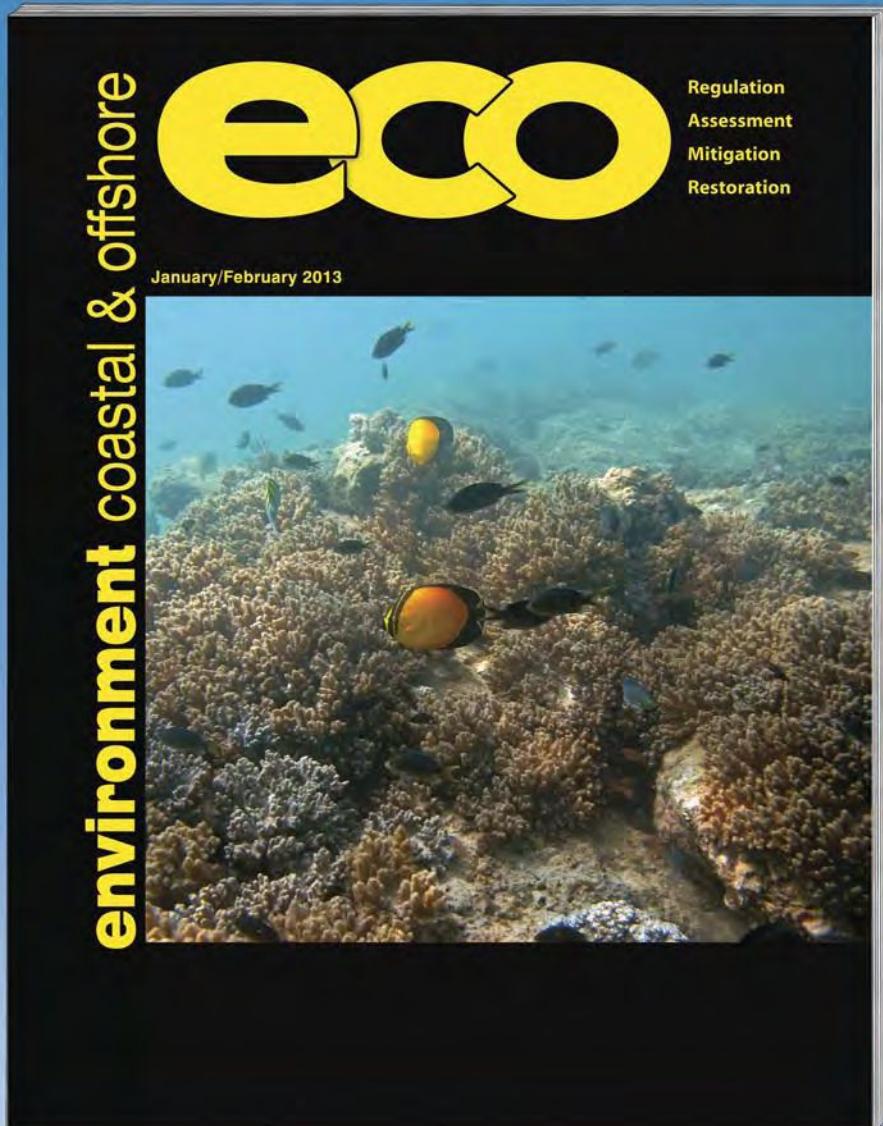
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Mariscope launches high-velocity ROV Commander MK II SF

With a velocity of approximately 7 kts, Mariscope has recently launched one of the fastest observation class vehicles on the market. The vehicle of the type Commander MK II SF (Super Fast) was tested during trials carried out with the German Customs Brigade in the city of Hamburg. In order to test the performance of the vehicle, the trials were carried out in Hamburg's harbor, located at the Elbe River. This port is the biggest river port in the world, and, since it is near the north Atlantic Sea, it is influenced by tidal currents, additionally increasing the flow velocity. With the aim to test the ROV in extreme conditions, the vehicle was operated during high tide and in the points of maximum current velocity.

Due to a series of innovations in the propulsion system of the ROV, the vehicle showed that not only was it able to withstand the current of the river, but it was also capable of navigating against it with incredible ease.

Due to the plus in power, the vehicle showed a perfect stability even working with extreme transversal currents.

With this development, Mariscope puts a vehicle on the market that is able to work in extreme conditions, a frequent situation that is in many parts of the world. Main focuses are the aquaculture industry, off-



shore wind parks, river operations, tunnels and channels, just to name a few. Most often, observation class ROV lack the power for these kinds of operations and work class ROVs are too big in size and costs. Mariscope is sure to have found the right combination to satisfy an increasing number of clients with growing complexity in their operations.

For more information, visit www.mariscope.de.

Coastline Surveys takes delivery of DATEM 5000 CPT System with immediate deployment in North Sea



Coastline Surveys has taken delivery of their new Datem 5000 CPT System (C-Pen35). After a series of robust acceptance tests, the system was delivered on time to Scotland and has immediately commenced work on a cable route survey in the North Sea for the Renewables Sector.

The DATEM 5000 unit is a coiled rod design offering the latest technology and increased push capability compared to similar CPT designs available. The C-Pen35 system is designed for performing *in-situ* soil testing from nearshore to water depths

up to 3,000 m. The unit is compact enough for deployment from smaller vessels 20 to 25m length, making it a versatile and adaptable system for most client applications and soil types and, importantly, reducing overall vessel spread costs to Clients.

The Cone Penetration Test(CPT) concept is based on pushing a calibrated steel cone into the ground at a constant speed of 2 cm/sec, with continuous measurement of the cone end resistance, sleeve friction along the cone, and the pore water pressure. These measurements make it possible to accurately determine *in-situ* ground condition strengths and infer stratigraphy over the penetrated depth. CPT is often used in conjunction with vibrocoring and geophysical surveys also undertaken in house. This system has been purchased to support the strategic expansion of Coastline Surveys Ltd geotechnical capabilities for the route studies for offshore renewables cables, pipelines, port, and coastal engineering and dredging studies.

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

SeaTrepid adds Sub-Atlantic™ Comanche work class to its ROV fleet

SeaTrepid International, LLC is proud to announce that it has added a Sub-Atlantic™ Comanche work class remotely operated vehicle (ROV) to its fleet of 32 observation, mid-class, and light work-class ROVs. The Comanche comes complete with A-frame launch and recovery systems, 20 hp hydraulic power unit and, over 6,000 ft of main lift umbilical.

With its 15 kw/20 hp HPU, the SeaTrepid Comanche ROV system provides exceptional tooling capabilities and has been designed for the following tasks among others: construction IRM—cleaning, cutting, jetting, dredging, and NDT applications; drill/rig/completion support; well intervention—AX/VX gasket change out, BOP shutdown, hot stab operations, Class 1-4 torque tools; and Survey—Pipe and cable tracking, single & dual head multi-beam sonars, subbottom profiling, pipe profile sonars, and leak sensor.

Additionally, when compared with hydraulic work-class systems, the Comanche provides important customer benefits with regard to capital and operational expenditure, simplicity of use, and use of less deck space.

For more information, visit www.seatrepid.com.

Exocetus Development LLC purchased all rights to ANT Littoral Gliders

The CEO of Exocetus Development LLC, Dr. Joe Imlach, announced that Exocetus has purchased all the assets, intellectual property (two patents and one pending), and technology for the Littoral Glider (LG) from ANT (formerly Alaska Native Technologies LLC). The manufacture of the Exocetus gliders will continue to be based in Anchorage, Alaska. These LG gliders were developed under funding from the Office of Naval Research during a 6-year period and will now be named Exocetus Coastal Gliders. Twelve of these gliders were delivered to the U.S. Navy during this 6-year period to be used as demonstration units for potential U.S. customers—both military and research institutions. To date, this glider model has more than 5,500 hours of at-sea operation.

The Exocetus (x-o-seat-us is the name of a flying fish) glider has been renamed the Exocetus Coastal Glider. The initial primary market for these Exocetus Coastal Gliders is coastal regions where conditions of hypoxia are prevalent during the warm months of the year. There are more than 200 regions of eutrophication and hypoxia throughout the coastal areas of the world. Another near-term market for the Exocetus Coastal Glider will be for research institutes studying ocean acidification.

For more information, visit www.exocetus.com.

Full pipeline survey spread now on SAAB Seaeye ROV

For the first time, a full pipeline survey spread has been fitted to a Saab Seaeye ROV in the shape of the Panther XT Plus.

The technological breakthrough will bring considerable savings in survey operating costs to operators when compared to deploying a 150-hp hydraulic work-class vehicle for the task.

Being acoustically quieter than an hydraulic vehicle, an electric ROV will also produce more accurate multi-beam sonar data.

Making this breakthrough possible is the unequalled power of the Panther XT Plus. This industry-leading ROV offers a powerful platform for a wide variety of tooling that expands the scope of work tasks possible in a compact vehicle.

The survey spread installed on the Panther XT Plus is a complete system that includes a Teledyne TSS pipe tracker for precise location of pipes; two Reson SeaBat 7125 multi-beam sonars with dual frequency operation for collection of seamless high-resolution survey data; a Sonardyne Lodestar inertial navigation system; a Doppler velocity log; camera booms; and wheeled skid.

For more information, visit www.seaeye.com.

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TORM chooses Inmarsat XpressLink to streamline operations

Inmarsat announced that Copenhagen-based TORM A/S, a carrier of refined oil products and dry bulk cargo, will deploy Inmarsat XpressLink to its owned bulk carrier and tanker fleets. The XpressLink roll out will commence with 17 ships and the remainder of the TORM owned fleet will be equipped over the next 3 years. The XpressLink solution from Inmarsat is a fully integrated and managed combination of VSAT and market-leading FleetBroadband™ delivering unlimited data availability across the world's oceans. It includes a free double bandwidth upgrade at the same fixed monthly rate when Inmarsat's Global Xpress constellation becomes commercially available from 2014. The integrated solution means that ship and shore communications can be seamlessly and professionally managed and supported end-to-end thanks to Inmarsat's state-of-the-art global infrastructure. The dual system design also results in unmatched redundancy delivering near 99.9% uptime.

Cobham forms new Satcom unit

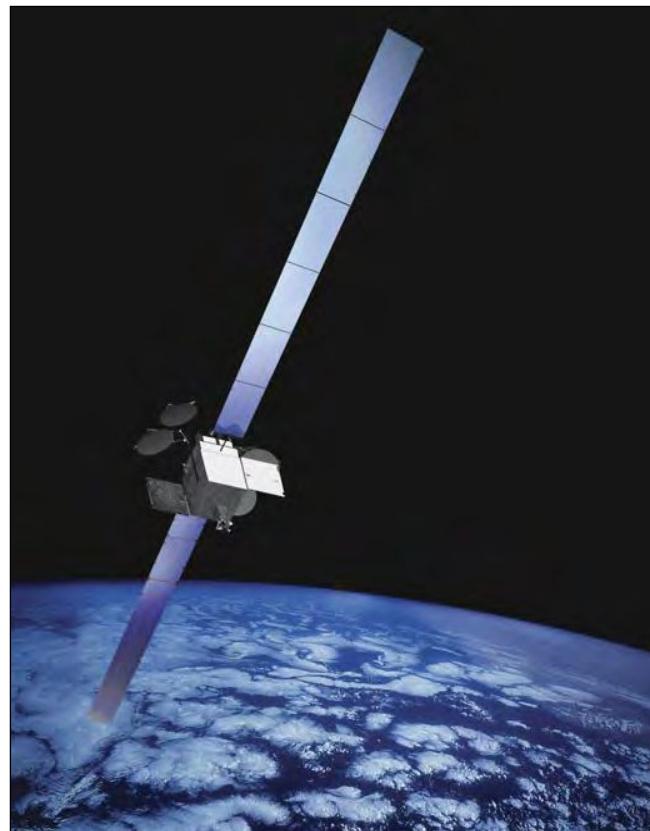
Following the acquisition of Thrane & Thrane by Cobham plc in July 2012, the two companies have converged to form a new SATCOM Strategic Business Unit under the Cobham Aerospace and Security Division. The new unit will be a powerhouse in the world of satellite and radio communication technology for use at sea, on land, and in the air. The companies' world-class portfolios will combine to continue leading this exciting and innovative industry with new innovations and high-quality products. Thrane & Thrane and Cobham already have complementary businesses in the VSAT and MSS sectors, but their combined experience, expertise, and global operations will make it easier for customers to choose communications equipment and integrated solutions that are right for them. Located at the Thrane & Thrane premises close to Copenhagen in Denmark, Cobham SATCOM is led by Walther Thygesen, former CEO of Thrane & Thrane. In addition to encompassing Thrane & Thrane, Cobham SATCOM also has leadership responsibility for the existing Cobham SATCOM businesses in Concord, California; Orlando, Florida; and in Cape Town, South Africa. The Danish facility will become a principal operating location for Cobham.

MTN celebrates anniversary of delivering Internet to the cruise industry

MTN Satellite Communications (MTN) is celebrating the 15-year anniversary of its Internet solution aboard cruise ships. Since 1999, more than 150 million passengers and crew members have logged on to the Internet to stay connected in some of the most remote locations around the world. From the Internet Cafe to its recently launched Connect at Sea mobile application, MTN continues to lead the cruise industry in delivering innovative communication solutions to meet the evolving needs and expectations of passengers. The industry's first Internet Cafe was launched in 1999, following 2 years of "proof of concept" leveraging MTN's Very Small Aperture Terminal (VSAT) technology. MTN revolutionizes the way that passengers and crew stay connected with friends and family at home and addresses changing passenger dynamics with quarterly enhancements. The company will further validate its commitment to delivering an onboard, cutting-edge Internet experience with the launch of its Next Generation Network later this year.



Boeing to build 702 HP communications satellite for SES



Boeing has been selected by SES S.A. to provide a new satellite that will expand direct-to-home broadcasting and other communications services to the fast-growing markets of Northeast Asia, South Asia, and Indonesia as well as maritime communications for vessels in the Indian Ocean. SES-9—ordered through SES' affiliate company SES Satellite Leasing Ltd.—will be a Ku-band 702 High Power (HP) satellite.

Boeing has a 25-year relationship with Luxembourg-based SES. This is the 11th spacecraft that SES has ordered from Boeing, and the contract includes an option for another. Financial details are not being disclosed.

SES-9 will be built in Boeing's El Segundo Satellite Development Center and is designed to operate for 15 years in geosynchronous orbit with a 12.7-kw payload and 57 high-power Ku-band transponders, equivalent to 81 36-MHz transponders.

The spacecraft will be positioned at 108.2 degrees east longitude and provide incremental as well as replacement capacity to this well-established SES slot over Asia. SES-9 will be colocated with SES' existing SES-7 and NSS-11 satellites.

For more information, visit www.ses.com.

KVH wins Best Product Awards

The National Marine Electronics Association (NMEA) awarded KVH Industries its prestigious "Best Product Award" in two categories—communications and entertainment—at its

annual convention in Orlando, Florida. The KVH TracVision® HD7 won the award for “Best Entertainment Product” of the year, and the KVH TracPhone® V3 won the award for “Best Communications Product.”

The NMEA is the global marine electronics industry’s premier trade association and is made up of more than 600 companies, including manufacturers, dealers, and boat builders. This is the 14th consecutive year that KVH has won a best product award from the NMEA.

The TracVision HD7, which won the award for “Best Entertainment Product,” is a stabilized satellite antenna that will work throughout the Americas to deliver the ultimate in both standard- and high-definition TV. The first product able to simultaneously track and deliver transmissions from both Ku-band and Ka-band satellites, the TracVision HD7 has become the favorite solution for boaters who want to watch high-definition programming from the popular DIRECTV® service on their boats. To make this innovative product even more versatile, KVH invented the Tri-Americas® LNB that enables the antenna to work with all of the popular satellite TV services throughout North and South America.

Winning the “Best Communications Award” was the KVH TracPhone® V3, the world’s smallest maritime VSAT antenna, which is designed to work with KVH’s mini-VSAT Broadband™ satellite network. KVH built its global maritime satellite communications network to provide customers with an affordable alternative to the Inmarsat service, which customers complained was prohibitively expensive to use for accessing the Internet.

Due to the mini-VSAT Broadband network’s unique spread spectrum technology (similar to that used in the new high-powered 3G and 4G networks on land), KVH was able to develop the TracPhone® V3, a system similar in size and cost to Inmarsat FleetBroadband equipment, but offering service up to ten times faster at broadband speeds of up to 2 Mbps, with airtime rates 1/10th the cost of Inmarsat. KVH’s airtime packages for the TracPhone® V3 start as low as \$49 per month for 50 MB of service. The product also provides crystal-clear Voice over IP (VoIP) calling, anywhere in the world, for only \$0.49 per minute.

For more information, visit www.kvh.com.

IsatPhone Pro helps rescue 82 from stranded vessel

Eighty-two people have been rescued from the sea near Java following a distress call using IsatPhone Pro.

At 08:21 (UTC) on 9 August, Australia Maritime Safety Authority’s (AMSA’s) Rescue Coordination Centre (RCC Australia) was contacted by Australian Federal Police after they received a distress call via IsatPhone Pro from a vessel requesting assistance.

RCC Australia successfully contacted the satellite telephone number and a person onboard reported the vessel’s engine was not working and there were 82 people onboard. RCC Australia sent out a distress broadcast to the area to call for assistance. There was an initial discrepancy over the vessel’s GPS position until Inmarsat confirmed from satellite phone positional information that the vessel was approximately 31 nmi south of Java.

A maritime patrol aircraft spotted the vessel, and three merchant ships who had responded to the earlier broadcast were diverted to the scene, followed shortly after by Australian Navy vessels HMAS Glenelg and HMAS Childers.

The MV Clipper Mayflower assisted in the rescue of two injured people from the water, while the remaining 80 people were taken onboard the Australian ships. The MV Clipper Mayflower took the injured people to Indonesia for medical treatment, with support from an Indonesian rescue boat.

For more information, visit www.inmarsat.com.

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Inmarsat and Cisco agree to a satellite services alliance

Inmarsat and Cisco have announced the creation of a unique long-term alliance that will enable Inmarsat to deliver advanced services, from applications to business collaboration and video to multi-media content, over Inmarsat's new high-throughput satellite broadband network, Global Xpress (GX).

Cisco will provide Inmarsat with a state-of-the-art satellite applications

service delivery platform and a high performance access network for Inmarsat's Global Xpress program, the first global Ka-band (the satellite transmission frequency) network with mobile connectivity. Cisco will also develop a router for satellite network end-users that will utilize not only the Inmarsat GX capabilities but also the current BGAN global network.

Cisco will build and operate the network on a fully managed basis before



KVH TRACVISION HD7
2012 BEST ENTERTAINMENT PRODUCT



KVH TRACPHONE V3
2012 BEST COMMUNICATIONS PRODUCT

transferring it to Inmarsat and will use its key software stacks of Service Delivery Platform and Prime to enable advanced capabilities such as voice, video, cloud application services, and high-speed Internet access.

This GX/BGAN-integrated platform will allow Inmarsat and its partners to rapidly develop and remotely deploy innovative applications to this new device and will extend the reach of new services across the whole Inmarsat network. Inmarsat will become a global partner for Cisco, and both companies will bring their combined service capabilities to Inmarsat's value-added resellers around the globe.

Scheduled for service introduction in 2014, the service delivery platform and satellite network router will leverage Global Xpress and BGAN, offering unprecedented data rates and bandwidth, backed by Inmarsat's quality standards, performance, and global reach, and providing the same experience as terrestrial broadband. It will be the only hybrid Ka- and L-band network designed to provide consistent global coverage.

For more information, visit www.inmarsat.com or www.cisco.com.

Beam receives Japanese approval for Inmarsat product range

Beam Communications Pty Ltd, a wholly owned subsidiary of World Reach Limited, announced that its entire range of Inmarsat products have been approved for sale into the Japanese market.

Under the Japanese regulatory environment, all equipment sold in Japan that emits Radio Frequency energy must be tested and granted Japanese Type Approval, commonly referred to as a "Giteki" or "Ninsho" certification. In addition, before sale, equipment must be certified for electrical safety and carry a "PSE" mark.

Beam has successfully completed the testing of all of its Inmarsat IsatDock Docking Stations for the IsatPhone Pro Satellite Handset along with the four Terra 400/800 and Oceana 400/800 terminals to support the Inmarsat FleetPhone

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The company is delighted to achieve certification across the complete range of Beam Inmarsat terminals, with the recent launch of the Inmarsat IsatPhone Pro and GSPS services in Japan, this gives Beam license to actively sell and promote these products into the Japanese market.

These approved terminals will be sold through strategic Inmarsat partners such as JSAT MOBILE Communications Inc., Japan Digital Corporation, and SatCom global.

Beam is a strategic manufacturer of both Inmarsat and Iridium satellite docking stations for the Iridium 9555, Iridium Extreme, and the Inmarsat IsatPhone Pro satellite telephones.

For more information, visit www.beamcommunications.com.

SELEX Elsag to supply RN communications system

Elsag, a Finmeccanica company, has been contracted by the South Korean shipbuilder Daewoo Shipbuilding & Marine Engineering (DSME) to supply a suite of communications systems for the Royal Navy's Military Afloat Reach & Sustainability (MARS) tanker program. The systems will be installed on four new logistic support vessels to be built in South Korea by DSME and operated by the Royal Fleet Auxiliary. The MARS communications system has been designed to make optimal use of commercial and military systems already proven on other defense programs. For instance, a number of systems deployed on the RN Type 45 Destroyer will be adapted cost effectively to meet the needs of the MARS tankers. These include SELEX Elsag's Communications Management System, which provides for central configuration and control of communications assets. Today's IP communications technology will form the backbone of the communications system, developed from the company's Sentinel system, which is now deployed on the UK MoD's Falcon land communications system. The MARS Identification Friend-or-Foe solution is based on that being supplied by SELEX Elsag for the RN Queen Elizabeth Class aircraft carriers. The messaging system uses the company's MPS2000 system deployed on most RN naval vessels. SELEX Elsag is also providing topside electromagnetic modeling to optimize the placement of antennas for reliable communications and safe operations. Other key elements include the HF, VHF, and UHF radio systems; tactical data links; and a suite of audio visual recreational systems. The MARS communications

system is easy to use and is optimized to support UK maritime operations. It is modular and scalable, facilitating the rapid insertion of additional capability through life. Key benefits include:

- Fast, flexible assignment of communications circuits and control of equipment characteristics;
- High levels of automation to reduce operator workload and enable crew multi-roling;
- Multi-level domain separation for voice,

data, and management traffic, derived from an in-service system to enable low risk security accreditation;

- Maximum use of standards-based solutions to aid scalability, capability insertion, and obsolescence management, while exploiting supply chain efficiencies;
- Extensive use of commercial products to take advantage of commercial innovation and upgrade cycles.

For more information, visit www.selexelsag.com.

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East West Interconnector opens on time and under budget

Ireland's first electricity link with Great Britain was officially opened on 20 September. Called the East West Interconnector, the cable runs between Deeside in north Wales and Woodland, County Meath in Ireland. Approximately 260 km in length, the underground and undersea link has the capacity to transport 500 MW—enough energy to power 300,000 homes. The EirGrid Interconnector will carry electricity both ways, benefiting consumers by helping to improve security of supply, increase competitiveness, and encourage the growth of renewable energy generation. EirGrid delivered on this complex project on time and approximately €30 million under budget.

Nexans secures agreement with BP

Nexans has secured a 10-year global frame agreement with BP International Limited, UK, to supply umbilicals, DEH (direct electrical heating) systems, accessories, and services for various oil and gas projects worldwide. The agreement runs from 2012 to 2022. It covers the design, manufacture, and supply of bespoke umbilicals that will carry fluid, power, control, and telecommunication services for new subsea oil and gas projects together with DEH systems that provide flow assurance in pipelines. Nexans has had two umbilical frame agreements with BP Exploration and Production Inc., one secured in 2003 and the other in 2009 for deepwater umbilical projects in the Gulf of Mexico.

JDR opens German office

JDR announced that it has opened a new German subsidiary, JDR Cable Systems GmbH, with an office in Hamburg. This move follows JDR's first German contract win with WindMW GmbH for subsea power cables for the Meerwind Sud/Ost offshore wind farm1. WindMW GmbH is responsible for the planning, construction, and operation of the Meerwind wind farm and will utilize over 110 km of JDR's inter-array subsea power cables, complete with JDR's UK-patented hang-off termination. The hang-off greatly improves the speed and safety of installation and lessens vessel on-station time, thereby contributing to overall project economics. The cables will link 80 individual 3.6-MW turbine generators with offshore substations that will generate 288 MW of electricity. Meerwind is located approximately 23 km north of the island of Helgoland and is expected to be completed in 2013. JDR has been involved across a diverse range of subsea power cable applications and has a range of products that enable operators to manage the challenge of subsea environments. All of JDR's subsea cables are manufactured at its new facility in Hartlepool.

Radius Oceanic Communications and Cyta announce Eastern Mediterranean cooperation through the POSEIDON System

Radius Oceanic Communications, Inc. (Radius) and the Cyprus Telecommunications Authority (Cyta) are pleased to announce the commencement of the POSEIDON project. POSEIDON is a high-capacity undersea cable system that will provide advanced telecommunications facilities to the offshore oil and gas industry in the Eastern Mediterranean region.

The POSEIDON system will extend for some 800 km from two shore landings in Cyprus, creating a self-healing ring that borders the Cypriot EEZ, enveloping the offshore oil and gas lease blocks established for development by the Republic of Cyprus. Radius has teamed with Cyta, which provides landing facilities and collocation services at its cable stations in Pentaskhinos and Yeroskipos. Through the POSEIDON system, Radius will offer managed broadband services on a subscriber basis to offshore exploration, production, and support facilities in the Eastern Mediterranean.

Cyta is the leading telecommunications provider in Cyprus, providing the full spectrum of electronic communications services ranging from fixed and mobile telephony to Internet service provision and broadband applications. Cyta, through its strategic business unit Cytaglobal, is particularly active in the area of undersea cable systems, providing wholesale products and services on a global basis, and has established Cyprus as a regional telecommunications hub in the Eastern Mediterranean. Through Cyta's telecommunications hub, Radius will be able to provide its offshore customers with secure, low-latency broadband connections to key locations worldwide.

On the conclusion of high-level bilateral meetings in Nicosia, Cyta and Radius teams were received by His Excellency the Minister of Commerce, Industry & Tourism, Neoklis Sylikiotis, overseeing all offshore energy development by the Republic of Cyprus, who has expressed his support for the POSEIDON system and the co-operation between the parties.

"Cyta is extremely pleased to have reached agreement with Radius for this new and important project for Cyprus. POSEIDON will enable Cyta to play an important role in providing state-of-the-art telecommunications facilities to the developing energy sector in the Eastern Mediterranean region. Our part-

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nership with Radius will allow offshore exploration, production, and support facilities to reach the world through Cyta's telecommunications hub," said Mr. Stathis Kittis, chairman of Cyta's board of directors.

Radius' president, Jim Byous, stated, "We are honored to be welcomed by the Cypriot government and by our partner Cyta to undertake a project that we believe will provide critical infrastructure for the offshore industry for decades to come as the Eastern Mediterranean deepwater developments mature."

Radius is a communications provider formed to offer broadband communications to the offshore oil and gas industry worldwide. The Radius team consists of leading industry professionals in the fields of undersea fiber optic telecommunications engineering, development, and operations. The Radius project development team has participated in leading roles in the development of offshore oil and gas undersea fiber projects in West Africa, the Gulf of Mexico, and the Asia Pacific regions since 2000.

For more information, visit www.radiusocean.com.

Emerald Networks announces strategic investment

Emerald Networks, a new-build network submarine cable system that will connect North America to Europe and Iceland, announced a strategic investment with Storage Engine, Inc. (SEI).

This new investment signifies the interest of bringing both public and private cloud computing, along with storage management solutions, offering comprehensive capabilities like continuous data protection (CDP) to Iceland's developing data center industry.

SEI is a pioneer with proven data protection and storage management solutions that will enable Emerald Networks' customers in Iceland to be more resilient, efficient, and agile in today's demanding, ever-changing world.

With this investment, SEI, an experienced and top-tier integrator of data recovery systems, recognizes the importance of data center development in Iceland and provides customized solutions for IT enterprise customers migrating to Iceland. The technologies being implemented on this initiative will significantly lower costs associated with both high performance computing (HPC) and data storage systems located in Iceland, while utilizing green energy in a truly sustainable manner.

This news is the latest in a series of strategic company milestones that

Emerald Networks has announced recently. Over the past 3 months, the company announced the appointments of Dr. William C. Marra to chief executive officer, Mr. Phillip Magiera to chief financial officer, and Dr. Gisli Hjalmysson to its board of directors."

For more information, visit www.emeraldnetworks.com.

GlobeNet announces major upgrade

Oi's international subsidiary provider of submarine capacity, GlobeNet, announced its plans to complete its third network capacity upgrade in 3 years on its lowest latency, fiber optic cable network connecting the Americas. This upgrade, bringing GlobeNet's network capacity to 1.2 Tbps and doubling its current lit capacity, will be completed in the fourth quarter of this year.

GlobeNet's submarine fiber optic cable system allows networks to bridge the Americas with low-latency routing and the highest performance. The existing advanced network architecture, coupled with this latest network upgrade, further serves the growing demand for bandwidth-intensive services from carriers, Internet service providers, social networks, CDNs, financial services, and end-users throughout Latin America and the United States.

In addition, GlobeNet successfully completed extensive trials with multiple coherent 100 G technology platforms, demonstrating its capability to carry over 12 Tbps over its four fiber pair subsea cable system, delivering more than 10 times the capacity than the original design. When the next upgrade is complete, GlobeNet will be ready to offer even more bandwidth without the need of massive infrastructure deployment and immense capital investment, future-proofing its network.

GlobeNet's international transport solutions serve Brazil, Bermuda, Colombia, United States, and Venezuela, offering a wide range of products and services, including International Private Line, Wavelength, Carrier Ethernet, and IP Transit.

For more information, visit www.globenet.net.

Seaborn signs contract with Alcatel-Lucent

Seaborn Networks has signed a turnkey contract with Alcatel-Lucent to build Seabras-1, a new 10,700-km submarine cable system that will create a direct route between New York and Sao Paulo in Brazil, with a branch to Fortaleza, Brazil.

Seaborn Networks and Alcatel-Lucent have already commenced the permit acquisition and marine survey work for the project.

The 100-Gbps Seabras-1 system will deliver new capacity on the primary route for the majority of Internet, data, and voice traffic between South America and the rest of the world. In addition, this new system will support a wide variety of consumer and business broadband services between two of the world's most connected societies.

By providing low-latency communication via a 10,400-km segment directly connecting Sao Paulo and New York and route diversity via a 350-km branch to Fortaleza, Seabras-1 will also enhance traffic protection in the region.

The Alcatel-Lucent solution to be deployed for this project includes an integrated 100-G wet plant of cable and high bandwidth repeaters, power feed equipment, and its 1620 Light Manager (LM) submarine line terminal equipped with advanced coherent technology and offering unique flexibility to increase direct connectivity between countries. Designed to accommodate 100-G wavelengths, the Alcatel-Lucent 1620 LM enables seamless capacity upgrade on flexible grid for channel spacing without traffic interruption. As part of the turnkey contract, Alcatel-Lucent will also be responsible for project management, system design, installation, and system commissioning.

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

ADB to help fund Solomon Islands cable

The Asian Development Bank (ADB) has approved \$7.5 million grant and \$10.5 million loan for the \$60 million Solomon Islands Broadband for Development Project, which will build a submarine cable system that will deliver good quality high-speed Internet services at affordable prices to the people of Solomon Islands. The government will lend this entire amount to the Solomon Oceanic Cable Company, which is also seeking private sector loans, including from ADB's private sector wing.

The submarine cable system will connect Solomon Islands to an existing international submarine cable network that runs between Guam and Sydney, Australia. The cable system is expected to be in place by December 2013.

The underwater fiber optic cable will provide Solomon Islands population of 550,000 cheaper, accessible, and reliable information and communication technology (ICT) services.

Lack of access to markets and services, combined with high transport and communication costs, leaves much of the geographically isolated portion of Solomon Islands economically isolated from national and regional markets. Improved connectivity with better quality and expected reduction in communication costs via the Solomon Islands Broadband for Development Project will offer new economic opportunities domestically and regionally as well as new avenues for the delivery of key public and social services.

Supporting inclusive growth and investment in ICT are key focus areas of ADB's Pacific Approach, which guides ADB's operational focus for ADB in the region. ADB's investment in the project is complemented by World Bank technical assistance to support the Telecommunications Commission of Solomon Islands.

For more information, visit www.adb.org.

Arctic Fibre applies for Canadian landing license



Arctic Fibre Inc. has applied to Industry Canada for submarine cable landing licenses under provisions of the Telecommunications Act, 1993.

The third fiber pair within the cable will be devoted to the carriage of signals between Japan and the northeastern United States through an existing landing station at Milton in the province of Newfoundland and Labrador and then transmitted southward through terrestrial and submarine fiber networks to the United States.

Based on the response to Arctic Fibre's Open Season capacity nomination process, the fourth fiber pair will provide virtually unlimited bandwidth to 52% of the Nunavut population living along the backbone in Cambridge Bay, Gjoa Haven, Taloyoak, Igloolik, Hall Beach, Cape Dorset, and Iqaluit.

Negotiations are ongoing with a major American carrier to construct spurs into

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the Alaskan communities of Nome, Kotzebue, Wainwright, Barrow, and Prudhoe Bay who face similar problems accessing the information highway.

No subsidization is required for the Nunavut communities living alongside the backbone due to sharing of the cable with international traffic, and marine surveys will be undertaken next summer with a projected backbone in-service date between Tokyo and London of November 2014. The company expects to spend approximately \$30 to \$31 million on capital expenditures within Nunavut in the next 2 years.

An additional \$161 million of capital contribution or about \$21 million per annum in annual revenue or subsidies will be required to construct spurs off the backbone to service Labrador through Nain; the Nunavik region through several spurs at Kuujjuaq, Kangirsuk, Quaqtaq, and Salluit; the Kivallik region as far south as Arviat; and as far as Pond Inlet on Baffin Island through an underwater branching unit in the Davis Strait.

Arctic Fibre has been in discussion with various provincial and territorial governments and will be filing a proposal with Industry Canada in the near term for the construction of the spurs in 2015-2016.

Arctic Fibre believes that, notwithstanding some technical improvements to satellite throughput, there is no way that satellite can be cost competitive with fiber per megabit, which is one of the primary reasons almost 99% of international traffic is carried by fiber. Arctic Fibre's initial rates in Nunavut represent an 80% price reduction to satellite costs and will improve further as economies of scale are realized.

Arctic Fibre completed detailed seabed studies in August covering the entire 15,079-km route between London and Tokyo as well as the 2,210-km Labrador backbone between Newfoundland and Labrador. Additional routing work was undertaken on the spurs. Arctic Fibre has used this desktop study and engineering design work to call for turnkey proposals to construct the network on the basis of 100-G wavelengths as opposed to the original 40-G concept.

Arctic Fibre has met with international carriers on an ongoing basis during the past 3 years and will move to the contractual stage between now and the end of the year.

For more information, visit www.arcticfibre.com.

Vocus renegociates Southern Cross capacity

Vocus Communications Ltd. has renegotiated its historical IRU supply agree-

ments and purchased additional capacity on the Southern Cross submarine cable, quadrupling capacity between Australia and New Zealand to the United States.

The renegotiation brings all historical purchases under a single new agreement at current rates. The additional investment provides the company with its largest ever increase in capacity, ensuring Vocus has the ability to cater to growing bandwidth demands.

Key aspects of the deal include:

- Single new agreement for historical and new capacity;
- Results in historical capacity at overall lower rate;
- Capacity 400% to 450% of previous agreements (depending on path configuration);
- Increased asset and corresponding liability added to balance sheet;
- Secured equivalent vendor finance terms;
- Monthly repayments only increase by ~24%; and
- Asset life in excess of 13 years and will be repaid over 6 years.

Vocus Communications is a leading telecommunications provider of data center, dark fiber, and international Internet connectivity across Australia, New Zealand, Singapore, and the United States. The company provides high performance, high availability, and highly scalable communications solutions, which allow service providers to quickly and easily deploy new services for their own customer base.

For more information, visit www.vocus.com.au.

BT to link Orkney and Shetland to Scottish mainland

BT is investing £8 million in a new fiber optic transmission link that runs from Inverness through the north of Scotland to Orkney and Shetland. Almost 1,000 km of fiber cable—including 400 km subsea—will be used in the link, making it one of the longest optical transmissions systems in the UK.

The new link will deliver faster broadband over copper lines and a new business Ethernet service to Kirkwall and Lerwick, with similar services being provided along the route at Dingwall, Tain, and Thurso. Alness and Invergordon will also benefit from an increase in broadband speeds.

The link is planned to come into service early next year, when it will carry all the broadband traffic between the Northern Isles and the mainland. The existing microwave radio links that serve Orkney and Shetland will be retained for back-up.

For more information, visit www.bt.com.

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Power Cable

Nordic Offshore wins contracts

Danish offshore contractor Nordic Offshore Marine and UK-based diving company Osiris Marine Services have recently secured several offshore repair contracts and, together with close partners, currently has a fully mobilized DP1 cable burial and repair vessel available for charter for future projects.

Nordic Offshore Marine is actively growing its presence in the offshore repair market and has recently been awarded three new projects in the UK and Brazil.

The two UK-projects are being handled in close cooperation with the partners Osiris Marine Services and Reef Subsea. The contracts include fault finding and repairs of two major interconnectors in the Irish Sea, where the DP1 cable burial and repair vessel Atlantis is presently used to carry out the work. For these projects, the vessel has been equipped with Rotech excavation tool, ROV, dive spread, cable handling equipment, etc.

The two contracts in the Irish Sea are expected to be completed by mid-October,



where after the Atlantis will be available for other projects within the offshore industries.

Separately, Nordic Offshore Marine is currently mobilizing for a major route clearance contract off the Brazilian coast, where the company will support a large cable laying project. Nordic Offshore Marine is handling the route clearance in its own name and with its own equipment being mobilized on board a Brazilian flagged tonnage to execute the contract.

For more information, visit www.nordicoffshore.dk.

Bay of Fundy network will monitor tides

Canada's efforts to become a world leader in tidal energy research and technology are taking a significant step forward. The Bay of Fundy, home to the world's highest tides, will also soon be home to the world's first underwater monitoring platform designed specifically for extreme, high-flow tide conditions.

FORCE (Fundy Ocean Research Center for Energy) announced a new high-tech ocean monitoring program to advance the science around the world's most power-

ful tides, supported by \$10 million from the Government of Canada, Encana Corporation, FORCE participants, and Ocean Networks Canada.

The program will be a world first—designing, building, and deploying a subsea monitoring platform capable of performing in the high-flow conditions of the FORCE test area. The platform will also be connected to the FORCE observation facility by submarine cable.

The subsea monitoring program will allow:

- Continuous, synchronized data collection (including currents, turbulence, and other environmental data);
- More accurate visualization of marine life behavior and movement;
- Real time instrument adjustments; and
- The future development of a new standard of high-flow turbine monitoring worldwide.

The announcement is made possible by \$5 million from the Government of Canada, \$3 million from Encana Corporation (a previous loan converted to a grant), \$1 million from FORCE turbine developers, and \$1 million of in-kind support from project partner Ocean Networks Canada.

In addition, FORCE continued to plan for the future submarine cable installation at its subsea site in the Minas Passage, Bay of Fundy. Cable contractor IT International Telecom rehearsed vessel maneuvering and station keeping between shore and the turbine test area on 19 and 20 August 2012.

These trials will use both the vessels and people expected to perform the future cable lay, including a barge and two Z-drive tugs of 4000 hp; IT will lead the navigation and operation.

The work plan included the rehearsal of station keeping near the shore and rehearsal of station keeping along the proposed cable route.

For more information, visit www.fundyforce.ca.

Svenska Kraftnät, PSE Operator acquire SwePol Link

Swedish National Grid (Svenska Kraftnät) and the Polish national grid company, PSE Operator, have acquired SwePol Link, the submarine power cable link between Sweden and Poland.

Last year, Svenska Kraftnät requested an authorization from the Swedish government and parliament to dissolve the existing package of agreements and establish a system where the interconnector and converter stations are directly owned by the Swedish and Polish system operators. The process has now been completed, and the acquisition results in a simplified owner-



ship structure. All market players will continue to have access to the infrastructure on equal terms, according to the principles of an open market.

The SwePol Link interconnection has been managed by SwePol Link AB since the 1990s, when the link was established as part of a long-term power sales agreement between Vattenfall AB and former PSE in Poland. At the establishment, Svenska Kraftnät owned 51% and Polish PGE owned 49% of SwePol Link AB. The facilities consist of converter stations in Stenungsund and Slupsk as well as a submarine pole cable and return cables. The capacity of the link is 600 MW, and the link has been open to the market since December 2010.

For more information, visit www.svk.se.

Prysmian to supply link across Dardanelles

Prysmian Group has been awarded a contract worth a total of €67 million by the Turkish electricity transmission utility TEIAS for the design, supply, installation, and commissioning of a high-voltage submarine power cable link to connect Europe and Asia across the Dardanelles strait in Turkey. Once completed, the link will be the first high-voltage submarine power cable link ever in the country.

The link comprises a double AC power transmission circuit of approximately 4 km with a rating of 1,000 MW for each circuit between the substations of Lapseki (on the Asian side) and Sütlüce (on the European side) across the Dardanelles strait. The 380-kV XLPE insulated cables will be manufactured in Prysmian's submarine production units based in Europe, and installation will be carried out by the Group's cableship Giulio Verne. Commissioning of the interconnection is scheduled for the second half of 2014.

Prysmian is a leader in the sector of submarine power cable with a leading position as supplier of high-voltage underground cables in Turkey.

Prysmian has a long-standing track record in the development of submarine cable milestones projects in the entire Mediterranean region, such as Italy-Greece, Spain-Morocco I and II, Sardinia-Italian Peninsula (SA.PE.I.), and Iberian

Peninsula-Mallorca (Romulo). The Group is also a founding member of the industrial partnership Medgrid, launched to study the feasibility of a high-voltage direct current interconnection project to transmit electricity from solar or wind power plants to load centers on either rim of the Mediterranean.

The Dardanelles link represents another milestone as it is one of the first AC 380 kV submarine cable links using XLPE insulated cables in the world. These achievements again demonstrate Prysmian's know-how and technologies' validity in the development of state-of-the art cables for power transmission and the commitment to support smarter and greener power grids worldwide.

Among other projects in which Prysmian has recently been involved are some of the largest and most strategic developments, such as the Hudson Project in New York and the Trans Bay Cable in San Francisco. In Europe, Prysmian is playing a key role in the development of power connections for offshore wind farms, with projects either completed or ongoing in Denmark, Holland, UK, and Germany. Recently, the Group has been awarded the Western HVDC link between Scotland and England, a strategic project for the upgrade of the entire British transmission grid. With an extended worldwide industrial footprint of 17 plants dedicated to high-voltage cables and 3 plants mainly dedicated to submarine cables, the Group has invested timely to meet the ever-growing challenges of the industry.

For more information, visit www.prysmian.com.

Reef Subsea debuts new ROV

Reef Subsea has announced the launch of the Q1000 Trench ROV in Newcastle, UK. The Q1000 is a modern, free-flying ROV jet trencher that can operate in water depths of up to 2,000 m and in a variety of soil conditions. The trencher has 1,000-hp installed power and is ideally suited to the burial of rigid and flexible pipelines, umbilicals, and cables for the oil & gas, renewables, power, telecommunications, and subsea defense sectors to 3 m trench depth.

The trencher can operate on skids or tracks and has two high-pressure, high-flow pumps with complete remote control over the pumps' performance. It can be fitted with cable depressor, educator, and trench wall collapse tool. A range of sensors and survey equipment are provided with the trencher to monitor the product during trenching and also carry out post-trench surveys by the trencher.

The trencher will come with a dedicated launch and recovery system, control system, and different workshops. Its modular



design allows it to be mobilized onto and operated from various type of supporting vessels.

Reef Subsea Power & Umbilical has also recently ordered a new heavy-duty flexible plough from the same subsea equipment manufacturer Soil Machine Dynamics Ltd (SMD), which will increase company's capabilities in trenching in harder soil condition from those that Q1000 can trench. The plough is due for delivery in late 2012.

Reef Subsea Power & Umbilical specializes in subsea installation, burial, and trenching services. The company has recently been involved in three of the world's largest wind farm developments offshore the UK, Thanet, Greater Gabbard, and Lincs. In July of this year, the company was awarded a £40 million contract with Gwynt y Mor Offshore Wind Farm Limited to install and bury all the inter-array cables for the wind farm, which is expected to be the largest in Europe.

For more information, visit www.reefsubsea.com.

Reef Subsea awarded contract for Lincs wind farm

Reef Subsea Power & Umbilical has been tasked with the installation and burial of 14 high-voltage power cables at Lincs Offshore Wind Farm located 8 km off the Lincolnshire coastline. The wind farm will have a capacity of 270 MW and will transmit power to the National Grid substation in North Norfolk in 2012.

Reef Subsea Power & Umbilical will provide all onshore and offshore project management and engineering for this project, including all transpooling arrangements. During this project, Reef Subsea Power & Umbilical will utilize their MD3 Cable Plough, and installation spread will be deployed from the Maersk Assister.

Reef Subsea Power & Umbilical also recently secured a major contract with Gwynt y Môr Offshore Wind Farm Ltd, which is expected to be one of the largest wind farms in Europe, and ordered a Heavy Duty Cable Plough with the capability to bury cables and subsea umbilicals up to 200-mm outer diameter and 3-m bending radius.

Reef Subsea is an international group providing cost-effective integrated subsea services—IRM and construction, installation and burial, and dredging and excavation—to the oil and gas and renewables

industries. Its specialized subsidiaries provide operators and contractors with highly experienced personnel, key subsea technologies, and construction support vessels. Reef Subsea serves its clients in the deep-water or demanding environments of the North Sea, Americas, Middle East, and SouthEast Asia areas. Reef Subsea is a 50/50 owned company of GC Rieber Shipping and HitecVision.

For more information, visit www.reefsubsea.com.

New research could save offshore energy sector millions

A key challenge facing the UK offshore renewables industry—how to monitor subsea cables that bring energy onshore—is set to be tackled by researchers at Heriot-Watt University.

An intelligent monitoring system that will safeguard underwater cable networks is being developed, with funding from Scottish Hydro Electric Power Distribution (SHEPD). The system could reduce the energy company's costs and help keep customer bills down.

Sixty percent of subsea cable failure is due to wear and tear. Repairing the cables is very costly, with maintenance vessels and the associated support cost in the region of £30,000 per day. If companies can anticipate cable failures before they happen, they can undertake planned work, which is much more cost effective.

The 12-month, £194,000 project, the first of its kind in the UK, could enable such planned cable maintenance, potentially saving the industry millions.

Staff from Heriot-Watt University's School of Engineering and Physical Sciences will lead a team of experts who will use specialist sensors to provide real-time monitoring and analysis of subsea cables and then send intelligence reports back to shore. The team will include staff at University of Greenwich and WFS Technologies.

The intelligent systems will use off-the-shelf components, including the sort of movement-sensing technology used in automotive airbags. The sensors will be mounted around the cables using a collar, which will be fitted at intervals over the entire subsea circuit length.

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



New Birns Pisces™ 1000W high pressure sodium vapor underwater security light

BIRNS, Inc., an ISO 9001:2008 certified global leader in the design and manufacture of unique lines of high performance lights, connectors, penetrators, and custom cable assemblies for severe environments, has introduced the ultimate underwater security light: the new BIRNS Pisces™. This rugged, 130,000 lumen high pressure sodium vapor (HPSV) lighting system is designed for a range of underwater security applications and for use alongside military submarine docks, but can be tailored for many different applications where long-term use, extremely powerful illumination, and minimal maintenance is required.

The BIRNS Pisces' robust construction features a solid housing fabricated of 63AA-electropolished AISI type 316 stainless steel. With a tough 1.06-in. thick tempered glass lens further supported by stainless steel reinforcing bars, this incredibly durable and powerful system is custom-engineered to withstand long term



immersion in seawater. The 1-kW HPSV lamp operates in a dry, one atmosphere chamber and has a 24,000-hr lamp life, and, in concert with its high-reflectivity mirror-finish reflector, provides intense light output. This high-intensity gas discharge lamp has no filament, making it nearly impervious to shock and vibration in situ. It can be relamped, tool-free, by hand in 60 seconds with commercially available, low mercury (toxicity characteristic leaching Procedure (TCLP) compliant .06mg/liter) lamps. The system comes with two robust wet mateable BIRNS connectors, with gold

plated contacts per MIL-G-45204.

This intensely powerful light stands up to the most punishing conditions at sea, yet it has a slim 13.2-in. wide by 19.7-in. long profile that can be adapted to many rigorous applications. In fact, the lamphead has a pan and tilt mounting yoke for maximum versatility.

For more information, visit www.birns.com.

Highlight your measurements with the new RBRsolo T

RBR Ltd. is pleased to announce the release of the new RBRsolo T – RBR's smallest, lightest, and most versatile single-channel logger. Tested in harsh environments to ensure performance, the RBRsolo T provides reliable temperature measurements even in the most unpredictable conditions. The RBRsolo T is ideal for long-term deployments, bore holes, extreme environ-

ments, or anywhere where size is a concern.

Even though the RBRsolo T is small in size, there is no need to sacrifice when it comes to deployment performance. The RBRsolo T can take up to 20-M readings on a single battery, samples up to 2 Hz, provides 3 years of sampling at 5-sec intervals, has a depth rating of 1,700 m, and uses true USB data download for speed and convenience.

The RBRsolo T is also extremely accurate. The logger is equipped with a pressure-protected thermistor that has a 0.8 sec time constant, providing reliability under varying deployment conditions (initial accuracy $\pm 0.002^\circ\text{C}$). The temperature logger offers exceptional stability; drift is typically less than 0.002°C per year. Along with the logger's numerous features, the RBRsolo T is available for an affordable price, making the RBRsolo T the perfect instrument for your upcoming project!

Greg Johnson, RBR president, stated, "The RBRsolo T is a carefully designed precision thermometer. Not only are the measurement specifications top-flight, but the deployment autonomy is exceptional. The entire team at RBR are very proud of our newest creation."

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



OOI chooses Ocean Sonics to provide broadband ethernet hydrophones

Ocean Sonics Ltd, of Great Village, Nova Scotia, Canada, has been selected by the University of Washington as the sole provider of broadband Ethernet hydrophones for the Regional Scale Nodes (RSN) component of the National Science Foundation's Ocean Observatories Initiative (OOI). The award period for this contract is until 2017.

The OOI RSN is a 900-km cabled ocean observatory network now under construction in the Northeast Pacific Ocean. The OOI, a project funded by the NSF, is planned as a networked infrastructure of science-driven sensor systems to measure the physical, chemical, geological, and biological variables in the ocean and seafloor. As a fully integrated system, OOI will collect and disseminate data on coastal, regional, and global scales. Through a unique cyber infrastructure, OOI will make ocean-observing data available to anyone with an Internet connection. Greater knowledge of the ocean's inter-related systems is vital for increased understanding of their effects on biodiversity, climate change, ocean and coastal ecosystems, environmental health, and climate.

"We are pleased that our hydrophones will be used on this important and innovative cabled ocean observatory, and we look forward to working closely with the OOI RSN scientists and engineers," said Mark Wood, president of Ocean Sonics. "These instruments will be used to help increase understanding of the oceans."

For more information, visit www.OceanSonics.com.

Bowtech Products Ltd adds new Explorer Lite camera to their low light camera range

Bowtech Products Ltd (Bowtech), a market leader in underwater and harsh environment vision systems, has announced that they have added a new camera to their low light camera range – the Explorer Lite. The Bowtech Explorer Lite, low-light level, high-resolution, monochrome CCD (charge-coupled device) camera is the ideal solution for extremely low-light level underwater viewing and navigation and produces excellent images in high-intensity illumination.

The camera can be manufactured with high-quality, hard anodised aluminium housing rated to 1,500 m operating depth as standard, or titanium housing rated to 6,000 m operating depth. It is fitted with a wide-angle, high-speed, aspherical lens, giving a diagonal field of view of 103° through a fully water-corrected front port. It also features built-in reverse polarity and surge protection.

The miniature high-quality 1/2-in. CCD sensor offers high resolution and low-light level sensitivity, making it the ideal camera for low-light underwater viewing tasks.

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



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Product News

ATLANS – new georeferencing and orientation system

ATLANS, a new cost-effective georeferencing and orientation system from iXBlue, has been designed specifically for land and airborne mapping applications being conducted within a limited budget. Significantly, the unit is ITAR-free.

The user gets a compact, lightweight gyro-compass and motion sensor that consumes very little power and yet provides all of the required data for demanding navigation, stabilization and control applications. ATLANS can be easily integrated with standard GNSS and DMI systems and is easily combined with most commonly used flight management, satellite tracking and mobile imaging systems. All of the interface and computing electronics are contained within a single housing that also features an embedded RTK GPS board for centimetre accuracy performance.



ATLANS is based on fiber optic gyroscope (FOG) technology, heavily developed by iXBlue over a period of 25 years and now incorporated into a range of high-performance positioning and navigational aids for use in civil, defence and space applications. Being solid state and having no moving parts, FOGs have become renowned for their ruggedness and stability, and for their extended and maintenance-free service lives.

Benoit Kerouanton, product manager, said, “We have spent a great deal of effort over the years developing FOG technology, not just to improve its performance and reliability but to get us to a position where we can provide simple to use, highly practical systems at very competitive prices. ATLANS capitalizes strongly on this work. It is a small, high-performance unit which comes at a price that will make it a very attractive option for users pursuing a range of UAV and LIDAR mapping, digital imaging and hyperspectral sensing applications.”

For more information, visit www.ixblue.com.

Port of Vancouver uses Clear Signal coating for horizontal ADCP

Severn Marine Technology's (Annapolis, MD) Clear Signal BioFouling Control System has successfully been used on a Teledyne RD Instruments (San Diego, CA) Horizontal Acoustic Doppler Current Profiler (HADCP) in the Port of Vancouver. The HADCP is used for gathering critical current measurements for ship navigation in the port.

The Clear Signal coated HADCP has been deployed since April 2011 with highly successful performance. The Clear Signal greatly decreased biofouling accumulation, cleaning times, and left no residual biofouling as reported by the Port of Vancouver diving contractors.

The Port of Vancouver had suffered extensive biofouling on its HADCP instruments causing unacceptable maintenance costs. The Clear Signal Biofouling Control System is a highly robust coating that has been proven to withstand the rigors of port and harbor use. The Clear Signal coated HADCP remains in full use in the Port of Vancouver and as a result of its success, another HADCP has been coated with Clear Signal. For more information, visit www.severnmarinetech.com.

Ocean News & Technology 2012/2013 EDITORIAL CALENDAR

December 2012

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

2013 EDITORIAL CALENDAR

January/February 2013

Editorial: Decommissioning & Abandonment, Subsea Fiber Optic Networks
Distribution: Decommissioning & Abandonment Summit, NACE, Offshore Mediterranean, U.S. Hydro
Product Focus: Navigation, Mapping & Signal Processing

March

Editorial: Oceanology & Meteorology, Maritime Security
Distribution: Ocean Business
Product Focus: Ocean Instrumentation, Diver Detection Systems

April

Editorial: Offshore Technology, Ocean Mapping & Survey
Distribution: GMREC, IDGA Maritime Homeland Security, OTC
Product Focus: Connectors, Cables & Umbilicals

May

Editorial: UW Imaging & Processing, Marine Salvage
Distribution: EnergyOcean, Oceans '13 Bergen, Sea Work Intl, UDT
Product Focus: Cameras, Lights & Imaging Sonars

June

Editorial: Workclass ROVs, Deepwater Pipeline & Repair & Maintenance
Distribution: TBA
Product Focus: Subsea Tools & Manipulators

July

Editorial: AUVs & Gliders, Marine Construction
Distribution: AUVSI
Product Focus: Tracking & Positioning Systems, Seismic Monitoring

August

Editorial: Defense & Naval Systems
Distribution: TBA
Product Focus: Multibeam & Side Scan Sonars

September

Editorial: Ocean Observing Systems, Ocean Renewables
Distribution: Oceans MTS IEEE, SPE ATCE, MREC, MTS Dynamic Positioning, AWEA/Offshore Windpower
Product Focus: Buoys & Monitoring Instrumentation

October

Editorial: Subsea Inspection, Repair Maintenance, Offshore Communications
Distribution: LAGCOE, Subsea Survey/IRM, Clean Gulf, Oil Comm, North Sea Decommissioning
Product Focus: Acoustic Modems, Releases & Transponders, Marine Communications

November

Editorial: Offshore Vessels, Subsea Telecom
Distribution: International Workboat
Product Focus: Handling Equipment, Winches & Control Systems, Battery Technology

December

Editorial: Light Workclass ROVs, Commercial Diving
Distribution: Subsea UK, Underwater Intervention
Product Focus: Diving Equipment & Buoyancy Materials

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VIDEO-IN-PRINT – Embed video in your ad! Viewed by digital and APP readers, your VIP can be informational, inspirational, and/or entertaining.

NEW Ocean News Interactive – Using this new discussion board, digital subscribers can now interact with the author by asking questions or making comments at the end of selected articles.



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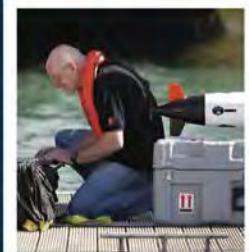
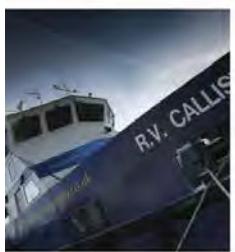


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People & Company News

Jeff Miller was promoted to executive vice president and chief operating officer of Halliburton. He will be responsible for the company's global operations as well as business development and marketing. Miller has held a number of positions at Halliburton, including most recently as senior vice president of global business development and marketing, responsible for strategic account management, sales, and marketing. He has also served as senior vice president of Halliburton's Gulf of Mexico region, vice president of the company's Baroid business line, country vice president for Indonesia, and country vice president for Angola. He holds a bachelor of science degree in agriculture and business from McNeese State University and has a master of business administration degree from Texas A&M University. Miller is a certified public accountant and a member of the Texas A&M University Look College of Engineering Advisory Board.

Intertek appointed **Greg Dinkelman** as business development manager to expand the company's calibration and metering service offering in Sub Saharan and West Africa. Based in Cape Town, South Africa, Dinkelman is responsible for developing the business as part of Intertek's growth strategy, which will also see the development of local offices in the region. The company already has plans to open a calibration laboratory in Ghana in the coming months. Dinkelman joins Intertek with over 10 years' experience in the industry, in both management and in the field, and is placed to drive forward Intertek's business in Africa. His job includes calibration of



Dinkelman

process and test equipment and pressure and temperature instruments as well as meter-proving and volume and flow measurement.

Teitur Poulsen has assumed the position of vice president of corporate planning and investor relations at Lundin Petroleum AB and assumed overall responsibility for investor relations as well as corporate development. Poulsen re-joins Lundin Petroleum from Det norske oljeselskap ASA where he served as chief financial officer. Prior to that he worked for Lundin Petroleum where he held various positions, including group economics and planning manager. Poulsen also previously worked for Faroe Petroleum plc and Dana Petroleum plc. In addition to the vice president of corporate planning and investor relations, Lundin Petroleum also created a role of manager, media communications filled by **Robert Eriksson**, a business reporter in Sweden during the late 1990s and early 2000s. He served as the U.S. correspondent of Swedish business daily Finanstidningen.

McDermott International, Inc. said that **William H. Schumann, III** was appointed to its board of directors, effective 24 September 2012. Schumann will also serve on the company's audit and governance committees. He retired from FMC Technologies, Inc., a leading provider of subsea technology solutions to the energy industry and products for other industrial markets, in August 2012 following over 30 years of service. During his career with FMC, Schumann held positions of increasing responsibility, including serving over 10 years as chief financial officer. Schumann, 62, holds a bachelor of science degree in engineering and a master of science degree in management science.

The advertisement features a large banner at the top with the text "Save the Date" in yellow, overlaid on a background image of an offshore oil rig at sunset. To the right, a white vertical panel contains the text "Registration Now Open!" and the website "www.MCEDD.com". Below this, the conference details are listed: "MCE DEEPWATER DEVELOPMENT", "18 - 20 March, 2013 · The World Forum", "The Hague · The Netherlands", and the website "www.MCEDD.com". To the right of the text is the "mce" logo, which consists of three interlocking rings in purple, gold, and red, with "Deepwater", "mce", and "Development" written vertically around them. A yellow ribbon banner across the logo reads "10th Annual". At the bottom left, it says "Organized by" with the "Quest Offshore" logo. A Shell logo is positioned next to the "Hosted by" text.



Captain Alex Sweeney has joined Crowley's solutions group as vice president, project operations. Sweeney, who most recently served as vice president of operations for Crowley's petroleum distribution group in Alaska, will remain in Anchorage and report to Michael Johnson, vice president, project management. In his new role, Sweeney will be responsible for the planning, coordination, and management of select solutions projects. He will also assist the solutions business development team in pursuing project opportunities. Sweeney began his career with Crowley in 1980 working on tugboats, and his experience spans across all sectors of the maritime industry.

Sigma Offshore, an international FPSO moorings and marine engineering services company, appointed a leading industry figure to its executive ranks as the business looks to expand with the launch of a new London office. **Bob Coates**, who was previously a director with London Marine Consultants, which is now part of Singapore-based Ezra Holdings, was named chief operating officer at Sigma Offshore, which has its headquarters in Aberdeen, UK. His remit includes responsibility for developing Sigma's presence in London, where the company aims to recruit a core team of approximately 20 engineers and designers, naval architects, and project support personnel within its first year of operation, with further expansion planned in future years as the business matures. An experienced senior manager, Coates started his career in 1978 as an apprentice ships draughtsman and later gained bachelor's degrees in engineering and law. He has more than 25 years of experience in the marine and offshore industries.

Atwood Oceanics, Inc. said that **Glen Kelley**, senior vice president, marketing and business development, will step down from his current position effective 1 January 2013 and will retire from the company effective 31 December 2013. Kelley began his career with Atwood in 1974, and over his period of service held a number of business development and administration positions until assuming his current role in 2004. He holds a bachelor of business administration degree from the University of Texas. Separately, effective 1 October 2012, Atwood's board of directors appointed **Geoff Wagner**, currently director, marketing and business development, to vice president, marketing and business development. Upon Kelley's resignation from his current position in January, Wagner will assume worldwide leadership of Atwood's marketing and business development activities and organization.

Bluefin Robotics, a leading provider of Autonomous Underwater Vehicles (AUVs), is pleased to announce that **Mr. Eric Levitt** has joined the company as sales director for commercial and international markets. His primary focus is to expand Bluefin's worldwide footprint as an AUV innovator and world-class solutions provider. Levitt has over 20 years of sales and marketing experience in both domestic and international markets for subsea technology. Before joining Bluefin, he was business development and sales manager at General Dynamics C4S Systems for Underwater ISR (Sonar) Solutions. In this role, he developed export markets for mine countermeasure (MCM) and anti-submarine Warfare (ASW) applications.

Ashtead Technology Offshore, a leading international subsea equipment solutions specialist, has announced its move to new global headquarters in Westhill, Aberdeen. The investment in the new premises follows the recent appointment of Allan Pirie as CEO. The new facility has doubled the company's capacity incorporating offices, warehouse, maintenance workshops, and a specialized calibration laboratory, representing a £750,000 investment. Ashtead Technology has recruited 15 new staff in 2012, and the new base will enable further recruitment plans in 2013.

November 20-21, 2012
North Sea Decommissioning Conference
 Aberdeen
www.decomworld.com

March 19-21, 2013
Nace Corrosion 2013
 Orlando, FL
www.nacecorrosion.org

December 3-5, 2012
OTC Arctic Technology Conference
 Houston, TX
www.otcnet.org

March 20-22, 2013
 Offshore Mediterranean Conference
 Ravenna, Italy
www.omc.it

December 5-7, 2012
International Workboat
 New Orleans, LA
www.workboat.com

April 9-13, 2013
 Ocean Business 2013
 South Hampton, UK
www.oceanbusiness.com

January 15-17, 2013
Underwater Intervention
 New Orleans, LA
www.underwaterintervention.com

April 10-11, 2013
 Global Marine Renewable Energy Conference
 Washington, D.C.
www.globalmarinerenewable.com

January 21-23, 2013
GoM Oil Spill & Ecosystem Science
 New Orleans, LA
www.gulfofmexicoconference.org

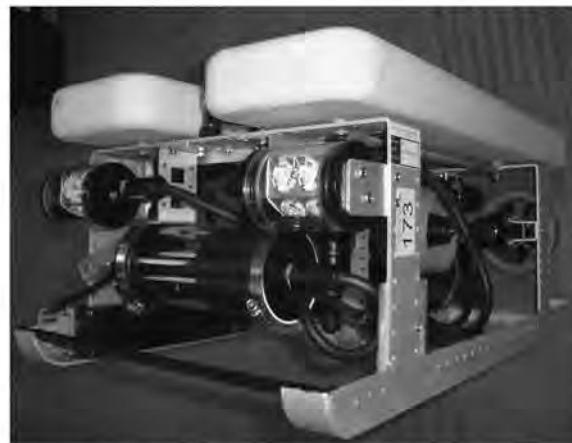
May 6-9, 2013
 Offshore Technology Conference
 Houston, TX
www.otcnet.org

March 19-21, 2013
Decommissioning and Abandonment Summit
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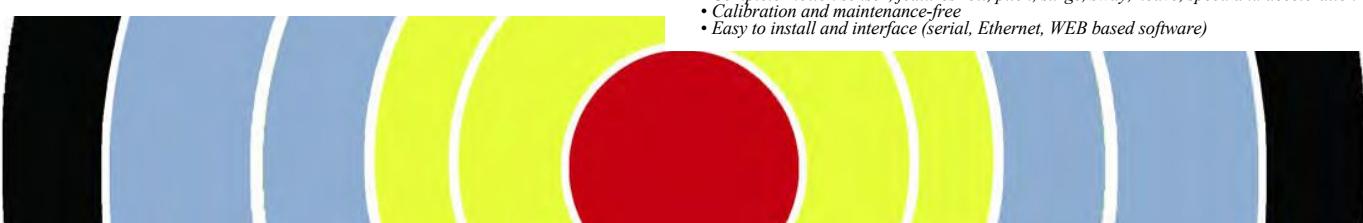


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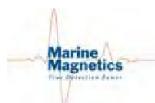
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Bruntsland Road
Portlethen, Aberdeenshire, AB12 4QL
Tel: +44(0)1224 781123, Fax: +44(0)1224 783407
Email: michael@m-re.com
Website: www.m-re.com
Contact: Mike Kernaghan

MaRE provides an International Brokerage and Equipment Sourcing service to the underwater industry. We are the world's leading source of used ROV systems and components. "DeepSearch", a free-issue database, is distributed monthly highlighting used ROVs and associated equipment for sale worldwide. Our Procurement department offers an equipment and spares sourcing service which complements the brokerage side of the business. MaRE also provides Consultancy on all aspects of remote underwater technology.

SONAR SYSTEMS



BlueView Technologies, Inc.
2515 N. Northlake Way, Suite 214
Seattle, WA 98103, USA
Tel: (206) 545-7260
E-mail: info@blueview.com
Website: www.blueview.com
Contact: Beto Campos - Director, Global Com. 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 Currie

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 881 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: jdmille@marinesonic.com
Website: www.marinesonic.us

Marine Sonic Technology, Ltd. builds high quality, high resolution side scan sonar systems. Located in Gloucester, Virginia, Marine Sonic has been in business for more than 20 years. Our towed systems are rugged, easy to deploy and easy to operate. We also offer highly efficient embedded side scan systems for use in AUVs which occupy minimal space in the vessel and operate with minimal power consumption.

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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@soundsmetrics.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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Tel: +47 56 11 30 66, Fax: +47 56 11 30 69
E-mail: info@saivas.no
Website: www.saivas.no
Contact: Gunnar Sagstad

- STD/CTD, Sound Velocity probes/recorder with optional multi-parameter facilities; Turbidity, Fluorescence, Oxygen etc.
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SUBSEA FABRICATION



NEW Industries
6032 Railroad Avenue
Morgan City, LA
Tel: 985-385-6789
E-mail: bill.new@newindustries.com
Website: www.newindustries.com
Contact: Bill New

New Industries (NI) provides quality fabrication services to the offshore oil & gas and marine industries. NI focuses on large diameter, pressure vessels and deepwater subsea equipment such as jumpers, PLETs, PLEMs, suction piles and ROV components.



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Seanic Ocean Systems
8860 Fallbrook Drive
Houston, TX 77064
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E-mail: contact@seanicusa.com
Website: www.seanicusa.com
Contact: Karen North

Seanic Ocean Systems is an industry leader in providing simple, rugged and reliable subsea tooling for remote intervention.

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SEACON Advanced Products, LLC.
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Bellville, Texas 77418, USA
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E-mail: sales@seacon-ap.com
Website: www.seacon-ap.com

SEACON Advanced Products, LLC., manufactures a wide variety of versatile and robust switches to suit a number of applications. These include Limit, Positive Action and Proximity switches in a range of materials including Titanium, Plastic and Stainless Steel which can be supplied in varying load capacities up to 7 amps and pressure rated to 10,000 psi. To further aid simplicity, our proven range of Modular Proximity Switches have been integrated with the Micro WET-CON electrical-wet mate connector making this switch a very modular component that is easily installed and replaced in the field, but without compromising reliability.

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Tel: (805) 683-2575, Fax (805) 967-8199
E-mail: sales@itc-transducers.com
Website: www.channeltechgroup.com
Contact: K.Ruelas, pres.; B.Dolán, Director of Business Development; E.Kunstal, eng. mgr.

The Science of Sound Performance – ITC, a Division of Channel Technologies Group (CTG), designs and manufactures both custom and off-the-shelf underwater, air, and ultrasonic acoustic transducers, projectors, hydrophones, hydrophone/preamp, side-scan arrays, OEM and end-item products for commercial and military applications.

UNDERWATER THICKNESS GAUGES



Cygnus Instruments, Inc.
PO Box 6417
Annapolis, MD 21401 USA
Tel: (410) 267 9771
Fax: (410) 268 2013

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

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

UNDERWATER VEHICLES

AUVs

EXOCETUS



Exocetus Development LLC
1444 East 9th Avenue, Anchorage, AK, 99501
Tel: 858-864-7775, Fax: 907-569-0268
E-mail: sales@exocetus.com
Website: www.exocetus.com
Contact: Ray Mahr, VP Sales & Marketing

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ROVs



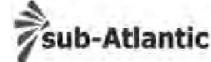
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Houston, TX 77041
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E-mail: perry.sales@f-e-t.com
Website: www.f-e-t.com/Subsea

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.



SeaBotix Inc.
2877 Historic Decatur Road, Suite 100
San Diego, CA 92106 USA
Tel: +1 619 450-4000
Fax: +1 619 450-4001
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.

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UNDERWATER VEHICLES

ROVs



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.

UVVs



iRobot Corporation | Maritime Systems

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

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

UNDERWATER VIDEO EQUIPMENT



KONGSBERG

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Shark Marine

23 Nihon Dr., Unit 4
St. Catharines, Ontario L3N 1L2
Tel: 905-687-6672, Fax: 905-687-9742
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.



SIDUS Solutions, Inc.

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Fax: (619) 275 5544
Houston, TX Office:
Tel: (281) 658-2555
E-mail: info@sidus-solutions.com
Website: www.sidus-solutions.com

SIDUS Solutions LLC is an integrated systems provider for security and video surveillance systems specializing in customization. Our products are operational to subsea depths of 6,500m, serving industries worldwide. We are a full service provider, offering end-to-end solutions from concept design, product selection, engineering, manufacturing, technical and customer support. Industries we serve are Oil and Gas, Scientific, Military and Academic.

Continued ■

Continued ■

WINCHES, HANDLING & CONTROL SYSTEMS



Hawboldt Industries

220 Windsor Road
Chester, Nova Scotia, Canada B0J 1J0
Tel: 902 275 3591
Fax: 902 275 5014
E-mail: paul.phillips@hawboldt.ca
Website: www.hawboldt.ca
Contact: Paul Phillips

Hawboldt Industries has built robust commercial and scientific deck machinery for over a century, focusing on custom winch solutions and satisfying project requirements from engineering to commissioning. ROV winches, A frames, and electro-hydraulic power packs are available to satisfy the offshore and subsea markets. Our scientific winches, preferred by universities and governments worldwide, are renowned for their durability and performance particularly in harsh environments.



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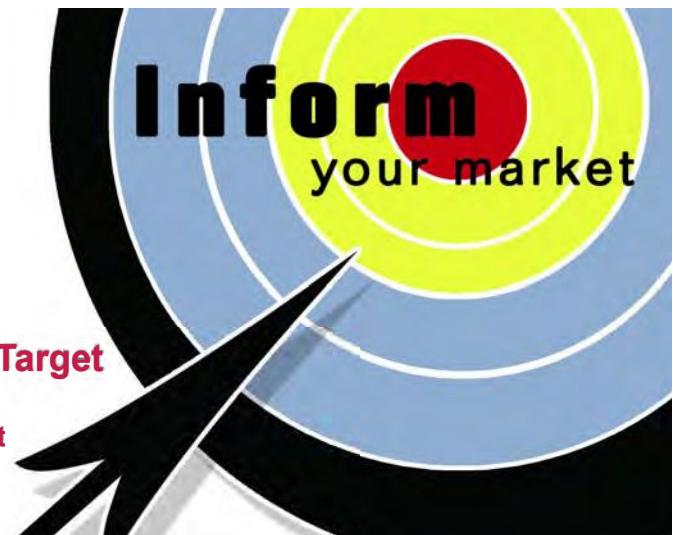
WINCHES - UNDERWATER

ALL OCEANS Engineering Ltd.

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Aberdeen AB21 0TT, UK
Tel: +44(0)1224 791001, Fax: +44(0)1224 791002
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Contact: Brian Abel

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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 category. Place 2, 3 and 4 next to other markets served.)

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

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

- | | |
|--|--|
| 1. <input type="checkbox"/> OWNER / EXECUTIVE | 5. <input type="checkbox"/> BUYER |
| 2. <input type="checkbox"/> MANAGEMENT / PROFESSOR | 6. <input type="checkbox"/> SALES |
| 3. <input type="checkbox"/> ENGINEER / SCIENTIST | 7. <input type="checkbox"/> OTHER (Please specify below) |
| 4. <input type="checkbox"/> TECHNICIAN / OPERATOR | <hr/> |

**5 How many other people will
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- accuracy: up to 0.04 degrees

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- range: up to 8000 m
- accuracy: better than 0.01 m

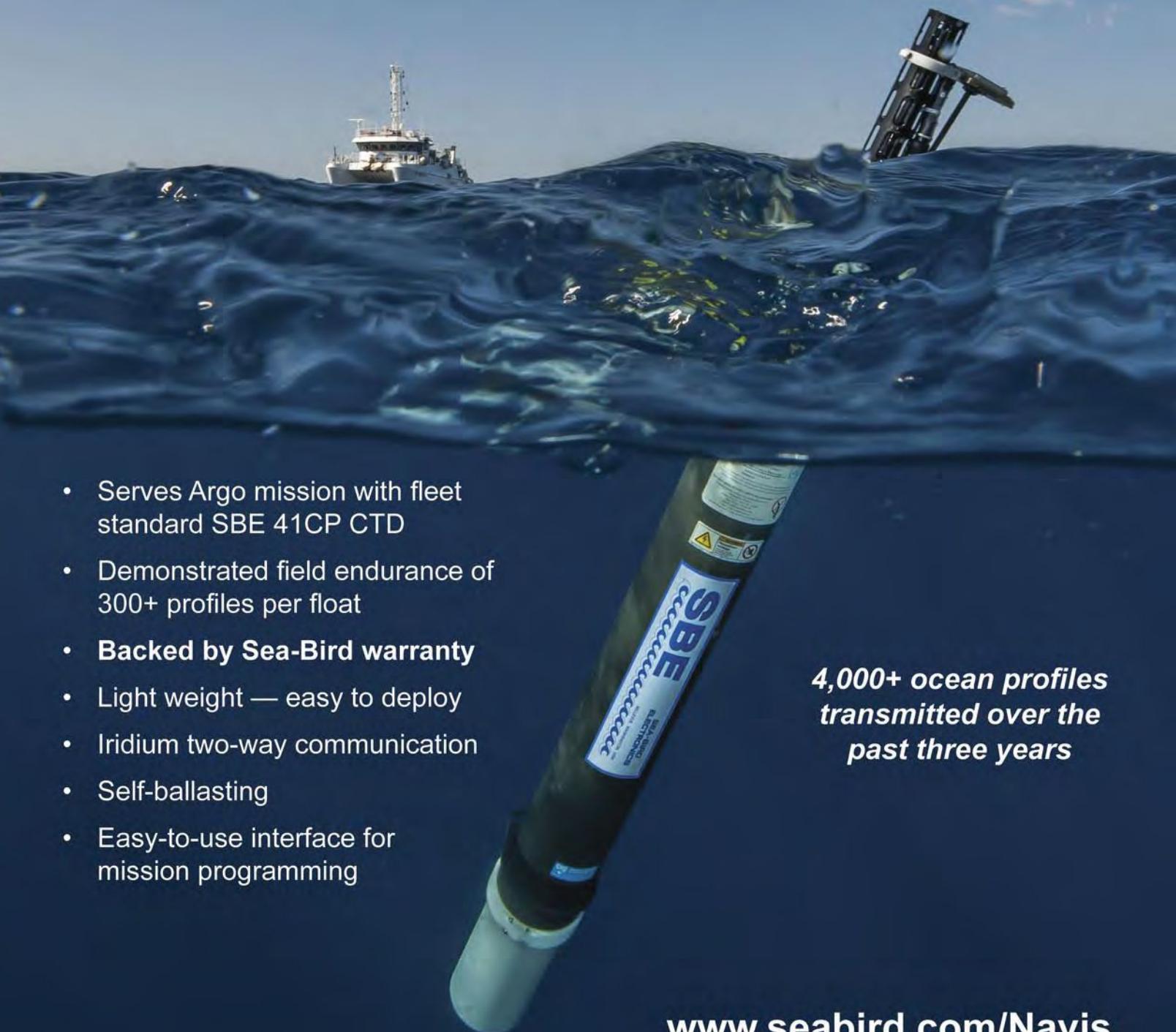
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