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Ocean News & Technology
September 2011

Offshore Wind

The Need for a "Supergrid"

Worldwide Submarine Telecom Activity

Special Report - Page 20

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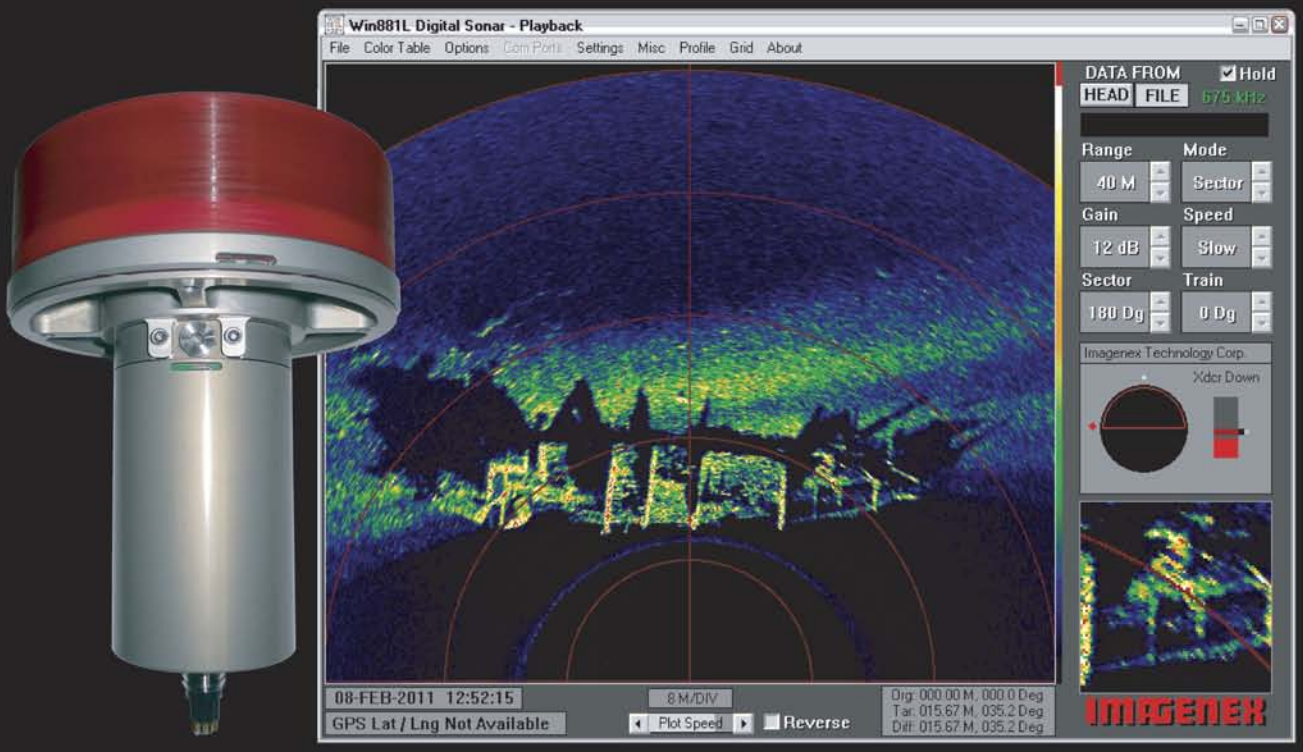

Sonar image of the Minesweeper shipwreck, *VT-100*

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Wind Turbine Heading out for Offshore Wind Farm
Image courtesy of:
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- Acoustic Modems, Releases & Transponders

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Ocean News & Technology is published 10 times a year by Technology Systems Corporation, 8502 SW Kansas Avenue, Stuart, FL 34997, telephone 772-221-7720.

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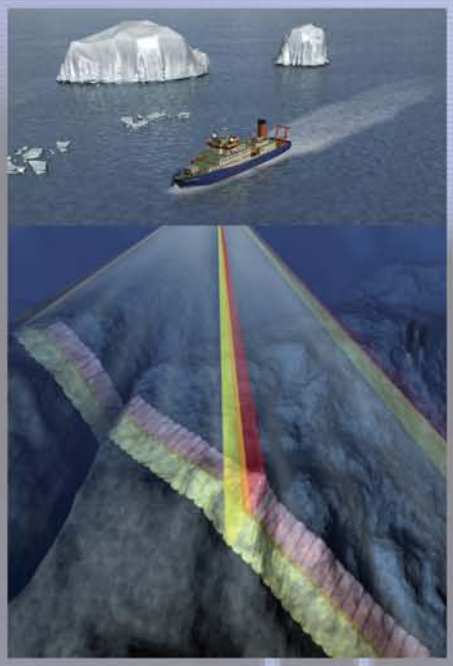

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By Ray Tyson

Ocean News & Technology

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Study: 60% drop in GoM drilling permits, and much more ...

A recent study financed by private industry shows just how dramatically business slowed in the U.S. Gulf of Mexico during the six months following the lifting of the Obama administration's drilling moratorium, and certainly does not reflect well on the administration's so-called pledge to help speed up the regulatory process in the wake of last year's Deepwater Horizon disaster that killed 11 and led to the largest ever oil spill in the U.S. Gulf. In fact, the study numbers show the opposite occurring.

The study, done by IHS CERA and IHS Global Insight, blames a "congestion point" inside the regulatory oversight process that's holding back exploration and production activity in the Gulf of Mexico. Consequently, this is holding back the economic benefits that would accrue to the entire United States if the activity matched industry capacity.

The study finds that industry has the capacity to add $44 billion to the U.S. gross domestic product while supporting 230,000 jobs, one-third of which are outside the Gulf region. Another $22 billion in wages and compensation would be realized, along with $18.6 billion in federal, state, and local royalties; bonus payments; and taxes over the next three years. In addition, 400,000 bbl/d of oil could be realized from new production.

The study looks at the plan and permit levels in the 6 months following the lifting of the deepwater activity moratorium in October 2010. The analysis finds the following:

- 250% increase in the backlog of deepwater plans pending governmental approval;
- 86% drop in the pace of regulatory approvals for plans;
- 60% drop in all Gulf of Mexico drilling permits;
- 38% increase in the time required to reach each regulatory approval required.

Michael Bromwich, the head of the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE), said the IHS CERA report presents "misleading conclusions about the current state of offshore oil and gas drilling."

In a letter to IHS CERA Chairman Daniel Yergin, Bromwich said the report overlooks the sweeping changes in drilling safety and environmental reviews that the government implemented after last year's spill. That includes a mandate that oil and gas companies be prepared to contain crude from a blown-out underwater well — a requirement that industry was unable to satisfy until early this year.

I really don't understand Bromwich's point. If anything, his view supports study conclusions that increased regulations, whether justified or not, have indeed slowed the permitting process in the U.S. Gulf. The study was specifically designed to quantify the activity gap between oil and gas company investment capacity and the regulatory capacity to process and oversee the work.

For one, the complexity of new drilling equipment and inspections required in the Gulf of Mexico in a post-Macondo world is likely to result in more downtime on rigs going forward, according to the heads of two major drilling companies.

"I'm just cautioning you that as we move through the months and years ahead and we more clearly define what the rules and expectations are, it's clear that we may have more downtime," Noble CEO David Williams said during a quarterly conference call. "The ultimate saddle for this may ride on the backs of the consumer, because it's gonna cost more to drill these wells."

Larry Dickerson, CEO of deepwater driller Diamond Offshore, also said in his company's quarterly conference call that his employees are similarly preparing for more time spent on rig inspections, particularly on key components. "In future projections, we're building in a little more downtime for blowout (preventer inspections)," he said.

This is the first in a series of studies IHS expects to conduct into the status of the U.S. Gulf oil and gas activity post-Macondo. The next version will look at the whole year since October 2010 to examine the quantifying factors affecting the activity and to understand where industry stands at the moment.

One unexpected finding from the study was that "an increase in oil and gas activity reverberates throughout the broader economy," said James Diffley, senior director of IHS Global Insight's U.S. Regional Economic Group. "Each new hire (in the Gulf) results, on average, in more than three additional jobs in an array of industries around the country," not just in the Gulf region.

"It is up to both the regulators and industry to find the reasons for this congestion point and to determine what needs to be done," Yergin said of the study's conclusions.

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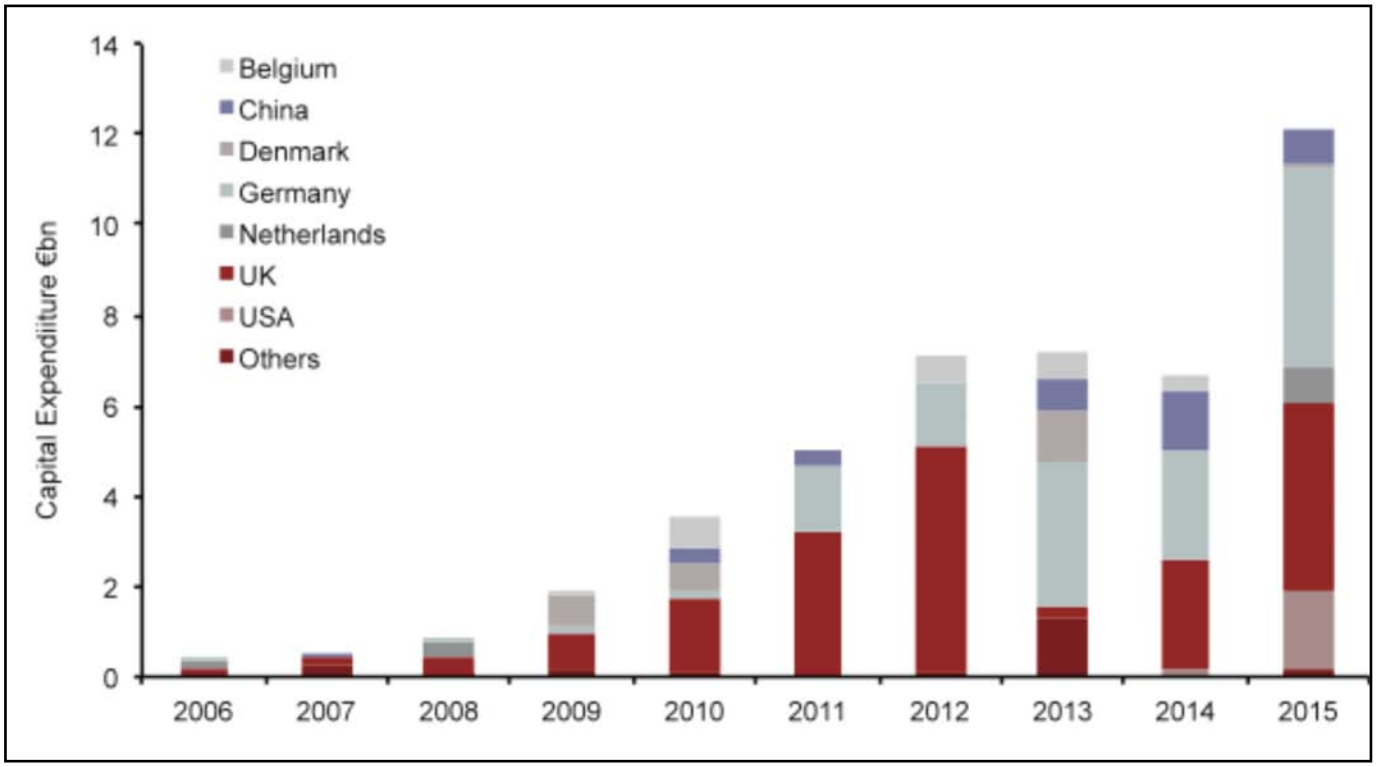
Offshore Wind Spend of €38 Billion Forecast by 2015

By Adam Westwood, Lead Author, Energy Business Analysts Douglas-Westwood



Capital Expenditure by Country 2006-2015

Introduction

There is now almost 3GW of offshore wind capacity online worldwide with in excess of 2GW currently under construction. Total planned capacity is currently in excess of 100GW. The industry has moved out of its infancy and, whilst there are major challenges ahead, it is now becoming increasingly independent from the onshore wind industry.

Market Forecast

Between 2006 and 2010 a total of 2.5GW of offshore wind capacity has been installed. Over 11GW of new capacity will be added over the next five years. The UK, Germany and China are the three biggest markets, which together will install almost 9.3GW or 83% of total global capacity for the period.

This growth in installation translates into €38 billion of offshore wind capital expenditure being forecast for the 2011-2015 period. Between 2008 and 2010 expenditure has doubled year-on-year due to increased activity and increased costs. Expenditure will grow to over €12 billion annually in 2015. While there is a dip in 2014, the spread of expenditure is expected to smooth this out. The UK is the largest market, with over €15 billion of expenditure and peaks in 2012 of €5 billion and €4 billion in 2015. Germany too has growing expenditure through the period rising from €150m in 2010 to €4.3 billion in 2015.

Europe

Europe is still very much the focus for offshore wind activity. Installations off the UK continue to increase pace, German projects are now entering construction, Belgium continues to develop at a modest pace and activity is imminent again off the Netherlands.

The UK will continue its position as the leading market for offshore wind through the next five years. The structured licensing rounds have helped build the UK's leading position at present and offer confidence to the long-term view. Activity on Round 2 projects is ongoing until the end of the period, at which point extensions to Round 1 and 2 projects are due to come online. These extensions will help bridge the gap before the first Round 3 and Scottish Territorial Waters (STW) projects come online.

The adaptive Renewables Obligation (RO) has ensured sufficient incentive is offered to project developers to date. There was some concern that changes to the RO would be made in October 2010 when sweeping cuts to UK government spending was made. The mechanism was left unchanged, however, with the Government demonstrating support to renewable energy. If the level of support was cut significantly it would call into question the viability of many projects in light of the high-cost environment the industry is currently in.

With 4.4GW of new capacity coming online, the UK is the biggest market for the 2011-2015 period. Installation rates around 2013 and 2014 are slightly lower ahead of the first Round 3 and STW projects.

Having long promised market growth, Germany is now starting to live up to expectations, with construction underway on the first commercial projects. Visibility to 2015 is good, with most projects at an advanced stage of contracting. With an updated market mechanism and grid connection policy there is confidence on project delivery. With fewer large utilities involved on projects than in the UK, the difficulties or delays may come in securing financing. Towards the end of the period, competition for supply chain capacity and assets is expected to intensify in light of the strong UK market.

Recent licensing of projects off the Netherlands has given a boost to the market here after a lack of commitment and uncertainty has clouded the outlook in the past few years. Contracting on approved projects can now get underway. Some activity will take place in the period to 2015, but many projects will not be completed until after this. The government must now act to ensure its 2020 offshore targets can be reached.

Asia

The Asian market is perhaps the most exciting. With little visibility on activity to date, the emergence of China in particular has surprised many. It is the third largest market in terms of expenditure between 2011 and 2015 with over €3 billion expected. Only €338m has been spent to date, so the rate of growth is very strong as China's expenditure increases from 9% of the market in 2010 (China's first significant expenditure) to 20% in 2014. With projects reaching completion in as little as three years (compared to typically six to ten in Europe) we see significant upside potential here.

We anticipate that China could become the world leader in offshore wind, overtaking the UK early in the next decade. Having entered the offshore wind industry only recently, the country has massive ambition. A succession of small projects is now underway with construction of many larger projects imminent. With firmer legislation and tariffs due imminently, the growth is expected to be rapid – as happened once China set onshore wind tariffs and policy. The imminent implementation of massive smart grid upgrades will boost the potential of offshore wind energy further.

Current projects are able to benefit from shallow waters, many areas of which are intertidal zones. Many of the companies pushing forward projects are relatively small players in the onshore market who are choosing to become early offshore leaders. The Chinese National Offshore Oil Corporation (CNOOC) is amongst the most ambitious with several GW of projects now planned.

The domestic supply chain is developing rapidly. Offshore wind turbines are now in production by a number of manufacturers. 2.3MW, 2.5MW, 3MW and 3.6MW turbines are available with the first 5MW turbines nearing commercialization. Project development and construction is almost all domestic, and there are strict policies on international involvement.

China's next five year plan is due for approval in 2011 and is expected to include around $750 billion of investment into developing alternative energy.

Elsewhere in Asia, South Korea is emerging as a potential growth area. Ambitious plans call for 5GW of offshore wind capacity by 2019. The first site of 1GW is moving ahead, the first phase of which will see 20 test turbines installed in 2013, with the remaining turbines following quickly.

North America

The recent approval of the 130-turbine Cape Wind offshore wind farm is of great significance to the industry in the U.S. The fate of that project has long been expected to herald the potential of other offshore wind projects in the country. It first filed for a permit in 2001 and has overcome numerous legal challenges and hurdles on its path to approval. The first 25 year lease for commercial wind energy development at the site was signed at the beginning of October 2010. A turbine supply agreement is hoped to be signed by of 2011.

The project's progression will necessitate new legislation and policy on offshore wind. The Obama administration has taken a positive stance on offshore wind to date, which is promising. The difficulties come with how implementation will be carried out amongst different states.

There are now a large number of proposed projects. By European standards, many of the proposals would be classed as optimistic at best but others are progressing. The next year should offer project developers the necessary clarity in terms of legislation.

With Cape Wind inching towards construction, the U.S. supply chain must now respond. With no dedicated manufacturers or contractors, early projects may struggle to control costs.

Google is investing heavily in a $5 billion transmission "backbone" off the Atlantic Coast to help bolster this emerging market. The transmission line is expected to be constructed 20 miles offshore and stretch from Virginia up to New Jersey.

The U.S. Department of Energy estimates that 54GW of offshore wind could be included in the 300GW required to meet 20% of the U.S. electricity needs in 2030. It is hoped further guidelines for development areas will be issued sometime in 2011.

Market Dynamics

Costs have plateaued for the main part; large scale investment in the supply chain has been met by demand from project developers. With the ramp-up in construction expected to continue for much of the next five years, cost savings are expected to be mediocre. The demand upon the financial sector is rising. Confidence amongst investors is slowly growing but cautiousness remains. The reliance on the European Investment Bank to support projects is risky. Further commitment from Governments is needed beyond the near-term future in order to give comfort to the banks and private equity. The level of investment required is unlikely to match investor's appetites otherwise.

Supply chain development is happening quickly and there is greater distinction between the offshore and onshore sectors. A year ago the UK may have had the most offshore wind capacity in the world but it had little to show for it. Twelve months on and multiple offshore turbine manufacturers are establishing themselves in the country and other areas of the supply chain are following suit, re-invigorating troubled manufacturing companies. In 2010, turbine manufacturers Siemens, Clipper, Mitsubishi, GE and Gamesa have all committed to a UK presence. Off Germany, careful investment over the past five years is paying rewards, with German companies now taking a large share of the European market.

To date there have been few options for developers in terms of turbines. Vestas and Siemens have held dominance over the market with their 3MW and 3.6MW turbines respectively. The advent of 5MW class turbines has helped open the market with 5MW and 6MW turbines from Repower Systems and the 5MW Multibrid turbine from Areva Wind. These smaller manufacturers are now taking market share from the leaders as projects off Germany move forward and larger-still UK projects draw near.

Technology progression is visible and offers the potential for greater efficiency and cost savings. Developing installation techniques, such as increasing the use of dynamic positioning on vessels, appears to be demonstrating time savings. Many new installation vessels are under construction in Asian yards from existing and new operators seeking to win a share of the burgeoning industry. With projects using larger hardware in more demanding locations, newbuild vessels must be specified to cope with the changing nature of sites.

Changes in the operations and maintenance phase are taking place. The first offshore accommodation platform has been installed at Horns Rev II with a further two contracted for other projects. Personnel transfer vessels will be in high demand and are evolving to suit the needs of new projects. Turbine reliability is often an area manufacturers shy away from offshore, although Repower Systems has been boasting of over 97% availability on its 5MW turbines at the Alpha Ventus project off Germany – comparable to an onshore site. These are figures investors want to hear and which bring confidence to the industry.

Conclusions

With over 3GW of capacity online by the end of 2010 and a further 2GW under construction, the offshore wind industry is stronger than ever. Whilst the UK has helped build the momentum in recent years (and will continue to do so) the large German market is now coming to life with project construction finally underway. Outside of Europe there is a spark of activity in China which could generate the largest market worldwide in as little as ten years.

The World Offshore Wind Market Report 2011-2015, is the latest in the acclaimed series of Douglas-Westwood business studies and is built on the company's unique knowledge of the sector. Douglas-Westwood carries out commercial due diligence work for the financial community and business research, market analysis and strategy work. Douglas-Westwood has clients in more than 70 countries and to date over 650 projects have been completed. Clients range from the energy majors and military contractors to equipment manufacturers, financial institutions, research organizations and departments of government in several countries. For more information, visit www.douglas-westwood.com

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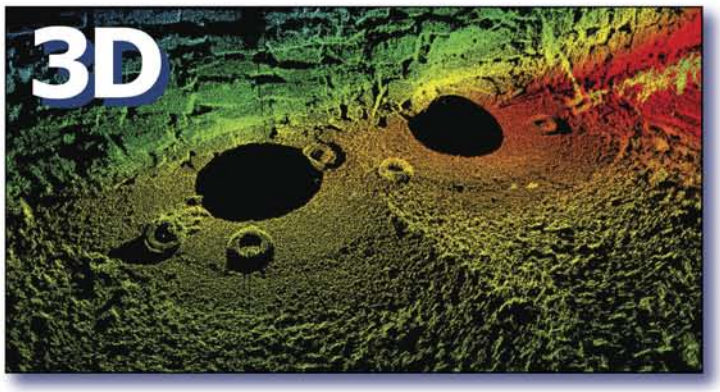

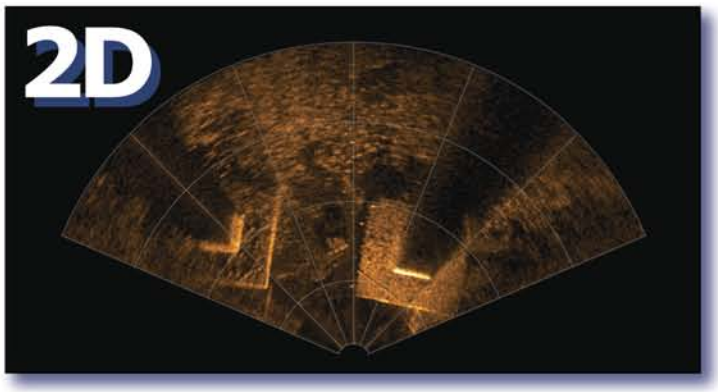

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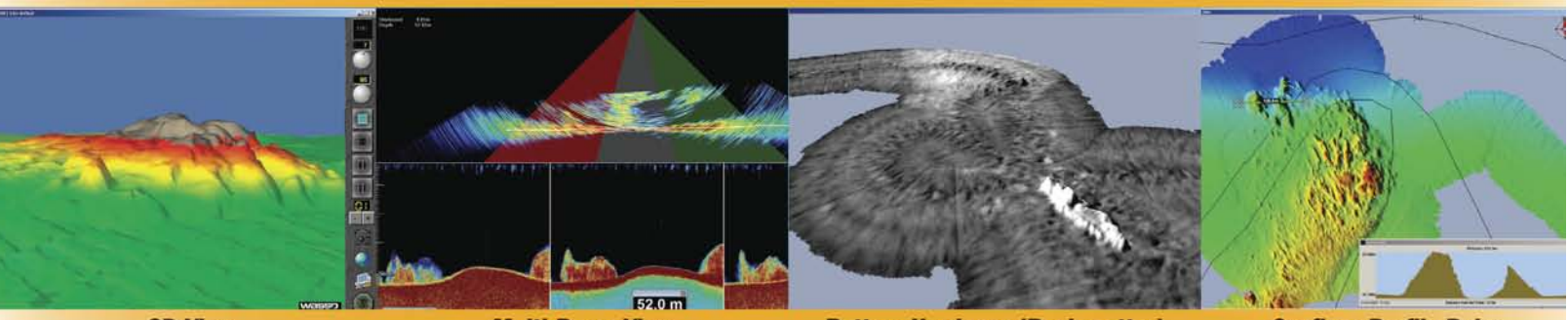

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OCEAN INDUSTRY

Would an offshore wind farm 'desecrate' site of D-Day invasion?

We read in interest an article written by Steve Leone (16 August 2011, RenewableEnergyWorld.com) about a controversy brewing at the site of perhaps the most famous military landing in modern history.

After an announcement of an offshore wind farm seven miles off the coast of the historical beaches at Normandy on the coast of France where Allied troops launched a historic offensive against Nazi Germany on 6 June 1944, yhere were complaints from veterans — mostly from the U.S. and Great Britain — who oppose French President Nicolas Sarkozy's plan to put 100 wind turbines seven miles offshore. Some go as far to say the turbines would "desecrate" the site. The French certainly own the rights.

The French government is surely keen to the sensitivity of the site. But they also know they are falling behind the renewable energy curve as they contemplate their future energy policy. The country remains deeply invested in nuclear power, with little to show in terms of solar and offshore wind development.

It will be interesting to follow the outcome of this dispute.

ARGUS joins UNH-CCOM industrial consortium

The SURVICE Engineering Company was recently invited to join the University of New Hampshire-Center for Coastal and Ocean Mapping (UNH-CCOM) Industry Consortium to participate in CCOM research through SURVICE's ARGUS underwater mapping system. ARGUS autonomously and automatically samples, processes and provides visualization of geo-referenced water depth and other marine environmental data from vessels-of-opportunity traveling through inland and coastal waterways. The system, which has been in development for 4 years, leverages web and wireless technology to provide two-way communications and the benefit of associated utilities.

CCOM is UNH's national center for expertise in ocean mapping and hydrographic sciences. Guided by a memorandum of understanding with the National Oceanic and Atmospheric Administration (NOAA), CCOM operates in partnership with NOAA's National Ocean Service and is particularly interested in cutting-edge technologies that can supplement and enhance current hydrographic surveying efforts. One of the goals of CCOM is to facilitate interaction and cooperation with the private sector, other government agencies and universities by focusing on two major tasks: (1) an educational task aimed at creating a learning center to promote and foster the education of a new generation of hydrographers and ocean mapping scientists; and (2) a research task, aimed at developing and evaluating state-of-the-art hydrographic and ocean mapping technologies and applications.

New technology brings water treatment to the masses

For over 100 years, the removal of salts from water required high pressure, large factories, metal parts susceptible to corrosion and massive amounts of electricity. All of this cost a bundle and led to the creation of huge desalination plants usually on the ocean somewhere. "Desal," as it's called, meant only the richest countries could afford the factories.

Because the desal technology was too cumbersome and not available to water treatment facilities across the nation, the salt byproducts, such as total dissolved solids (TDS's), and other hazardous chemicals from industrial uses, have found their way into our rivers and drinking water. A new desal technology has emerged that not only can desalinate water at an affordable cost, but can also simultaneously remove harmful chemicals and disease microbes from the water.

It all started years ago when a scientist working in a small lab at a university in Arizona, had an idea. Dr. Jim Beckman, a professor at Arizona State University, asked these questions: Why couldn't desalination technology avoid using pressure,

Ocean Engineer to head UVic's NEPTUNE Canada

The new director of the NEPTUNE Canada ocean network is Dr. Kate Moran, a world-renowned ocean engineer who is completing a two-year term as assistant director in the White House Office of Science and Technology Policy in Washington, DC. NEPTUNE Canada is the world's largest and most advanced cabled ocean network. It and the VENUS coastal network make up the University of Victoria's ONC Observatory, which is managed for the university by Ocean Networks Canada (ONC). Moran holds degrees in marine science and engineering from the University of Pittsburgh, the University of Rhode Island, and Dalhousie University. Her research focuses on marine geotechnics and its application to the study of paleoceanography, tectonics, and seafloor stability. She has authored more than 45 publications.

Shell oil spill in North Sea

Oil seeped into the North Sea after a Royal Dutch Shell platform flow line burst. An estimated 54,600 gallons of oil leaked into the water. The spill, announced by the company on 12 August, is in the central North Sea, about 112 miles east of Aberdeen, Scotland. The spill occurred just days after the U.S.'s Department of the Interior tentatively approved Shell's request to drill four experimental wells in the U.S. Arctic's Beaufort Sea in 2012.

The GHOF awards research grant

The Guy Harvey Ocean Foundation (GHOF) has awarded funding to Dr. Neil Hammerschlag of the RJ Dunlap Marine Conservation Program at the University of Miami for his research, "Assessing the Cascading Ecosystem Impacts of Marine Apex Predator Declines." Dr. Hammerschlag's mission is to determine the effects of declining populations of tunas, billfish, and sharks on the overall health of the ocean environment. This will be accomplished through a series of integrated field and laboratory studies, including field surveys, stable isotope analysis, genetic analysis and blood hormone analysis. (www.guyharveyoceanfoundation.org).

metal parts, and large amounts of electricity? Why couldn't the technology use no pressure and instead rely on plastic parts to avoid corrosion, and thus use almost no electricity? So Beckman went to work - and after years in the lab, he produced a system that can do just that.

In order to treat the water, Altela technology uses the simplest of Mother Nature's processes, making rain. The mechanics are simple: each AltelaRain® tower is composed of two chambers. Steam and hot air taken from a heat stream or waste heat, circulate throughout the two chambers. As brackish water enters one chamber, it evaporates by passing through the steam. The water's contaminants fall to the bottom and exit the chamber. Next, dry air is pumped into the bottom of chamber, which carries the evaporated water molecules into the other chamber. From there, the water is condensed into clean water droplets. As the water condenses it becomes colder and emits heat that re-enters the other chamber and evaporates the brackish water.

Altela manufactures small, portable units that can be set up anywhere. That means the technology can remove salt and all harmful chemicals at any site in the country easily, cheaply, and with 90% less energy than other water treatment systems. An AltelaRain® module could run off of solar energy, enabling it to treat water from a village in Africa to the Marcellus Shale of Pennsylvania.

What does this mean, in practice? It means that all water coming from the Marcellus Shale natural gas wells, known as "frac water," can be made cleaner than drinking water before going into the river. It means that runoff from a landfill, water that pollutes the streams, rivers and oceans ultimately can be treated on site before it is released. And it means that every village in Africa can have a small water treatment plant to stop the deaths of 3.5 million people every year from a lack of safe drinking water.

In fact, Altela's facility in Albuquerque is busy churning out modules to do just that. Its AltelaRain® 600 systems have also been installed in Pennsylvania and are processing water from natural gas wells to keep the industry going, despite new regulations, and sustaining 156,000 jobs in Pennsylvania alone.

"We set out to revolutionize the desal treatment, and we ended up finding a solution to water treatment all over the world, from the Marcellus Shale, to the smallest village in Africa," said CEO Ned Godshall. "Pennsylvania is the beginning, but now we are poised to provide clean drinking water for the planet and stop the needless deaths of 3.5 million people every year."

NOAA, Bermuda partner to protect humpback whales in the Atlantic

NOAA's Stellwagen Bank National Marine Sanctuary and the Government of Bermuda have pledged cooperation on scientific and educational programs to better protect the endangered North Atlantic humpback whale population.

Together, they will collaborate on research, monitoring, and outreach programs that could lead to better management and protection of this species along its migratory route from the Gulf of Maine to the Caribbean Sea.

Like the Stellwagen Bank sanctuary off the Massachusetts coast and its sister sanctuary in the Dominican Republic, Bermuda is strategically situated between the humpbacks' southern calving and breeding grounds and their northern feeding grounds. With Bermuda located nearly 650 miles east of the North Carolina coast, this partnership could enhance the three nations' unique commitments to protect the species at various points along its migratory route.

A letter of intent signed last month by NOAA and the Bermuda Department of Environmental Protection expresses interest in pursuing collaborative management efforts leading to establishment of a "sister sanctuary" partnership. NOAA and Bermuda intend to work together.

Craig MacDonald, Stellwagen Bank's superintendent, said cooperative sanctuary programs help foster mutual interest and best practices for whale conservation and management.

"Humpback whales are international citizens without passports who recognize no political jurisdictions," MacDonald said. "We share whales with other nations that border their migratory route, just as we share the responsibility for protecting these fascinating animals."

Stellwagen Bank National Marine Sanctuary encompasses 842 square miles of ocean, stretching between Cape Ann and Cape Cod. Renowned for its remarkable productivity, the sanctuary supports a rich diversity of marine life, including 22 species of marine mammals, more than 53 species of seabirds, in excess of 80 species of fishes and hundreds of marine invertebrates.

Icelandic current could change North Atlantic climate picture

An international team of researchers, including physical oceanographers from the Woods Hole Oceanographic Institution (WHOI), has confirmed the presence of a deep-reaching ocean circulation system off Iceland that could significantly influence the ocean's response to climate change in previously unforeseen ways.

For years, it has been thought that the primary source of the Denmark Overflow is a current adjacent to Greenland known as the East Greenland Current. However, this view was recently called into question by two oceanographers from Iceland who discovered a deep current flowing southward along the continental slope of Iceland. They named the current the North Icelandic Jet (NIJ) and hypothesized that it formed a significant part of the overflow water.

The current, called the North Icelandic Jet, contributes to a key component of the Atlantic Meridional Overturning Circulation (AMOC), also known as the "great ocean conveyor belt," which is critically important for regulating Earth's climate. As part of the planet's reciprocal relationship between ocean circulation and climate, this conveyor belt transports warm surface water to high latitudes where the water warms the air, then cools, sinks, and returns towards the equator as a deep flow.

Port State control CIC on structural safety and load line convention compliance
The Paris MoU and Tokyo MoU announced that they, as well as the Viña del Mar, Indian Ocean, Mediterranean and Black Sea MoUs, will conduct a Concentrated Inspection Campaign (CIC) on Structural Safety and International Convention on Load Lines compliance, from 1 September through 30 November 2011. The questionnaire to be used was posted on their websites in August.

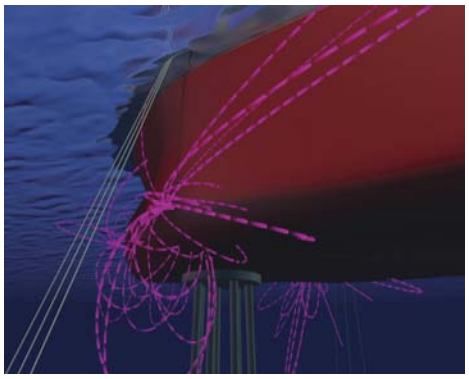
EU supports LNG study
The European Union will donate almost $14 million to support a study to analyze the possibilities of switching to Liquefied Natural Gas (LNG) propulsion in the shipping industry in order to improve the environmental performance of the sector.

Greenpeace Rainbow Warrior II retired
At a ceremony in Singapore recently, the iconic protest vessel, the Rainbow Warrior, was transferred to Friendship, a Bangladesh-based NGO that will refit it for use as a hospital ship. After 22 years of traversing the world's oceans in defense of the environment, the ship will be renamed as Rongdhonu, which is Bengali for Rainbow.

International Offshore Services, LLC selects MarineCFO software
MarineCFO Inc., a leading provider of Marine Software, including On-Vessel, Marine Operations, Personnel, Fleet Maintenance, and Financial Management Software Solutions to the Marine Transportation Industry, announced that International Offshore Services has chosen to implement the full MarineCFO Enterprise software suite. MarineCFO software now manages over 1,000 vessels worldwide, MarineCFO solutions are scalable from the largest industry players to small family-run companies. MarineCFO provides MarineCFO Enterprise, a comprehensive behind the fire-wall solution, and MarineCFO Live!, an on-demand, web-based solution (www.MarineCFO.com).

USCG notice of proposed rulemaking (NPRM) designed to improve safety on towing vessels
The NPRM provides a layered approach to towing vessel safety that includes the option of an audited safety management system or an annual U.S. Coast Guard inspection regime. The NPRM also includes procedures for obtaining Certificates of Inspection issued by the USCG, and for USCG oversight of any audit and survey processes involving third party organizations. Additionally, it would establish safety regulations governing the inspection, standards, and safety management systems for towing vessels. These include requirements for lifesaving and fire protection, electrical and mechanical items and operational requirements such as crewmember training and drills, navigation and towing safety and record-keeping provisions.

Corrosion protection for converted FPSO



Cathelco have supplied a hull corrosion protection system for the Armada TGT 1, an FPSO that has been converted by the Keppel Shipyard in Singapore for Bumi Armada Berhad.

The Armada TGT 1 will be deployed in the Te Giac Trang oilfield off Vietnam by the Hoang Long Joint Operating Company where it will produce up to 55,000 bbl/d and store 620,000 barrels of oil.

The Cathelco impressed current cathodic protection (ICCP) system will protect the hull of the FPSO against corrosion over its 20 year design life.

The contract has been won through Cathelco S.E.A., Cathelco's wholly owned subsidiary in Singapore strategically located to provide equipment and technical support throughout the region.

As the Armada TGT 1 is 332 meters in length, Cathelco has provided an 800-amp fore and aft ICCP system. Both of the systems consist of 400-amp thyristor control panels wired to pairs of anodes and reference electrodes mounted on the surface of the hull.

In operation, the reference electrodes measure the electrical 'potential' at the hull seawater interface and send a reading to the control panel, which raises or lowers the output to the anodes so that the optimum level of corrosion protection is achieved at all times.

The Armada TGT 1 has been installed with linear loop anodes that are diver changeable. This is allows them to be changed at sea, an important factor for FPSOs which operate for prolonged periods without drydocking.

For more information, visit www.cathelco.com.

UTEC mobilizes MV Calypso Star for offshore Australia

UTEC Survey Australia Pty Ltd., UTEC's Perth-based business unit, has mobilized the 24m geophysical survey catamaran, MV Calypso Star, on a long term basis to support geophysical survey operations in North and North West Australia.

The vessel is currently performing survey operations to Oil & Gas clients in the Timor Sea with expected completion in late August 2011 in Exmouth.

The Calypso Star is equipped with an array of geophysical survey equipment, including a high resolution R2Sonics multibeam echo sounder coupled with a DMS3-05 motion sensor, Edgetech 4200 digital side scan sonar, reflection seismic, and onboard processing capabilities.

The vessel is currently available in early September to support regional geophysical survey projects.

For more information, visitwww.utecsur vey.com.

Laborde supplies Yanmars to power boasts for export

Laborde now has the ability to supply builders on the U.S. Gulf Coast with the complete line of Yanmar 360-1,822-hp commercial engines for export. Laborde recently supplied six Yanmar 6CX-GTYE engines to Neuville Boat Works for crewboats headed for Trinidad.

Inland and Offshore Contractors Ltd., a diversified transportation company serving the petroleum industry, will take delivery of three 47-ft boats to carry crew and cargo to offshore installations. The fully mechanical Yanmars were chosen for their reliability and durability and because they can be easily serviced in the West Indies. The Yanmars are rated 400-hp at 2,700 rpm and will likely pick up a knot in Trinidad's heavy saltwater.

For more information, visit www.labordeproducts.com.

Jumbo Shipping delivers 51 monopiles in 7 voyages

Jumbo Shipping has successfully transported 51 monopiles from EEW's manufacturing plant in Rostock, Germany to Barrow-in-Furness in the UK. The monopiles' final destination was DONG Energy's Walney Offshore Windfarm 2.

When the contract was awarded, the first shipment was only 7 weeks away, during which time Jumbo engineered all shipments and designed and manufactured saddles for the monopiles. Within this short period of time, all was ready and approved by the Marine Warranty Surveyor.

Jumbo's HLV Fairpartner made six consecutive voyages carrying eight monopiles at a time: two in the hold and six on deck. The largest monopile weighed 806-metric tons and measured 68m in length and 6.5m in diameter.

In order to improve the delivery schedule, DONG Energy asked Jumbo to employ HLV Jumbo Vision to transport the last three monopiles. The transport

engineering plus design and fabrication of the stoppers for the sea fasting of the monopiles was done within only two weeks' time.

By transporting as much as eight monopiles per voyage, Jumbo was able to complete the project in a substantially small number of voyages and thus reduced the project's environmental impact.

The project shows that Jumbo is very well equipped for transporting monopiles to Offshore Windfarms. In previous projects Jumbo proved to be highly capable of installing transition pieces offshore. These two services, transportation and Offshore installation, complement each other well, which makes Jumbo the ideal subcontractor for Offshore Wind projects.

For more information, visit www.jumboshipping.nl.

Unique to build survey vessel

Unique System FZE, based in Sharjah, UAE has been recently contracted for the building of a survey training vessel for the General Commission for Survey (GCS), Saudi. The 16m GRP catamaran under construction in UAE is to be equipped with a Kongsberg EM 710 Multibeam Echo Sounder capable of mapping over 1,500m water depths.

The vessel will be employed as a hydrographic training platform by GCS and includes Kongsberg Single Beam Echo Sounder and Dual frequency Side Scan Sonar. The data acquisition package is from Hypack and post processing on Caris HIPS & SIPS.

In addition to hydrographic equipments the vessel will be also equipped for CTD profiling, Teledyne RDI Mariner ADCP for synoptic current profiling Seabed Grab & Gravity Coring systems. The vessel is scheduled to be delivered before end of this year and will operate from the GCS base at Jeddah on the Red Sea.

Unique Systems is a Unique Maritime Group Company with a mission to provide customers worldwide with knowledge and technology based engineering services and products, serving the subsea and maritime industries through their global network of employees, while keeping customer satisfaction, environment, and safety at the forefront.

For more information, contact www.uniquegroup.com.

BMT Nigel Gee goes green

BMT Nigel Gee Ltd, a subsidiary of BMT Group Ltd, the leading international maritime design, engineering, and risk management consultancy, announces that it has won an order for the design of a 25m, all electric, 150 passenger ferry in China.

In order to demonstrate the practical use of a battery-powered ferry within the estuarial and coastal waters, where marine transportation provides a viable alternative to land-based transport, a new green ship design will be developed. BMT has been tasked with providing the design based on its innovative design capability and its proven low resistance hull form technology that is currently in use in many low-wash catamaran ferries.

In addition to providing the fundamental naval architecture design, BMT will develop the layout and styling of the vessel to provide an elegant, yet simple design that reflects the vessel's modern green credentials and practical functionality as a passenger ferry. The design uses a proven catamaran hull form with VRB batteries providing the power to the electric drive motors, which will achieve a 10 knot service speed. Solar cells are incorporated into the roof structure to top up the batteries while the vessel is in use.

Construction of the vessel will start by the middle of 2011, with trials and delivery by mid- 2012.

For more information, visit www.ngal.co.ul.

Worldwide Submarine Telecom Activities

By John Manock, Submarine Cable Editor

The submarine fiber optic cable market is enjoying a solid 2011. New projects are being funded and supply contracts awarded, existing cables are being upgraded and new technologies developed to push the bandwidth potential of cables to new levels. The global fiber optic network is more resilient than ever, able to function smoothly even through catastrophes as great as the April earthquake and tsunami off Japan.

The January 2011 edition of TSC's Radar Screen Report, which analyzes trends in the submarine cable market, forecasted that demand in 2011, based on new contract awards, would be comparable to the previous two years – in the 40,000 to 50,000 kilometer range. In the best case scenario, if one particularly large project (the 12,750-kilometer Pacific Fibre cable) went to contract in 2011, demand was expected to near 60,000 kilometers. This would bring demand for 2011 near the total manufacturing capacity of the submarine fiber optic cable industry, which is approximately 60,000 to 70,000 kilometers per year.

The Pacific Fibre contract was awarded in July and as of the middle of August contracts totaling just over 50,000 kilometers have been awarded, so demand appears on track to approach annual supply capacity by the end of the year.

Equally as significant, however, is the rapid development of dense wavelength division multiplexing (DWDM) technologies that greatly increase the capacity of submarine cable systems. Until recently, technology was limited to 10 Gbps per wavelength. New products are now entering the market that allows 40 Gbps and even 100 Gbps per wavelength. With up to 100 wavelengths on an optical fiber, the new DWDM technologies can offer amounts of bandwidth that were inconceivable only a few years ago.

The following review will look at projects that have awarded supply contracts in 2011 and cable systems that have entered service during the year. We will also look at the journey of one major submarine cable system in breaking new ground.

Supply Contracts Awarded in 2011

Project Express

In January, Hibernia Atlantic received a $250 million financing commitment for Project Express from one of its vendors, Huawei Marine Networks Co., Ltd. This transatlantic cable will be the first build of its kind in over ten years and will offer financial clients of Hibernia's Global Financial Network (GFN), such as traders, global banks and exchanges, connectivity with sub 60 milliseconds latency. Once completed, Project Express will be the fastest route across the Atlantic Ocean. This new build is expected to be complete in the summer of 2012.

Asia Submarine-cable Express (ASE)

In January, Fujitsu Limited and NEC Corporation (NEC; TSE6701) announced an agreement with NTT Communications, Philippine Long Distance Telephone Company, StarHub Limited and Telekom Malaysia Berhad to construct the Asia Submarine-cable Express (ASE) system, a high-bandwidth optical submarine cable system that will link Japan to Singapore, Hong Kong, the Philippines and Malaysia. The ASE is designed for a transmission speed of 40 Gbps. Overall project management will be carried out jointly by the Fujitsu and NEC consortium. The manufacture and installation of all submersible plants such as repeaters, OADM branching units and cables, power feeding equipment, and submersible plant monitoring system will be implemented by NEC. The manufacture and installation of submarine line terminal equipment and the management controller will be implemented by Fujitsu.

BDM Cable System

In March, Huawei Marine Networks Co. Ltd. won the bidding for the BDM (Batam-Dumai-Melaka) submarine cable project and will provide the end-to-end turnkey submarine system solution. The BDM project will complete a cable system between Melaka, Malaysia, and Dumai and Batam, Indonesia, by the 4th quarter of 2011. The completion of this new system will bring the leading submarine telecommunication technologies to Malaysia and Indonesia, providing exceptional bandwidth improvement for these two countries, while satisfying their soaring demand for international communications.

Dhiraagu Domestic Submarine Cable Network (DDSCN)

In April, NEC Corporation signed a contract with Dhiraagu (Dhivehi Raajjeyge

Gulhun Private Limited), the largest telecom carrier in the Maldives, for a domestic optical submarine cable system connecting eight islands in the Maldives. NEC will provide a comprehensive set of equipment and services including commissioning and integration on a full turnkey basis. The contract is for the construction of a non-repeater submarine cable system connecting eight islands in the Maldives, including Kulhuduffushi, Eydhafushi, Hulhumale, Dhangethi, Laamu Gan, Gadhdhoo, Fuahmulak and Hithadhoo. The total length of the cable will be approximately 1,017km with an initial transmission capacity of 20 Gbps.

Southeast Asia Japan Cable (SJC)

Also in April, the global consortium of telecommunications companies formed to build and operate the Southeast Asia Japan Cable (SJC) system officially announced the start of the construction of the project that will link Brunei, China Mainland, Hong Kong, Philippines, Japan and Singapore, with options to extend to Indonesia and Thailand. The SJC consortium has awarded the supply contract for the new international submarine cable system to two TE SubCom and NEC Corporation. First announced in December 2009, the cable was initially planned to be 8,300km in length, linking 5 countries / territories. SJC's length is now 8,900km which could extend up to 10,700km, linking up to 8 countries / territories while supporting an initial design capacity of over 15 terabits per second. The SJC system is expected to be ready for service in 2H-2013. The SJC consortium is composed of Brunei International Gateway, China Mobile, China Telecom, China Telecom (Hong Kong) International Ltd., Donghwa Telecom Co., Ltd., Globe Telecom, Inc., Google SJC Bermuda Ltd. (a subsidiary of Google Inc.), KDDI Corporation, Singapore Telecommunications Limited, PT Telekomunikasi Indonesia International, Telemedia Pacific Inc., and TOT Public Co., Ltd.

Interchange Cable Network (ICN)

April was a busy month as Interchange Limited, a Vanuatu based company, and Alcatel-Lucent signed an agreement to deploy Vanuatu's first international submarine cable system linking Port Vila, Vanuatu, to Suva, Fiji. Scheduled for completion in mid 2012, this new system will deliver faster, more efficient and cost-effective Internet connectivity to the Pacific island nation, while removing the current dependence on satellite and strengthening Vanuatu's competitive position as an e-business hub. Interchange will construct, own and operate the 1,230-kilometer submarine cable system, which will link directly into the high capacity Southern Cross Cable between Sydney and Hawaii enabling Vanuatu businesses to connect to global telecommunications highway via USA, Australia, Asia and Europe. Initially equipped for 20 Gbps data transfer, which is over 200 times Vanuatu's current capacity, the new submarine cable system is designed with an ultimate capacity of up to 320 Gbps to support the continued growth of Vanuatu's e-business economy well into the future.

Australia-Singapore Cable (ASC)

In May, ASC, a specialist submarine cable subsidiary of Leighton Contractors, signed a contract with Alcatel-Lucent as part of ASC's plan to build, own and operate a 4,800km multi-terabit submarine cable system with an option for 100 Gbps (100G) transmission. The new system will link Perth, Australia, to Singapore, providing high-speed connection from Australia to South East Asia. The first phase of the project involving detailed design, route survey and permitting in Australia, Indonesia and Singapore is already underway. The second phase subject to permitting requirements and final board approval involves the construction of the cable system and is expected to start in the first quarter 2012 and commercial operation is planned for 2013. The 4,800km submarine cable system will link Australia to Singapore, through the Sunda Strait in Indonesia providing potential for the first 100 Gbps high-speed connection from Western Australia to South East Asia. Providing around eight times more capacity than similar regional routes, the system has an ultimate capacity of at least 6 Terabits per second (Tbps) and over 16 Tbps with the 100G option.

Global Nexus Phase 1

Also in May, Global Nexus Telecommunications, a new provider of wholesale telecommunications capacity, and TE SubCom (SubCom) announced the signing of a supply contract for phase one of the Global Nexus Cable System. Phase one of the Global Nexus network will provide low latency, resilient and diverse, ultra high capacity rates between Canada and the Bahamas, with onward connectivity to the United States, Latin and South America and serve as a catalyst to mesh hemispheric and regional networks. The system will be initially deployed with advanced 40 Gbps transmission technology and is designed to be compatible with SubCom's 100G transmission equipment. The system itself will be delivered under a nineteen-month program.

Pacific Fibre

In July, Pacific Fibre and SubCom announced the signing of a supply contract for the Pacific Fibre undersea cable system. The exceptionally long system will stretch 12,750 kilometers and boast a significantly higher cross sectional capacity than any other trans-Pacific cable. Intended to meet the increasing demand for international bandwidth in Australia and New Zealand, which has been growing at a rate of 55 percent per year, the Pacific Fibre system is planned for completion in 2014. The two-cable system will link Australia and New Zealand via a trans-Tasman cable, while connecting New Zealand to the United States via a trans-Pacific cable. The cable landing points will be in Sydney, Australia; Auckland, New Zealand; and Los Angeles, California.

Emerald Atlantis Trans-Atlantic Cable System

Also in July, Emerald Atlantis Limited (EA) and SubCom, announced the finalization of an Instruction to Proceed (ITP) to build the Emerald Express Trans-Atlantic Cable System. The first phase will provide both low-latency and ultra-high bandwidth capacity between the US, Canada, UK and Iceland, requiring 5,200 kilometers of advanced submarine fiber optic cable. To achieve the desired ultra-high capacity rates, Emerald Express has been designed to support 100 wavelengths at 100 Gbps on each of its six fiber pairs. The trans-Atlantic marine cable route survey between UK and Canada commenced in early August and the Emerald Express system will enter service in late 2012. The Emerald Express system includes a high capacity connection to Iceland, allowing Iceland based data centers to offer ultra low latency connections to Europe and North America, and provides two stubbed branching units positioned off Newfoundland and Ireland to support future connectivity.

In addition to these new contract awards, more than 20,000 kilometers of new submarine fiber optic cables have entered service so far in 2011. The following is a review of the major cable systems that have become operational during the year.

New Cable Entering Service in 2011

Europe India Gateway (EIG)

EIG is a 15,000-kilometer long submarine cable system stretching from the United Kingdom to India. In February, the 16-members of the consortium responsible for overseeing the building of the $700 million high-capacity submarine cable system began accepting delivery of more than 11,300 kilometers of the total. Turmoil in Egypt prevented the acceptance of the entire system. The consortium at the time reported the acceptance of EIG cable landing sites in the UK, Portugal, Gibraltar, Monaco, Libya, Saudi Arabia, Djibouti, Oman, UAE, India and a terminal site in Marseille, France. The only remaining segment to be completed for the EIG is in Egypt where there are two landing sites. The status of the Libyan site, following turmoil there after this announcement was made, is not known. When fully activated with the Egypt link, the EIG will be the first direct high-bandwidth optical fiber system from the UK to India. The design capacity on the full system is 3.84 Tbps.

TE North

Telecom Egypt (TE) and Alcatel-Lucent announced that the TE-NORTH Cable System, provisioned with 40 Gbps (40G) wavelengths across the Mediterranean, is in service. TE-NORTH is the first Mediterranean cable network to provide commercial service using this newest 40G technology. The 3,600km system connects Abu Talat, Egypt, to Marseille, France, with a branch to Pentaskhinos, Cyprus, and also includes other branching units for further expansions in the Mediterranean basin. The introduction of this advanced technology, essentially doubles the original design capacity of the system from 10 Tbps to over 20 Tbps, equivalent to the transfer of over 32,000 HD movies in 60 seconds.

Hawk

In June, Reliance Globalcom announced the launch of its Next Generation submarine cable system – Hawk, connecting Yeroskipos, Cyprus; Marseille, France; and Alexandria, Egypt. PrimeTel, the leading fixed line and TV service provider of Cyprus, is the landing partner for Hawk in Cyprus. The submarine cable terminates at the newly constructed cable landing station of PrimeTel at Anatoliko, the industrial area in Paphos.

The Journey of Hawk

A number of factors are driving new submarine cable construction, including the availability of financing and skyrocketing Internet demand. One factor that is often overlooked is the liberalization of telecommunications markets around the world. From the advent of the telephone era, the telecommunications market in virtually every country, the United States being a notable exception, was a monopoly controlled by a government-owned carrier. This carrier was generically referred to as a PTT, for Posts, Telephone and Telegraph – the three functions often being controlled by a single government ministry.

Beginning in the 1970s, however, the concept of liberalization began to take hold and the breaking down of the old PTT system moved quickly around the world. By the early years of the 21st century, telecom monopolies and 100% government-owned carriers largely had become a thing of the past. New and dynamic private operators were competing with the now privatized PTTs in many markets, while the emergence of the Internet created new opportunities for all.

These factors made it possible and desirable for private operators to become submarine fiber optic cable owners, rather than relying on buying bandwidth for the former PTT, which would also be the new operator's primary competitor.

The result is that there are now many private submarine cable systems owned by telecom carriers that were not in existence 10 years ago. This is not only beneficial to the industry as a whole but to the new operator's home market as competitive cables help to drive prices down, increase investment in new technologies and provide valuable diversity. The latter is particularly important in the event of a natural disaster or cable break.

The Hawk cable provides an interesting example of the struggles of new players and the benefits that these cables bring to their home countries. In June 2011, Hawk became the first competitive submarine fiber optic cable entered into service in Cyprus. It was built by global submarine cable operator Reliance Globalcom, with the landing in Cyprus owned by PrimeTel, a local competitive carrier.

Hawk arrived at a time of high demand for bandwidth in Cyprus. The demand for bandwidth will continue its upward trend as the number of Internet users increases and new bandwidth-hungry services are being developed. The percentage of Internet users in Cyprus jumped from about 42.9% in 2009 to 56% in 2010. Furthermore the development of high speed networks, such as fiber-to-the-home (FTTH), currently under consideration in Cyprus, will have a tremendous impact on capability of delivering ultra high speeds gradually to all the population in conformity to Europe Digital Agenda.

The Internet in Cyprus and throughout the world has become a vital medium of economic and social activity enabling business doing, working, communicating, playing, etc., therefore demand for higher access speeds to the Internet is irreversible. Furthermore, services are converging and being accessed by devices such as smartphones, tablets, PCs, etc., resulting in impressive rates of growth of mobile data.

The Hawk cable system has a design capacity of 2.7 Tbps and an initially lit capacity of 100 Gbps. It consists of 4 fiber pairs. One fiber pair connects Marseille to Cyprus and further connectivity, under progress, between Cyprus to Alexandria is planned for February next year. A second fiber pair with capacity of 100 Gbps would connect Marseille to Alexandria direct.

The other two fiber pairs will be lit at a later stage. From Marseille, a diverse backhaul network connects London, Frankfurt and Paris. Diversity and redundancy to Hawk will be provided using the Flag Europe Asia (FEA) cable, which is currently being upgraded. In Egypt (Alexandria), Hawk will be interconnected to FEA and Falcon, another Reliance-owned submarine cable in the Indian Ocean, thereby providing a completely diverse route to Middle East countries and India.

The operation of Hawk will enhance substantially the international connectivity of Cyprus with the outside world, both west and east, creating additional diversity and alternative routing capabilities for Cyprus.

Hawk will contribute towards strengthening the position of Cyprus as a network hub in the Eastern Mediterranean Basin. It will also promote Cyprus as a center for development of new services and applications, facilitated by substantial increase in international capacity, reduction in pricing, enhanced diversity and alternative routing capabilities.

Hawk will also support efforts for attracting investments in the Island and the setting up of data centers to serve international companies looking for reduction in

signal latency by being nearer to the Middle East. PrimeTel is definitely looking forward to the use of its landing station by other foreign operators for collocation of cables from countries in the region and beyond with a view to having access to Hawk capacity. The landing station can currently accommodate up to four systems.

There is provision for extension however in which case additional cables can be accommodated. PrimeTel is also planning to build a second landing station in different location for diversity and redundancy purposes. The station is equipped with redundant systems capable of supporting effectively the operation of cable systems equipment and providing appropriate environmental conditions.

Primary AC supply is provided from two different sources and backed up by secondary supply provided by diesel generators. The station is manned on a 24x7 basis by fully qualified personnel.

PrimeTel, being the first private company to seek permission for the landing of a submarine cable system in Cyprus, requested the assistance of the Regulator and the Ministry of Communications and Works (MCW) in an aim to create awareness of the intentions of PrimeTel and for briefing competent authorities on the activities foreseen by the process of landing a cable at the shore of Cyprus. This is the first time were called upon to grant permission to a private company to lay a cable in the territorial waters of Cyprus and to land it at a specific landing point.

The MCW took the initiative of inviting all the government departments and services involved in the process to a meeting at which they were fully briefed on the plans of the company and the associated timelines. The procedure and information to be provided to each party were agreed and everybody committed to responding without any delay to the application of the company subject to being provided with necessary details. From that point onwards the landing moved swiftly with the exception of the local authority having jurisdiction over the area where the landing station was to be erected. The behavior and the decisions of the local authority were unjustifiable and despite the fact that the competent Ministries pointed out to them that they had no legal right to reject the application for a building permit.

As a result of the refusal of the local authority to grant building permits, the plans of the company for the launching of the project were delayed by two years. The building was finally erected in another location outside the area of jurisdiction of the local authority. In spite of the difficulties, PrimeTel has paved the way to other private companies to land cables in Cyprus without major problems.

The experience of Hawk demonstrates the difficulties of the pathfinder – the new carrier that first breaks through the old monopoly on submarine cables in a given market. Obstacles can come from the most unexpected sources, such as the local authority in this instance, but with perseverance competitive cables can become a reality and provide great benefits for the local population.

The Future

For the submarine cable market as a whole, it is unlikely that demand will continue as strong for the remainder of 2011 as it was through the first 8 months of the year. There are a limited number of large (greater than 5,000 kilometers) cable systems in the pipeline to drive demand at the current pace. There are, however, many smaller systems coming along that will continue to provide business for suppliers.

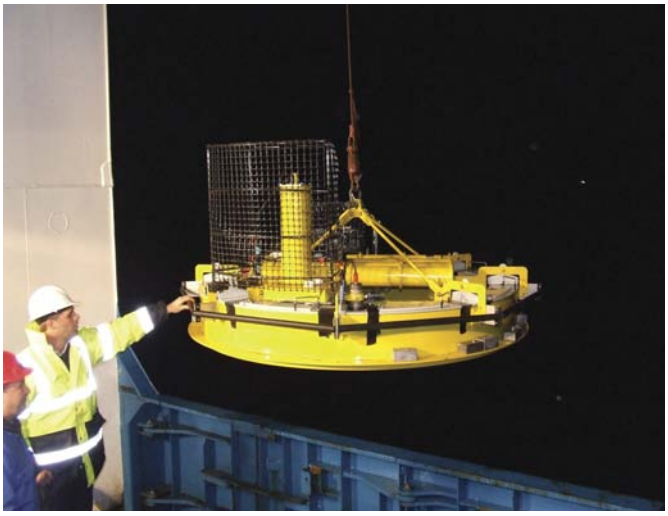
Perhaps most importantly, the telecommunications market in general and the submarine cable market in particular have been largely protected from economic turmoil in the past few years. Public demand for the Internet, even in harsh economic times, continues to drive infrastructure investment. As the Internet becomes the primary delivery system for global entertainment, submarine cable systems will continue to be in demand.

Tuna giant quits destructive fishing
John West became the last of the major UK tuna industry players to announce that they will shift to greener fishing methods. All of the UK's major tinned tuna companies and supermarket-owned brands have now promised to drop a fishing method that is responsible for high levels of bycatch and have committed to no longer sourcing tuna from within the Pacific Commons marine reserves. John West, which produces one-third of all the tuna tins sold in the UK and is owned by the world's largest seafood producing company Thai Union, joins UK companies Princes, Asda, Sainsbury's, Waitrose, M&S, Tesco, the Co-op ,and Morrisons, who have already ditched tuna fishing methods that use vast nets called 'purse seines' along with fish aggregation devices (FADs). FADs are floating objects, often equipped with satellite-linked sonar devices, around which tuna instinctively gather, but also attract sharks, juvenile tuna, and turtles, whidh all scooped up by fishing nets and mostly discarded as waste.

The International Quiet Ocean Experiment
Human activities on the high seas have grown significantly in recent decades, contributing to increasing ocean noise levels. Scientists suspect that the situation may be affecting the health and behavior of marine life. In light of growing concern, fuelled by the increasing industrialization of the oceans, leading marine scientists and representatives from the private sector and military establishments will meet at UNESCO from 30 August to 1 September to plan the International Quiet Ocean Experiment (IQOE). This decade-long project aims to fill the considerable knowledge gaps in this area so that management of ocean noise can be more informed and effective. Many marine species rely mainly on sound as a source of environmental information, in much the same way as human beings rely on their eyesight. Although very little research exists to prove any links, there is a growing suspicion that increasing noise levels, and some sounds in particular, are altering the behavior of marine animals and perhaps even reducing their capacity to perform normal life functions such as such as finding food, seeking out mates, or avoiding predators. Evidence suggests, for example, that several whale species have raised the volume of the squeaks, clicks and moans by which they communicate with each other. The IQOE is organized by the Scientific Committee on Oceanic Research and the Partnership for Observation of the Global Oceans, of which UNESCO's Intergovernmental Oceanographic Commission (IOC) is a member.

Research vessel Polarstern at North Pole
On 22 August 2011 the research icebreaker *Polarstern* of the Alfred Wegener Institute for Polar and Marine Research in the Helmholtz Association reached the North Pole. The 55 scientists and technicians from six countries onboard the Polarstern plan to document changes in the far north. Thus, the researchers onboard are conducting an extensive investigation of the water, ice, and air at the northernmost point on Earth. The little sea ice cover makes the route via the pole to the investigation area in the Canadian Arctic possible. The warming of the Arctic and the related changes in heat and gas exchange processes between the ocean, sea ice, and atmosphere are the paramount focus of the investigations. The oceanic currents that exchange water masses with the Atlantic and the Pacific are also undergoing change.

Partrac flume technology acquires novel seabed data



Marine data experts Partrac Ltd have announced their contribution to a scientific paper that was recently published in the journal 'Estuarine and Coastal Shelf Science'. The paper, titled "*In situ* measurements of resuspension in the North Sea" reports on the collection of world-first data using Partrac's state-of-the-art benthic flume, Voyager II. The flume was deployed at three sites in the North Sea, and the data acquisition activity formed part of the Marine Ecosystem Connections Study(MECS), a collaborative project comprising the UK Centre for Environment, Fisheries and Aquaculture Science (CEFAS), scientists at the Universities of Portsmouth and Southampton, the National Oceanography Centre (Southampton) and Partrac Ltd.

The objectives of the study were to investigate nutrient and sediment resuspension events in the North Sea, an area where the nutrient budget does not close due to apparently missing terms. The work was directed at measuring the input of nutrients into the water column due to resuspension of the bottom sediments. The study focused on the collection of novel data on seabed entrainment and nutrient exchange parameters at depths up to 83m on the UK continental shelf.

Previously, the only means of collecting these data was through collection of cores or manipulative laboratory studies, each of which has limitations. The ability to measure these fluxes actually at the seabed on undisturbed sediments offered through use of the Voyager II instrument is a substantial technological advance that offers significant scientific improvements. The results are the first *in situ* data of this type to be reported anywhere in the world at such depths. The MECS study has provided valuable insights into the magnitudes of resuspension and the flux rates for nutrients under both median and storm conditions.

Voyager II is also used in the commercial arena (e.g. dredging and aggregates, contaminated sediments, marine renewables, marine cables and Environmental Impact Assessments etc.), where sediment (and contaminant) mobility measurements, in particular, provides important information to both developers and regulators in relation to sediment transport and contaminant impact issues.

The paper can be downloaded at www.sciencedirect.com/science/article/pii/S0272771411001934. For more information, visit www.partrac.com.

World's largest shark sanctuary

An area covering more than two million square miles of the western Pacific Ocean, two-thirds of the land area of the United States, is slated to become the world's largest shark sanctuary and the first one ever created through a regional agreement among governments.

Leaders at the 15th Micronesian Chief Executive Summit passed a resolution to begin the process of creating a regional sanctuary where shark fishing would be prohibited. The agreement, which also authorizes the development of a regional ban on the possession, sale, and trade of shark fins, covers the waters of the Federated States of Micronesia and its four member States, The Republic of the Marshall Islands, the Republic of Palau, the Territory of Guam, and the Commonwealth of the Northern Marianas Islands.

The Micronesian resolution is the most recent and largest example to date of a growing realization that sharks — of which a third of all species are headed towards extinction — are in serious trouble. Last month, the Association of Pacific Island Legislatures (APIL), a body composed of lawmakers from across the Western and Central Pacific, requested all member nations to "adopt legislation for a unified regional ban prohibiting the possession, selling, offering for sale, trading, or distribution of shark fins, rays, and ray parts."

In June and July, Honduras and the Bahamas joined Palau and the Maldives in creating shark sanctuaries. These nations have come to realize that shark tourism is far more profitable than killing the animals for their fins. Last year, the Marshall Islands instituted a shark fishing moratorium after reports of unregulated activity in its waters.

Major scientific discovery on the Mid-Atlantic Ridge

The Irish-led VENTuRE scientific expedition aboard the national research vessel RV Celtic Explorer has discovered a previously uncharted field of hydrothermal vents along the Mid-Atlantic Ridge – the first to be explored north of the Azores.

The mission, led by Dr. Andy Wheeler of University College, Cork (UCC), with scientists from the National Oceanography Centre and the University of Southampton in the UK, NUI Galway, and the Geological Survey of Ireland, returned to Cork 4 August from an investigation 3,000 meters below the surface of the sea using the Remotely Operated Vehicle (ROV) Holland 1.

Hydrothermal vents, which spew mineral-rich seawater heated to boiling point by volcanic rock in the Earth's crust, are home to a rich variety of marine life that thrives in complete darkness on bacteria fed by chemicals.

The investigation was supported by the Marine Institute under the 2011 Ship-Time Programme of the National Development Plan and by the National Geographic Society, which filmed the work for inclusion in an upcoming National Geographic Channel series, "Alien Deep," premiering globally in 2012.

The purpose of the mission was to study two major, deep-sea ecosystems in relation to the biogeography and evolution of chemical-based ecosystems on the first deep-water hydrothermal vent field yet detected along the Mid-Atlantic Ridge between the Azores and Iceland and the significant westward extension of the known area of active coral growth in the Porcupine Seabight.

The mission carried geochemists, marine biologists, marine geologists, marine geneticists and technicians from Ireland and the UK as well as a TV crew from National Geographic. It was supported by the Marine Institute under the 2011 Ship-Time Programme of the National Development Plan.

Intensive nitrogen losses off the coast of Oman, caused by coupling of two microbial processes

Nitrogen is an essential nutrient and often a limiting factor for all life on our planet. It is present in proteins and DNA. In the oceans, microbial processes regulate the concentrations and fluxes of biological relevant nitrogen compounds like ammonia, nitrite, and nitrate, which have to be available for the marine life. The major sink through which nitrogen can escape from the marine food web into the atmosphere is as nitrogen gas, N_2. The driving forces balancing this system are more complex than previously thought.

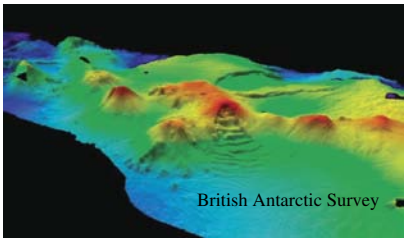
Now scientists from the Max Planck Institute for Marine Microbiology and their colleagues have taken a very close look at the microbial processes in the Arabian Sea and published their results in two scientific papers.

The marine food web stores huge amounts of organic carbon compounds. The carbon cycle is interacting with both the dissolved molecular oxygen (O_2) and the nitrogen cycle. Global warming results in a diminished solubility of oxygen, and the influx of waste-water loaded with organic compounds from the human civilization further consumes oxygen.

Consequently, the oxygen-deficient waters or oxygen minimum zones (OMZ), which originally constituted only <1% global ocean volume yet are responsible for 30% to 50% of the global marine N-losses, have been spreading worldwide in the last few decades. More N-losses will thus be expected.

Underwater eruption discovered off the coast of Oregon

An undersea volcano has erupted off the coast of Oregon, spewing forth a layer of lava more than 4m thick in some places,and opening up deep vents that



belch forth a cloudy stew of hot water and microbes from deep inside the Earth.

Scientists uncovered evidence of the early April eruption on a routine expedition in late July to the Axial Seamount, an underwater volcano that stands 250 miles off the Oregon coast.

The discovery came as a surprise, as researchers attempted to recover instruments they had left behind to monitor the peak a year earlier. When the researchers hefted a seafaring robotic vehicle overboard to fetch the instruments, the feed from the onboard camera sent back images of an alien seafloor landscape.

The Axial Volcano rises 3,000 feet above the seafloor, the most active of a string of volcanoes along the Juan de Fuca Ridge, a plate boundary where the seafloor is slowly pulling apart.

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Empowering your Vision

Practical Deepwater Pipeline Repair System

By Tim Sheehan, Vice President and Business Unit General Manager, Wachs Subsea, LLC

Bo Povloski of Oil States conceptualized an environmentally innovative and cost-effective pipe lift system and connector design. Once the major oil producer accepted the Oil States' concept, the team members afforded themselves one year to complete the development of the Deepwater Pipeline Repair System, reviewing the individual tooling that best addressed repair needs and considering contingencies for every scenario.

NewKit

Completed in 2009, the diverless horizontal repair kit comprises a cut/bevel/weld seam and Fusion Bonded Epoxy (FBE) removal multipurpose combination tool with structural lifting frames and hydraulic actuated pipeline connectors. The connectors are dual grip and seal with an alignment frame and an index frame. The flexible design of the Deepwater Pipeline Repair System stayed true to the objective of adaptability and interchangeability with different connector styles, different manufacturers and use of any Remote Operated Vehicle (ROV) of opportunity.

The Deepwater Pipeline Repair System uses two ROVs, but has a built-in contingency to operate with only one. It also features a simple control system that takes complicated electronics out of the subsea equipment and returns to the basics. When the repair is completed, only the connectors and the new jumper pipe remain on the ocean floor. The system eliminates the need for a diver and welding and it can even be used in shallow water.

Unlike current systems that require larger vessels, the Deepwater Pipeline Repair System uses smaller, more readily available vessels beginning at 290 feet. The system, with a pipe lift frame capable of lifting 80 kip, is substantially lighter than its gigantic gantry predecessors and provides relief for crane capacity at approximately 25 tons for the index frame, 28 tons for the lift frame and 5 tons for the alignment frame. The modular design allows for disassembling into compact groups for trucking across state lines without permits and for in-freight around the world at a moment's notice.

The Challenge

The challenge for Wachs Subsea was to invent, design and deliver a unique solution that eliminated the need for multiple tools and ROV runs. Wachs met this challenge with the success of its combination tool, which is capable of five functions. The new combination tool severs the pipe and then conducts an Outside Diameter (OD) bevel, an Inside Diameter (ID) bevel, a weld seam removal and FBE removal. The tool prepares the pipe by completing all the functions in one deployment. The compact design of the combination tool shrinks in size when compared to previous machines. Wachs has taken a giant step by reassembling the existing pieces of their current subsea tools into a very smart package.

"We used minor adaptations of a subsea drill and used common tooling and parts so that replacement or new pieces are readily found on our shelves," says Tim Sheehan, Vice President of Wachs Subsea in Houston.

Innovative Design

Wachs designed the combination tool with a slightly different approach from conventionally designed tools that are used during cutting operations. The cutting component was designed using the end mill cutting method to cut pipes that have unknown stored energy. Standard milling heads are placed on a rectangular platform with a clamp that can index backwards and forwards. The cutting method is guaranteed not to jam at depths of up to 10,000 feet.

In contrast to previous systems requiring multiple and separate components with various hydraulic functions, one ROV docks to the Wachs combination tool and brings it to the location on the pipe. A control module, which is affixed to the back of the tool, is controlled via a laptop on the surface. Three cameras, one on each module, provide visual feedback to the system operator.

Once the precision cut has been made, the combination tool's second function, the OD bevel, orbits the pipe to cut the rough edge off at a 45-degree, 1/4-inch bevel. This type of cut prevents damage to the seal when the repair clamp is installed and creates a smooth finish for the sleeve connector. Adjacent to the sever/bevel module is the ID bevel module which machines an ID bevel on the inside of the pipe. The process ensures efficient future pigging operations.

Next, Wachs designed cutters to remove the weld seam and FBE off a predetermined length of the pipe. The weld seam is removed by a specially made fly cutter using over- lapping passes and the FBE by a very unique, compliant, diamond impregnated media pad. The combination tool crawls along the pipe to accomplish these tasks which are required to prepare the pipe for the 'grip and seal' connector.

Combination gauges, precision made to mimic the repair connectors, are deployed to the seabed and used to verify ovality and straightness.

Once the metrology is taken, the repair spool can be cut to length on deck. The repair clamps are added to the pipe spool and then landed on the index frames utilizing the alignment frames.

The ROV uses hot stabs to operate the index frames to align the spool piece utilizing the unique Wachs laser alignment system. When the two ends of the pipeline are aligned, the connectors are

hydraulically stroked onto the pipeline from one side to the other using an ROV on each side.

Wachs Subsea designed and developed ancillary tools for the kit, including a hydraulic jack tools to work with the removable pins on the hinged pieces of the equipment. The tool allows for the disassembling of the frame so that it can be pulled back to the surface in the event that mud mats must be recovered separately.

Other tools include 'go/no go' gauges to check the location marked for cutting; a deployment frame that is also a storage device and a gauging tool to measure gap; removable and interchangeable mud mats; a pull-down tool to assist the maneuvering of the entire spool into location; a second laser alignment system to measure axis; and a revolutionary ROV- installed acoustic magnetic beacon clamp that measures the distance between the two ends of the pipe from where the section is cut for the repair.

Wachs Subsea also developed a pipe lift bag system, an industry first that can remove an additional 25 tons from the typical operation to lift the pipe off the seabed. The system, as designed, uses mud mats and cradles to control movement when the pipe is being lifted.

As a contingency tool, an interface pump known as the isolated hydraulic power unit is placed between the ROV and the equipment to avoid contamination of the ROV's hydraulic fluid. In addition, Wachs Subsea developed high flow, zero leak hot stabs for hydraulic connection.

Wachs Subsea and Oil States Industries, both with international presence, look forward to future opportunities globally. With its promising ingenuity, major oil companies have accepted the Deepwater Pipeline Repair System, which will only continue to evolve as the industry faces future challenges.

For more information, contact Tim Sheehan at tsheehan@wachssubsea.com.

BOEMRE begins study of coastal and marine archaeological sites along Pacific coast
The Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) announced it is beginning a 2-year, comprehensive study of coastal and marine archaeological sites along the Pacific Coast of the United States. The study will analyze and inventory marine archaeological resources on the Pacific Outer Continental Shelf (OCS) and existing historical sites located on the West Coast. Findings from the study will be used in future environmental analyses and may trigger specific steps to mitigate potential environmental impacts associated with future construction and deployment of offshore renewable energy facilities.

LDD wins major renewables contract
LDD, an Acteon company, has won a multimillion-pound contract with RWE npower renewables to provide specialist drilling services to help install 160 wind turbine foundations at the Gwynt y Môr wind farm 18km off the North Wales coast. LDD will commission what is believed to be the world's largest and most-powerful reverse-circulation drill, and four of its specialist engineers will operate the drill from onboard RWE's installation vessel later this year when the offshore development work begins. The Gwynt y Môr project consists of 160 turbines producing a total of 576MW of energy, two offshore substations, a large new onshore substation and 11km of underground cabling.

Harnessing tidal power, protecting marine Life
Below the surface of U.S. coastal waters could be the energy needed to power your clothes dryer and other appliances. Some say tides have the potential to power about 5% of U.S. households by producing nearly 9GW of renewable energy. A pilot project to test this potential is in the works in Washington state's Puget Sound. The Snohomish County Public Utility District was awarded a $10 million grant from the U.S. DOE to install two tidal energy turbines on the floor of Admiralty Inlet, a trough of fast-moving water about 35 miles northwest of Seattle. Much like how wind turbines convert wind energy, the project's underwater turbines will generate electricity from ebbing and flowing tidal waters. At peak tidal currents, the two turbines could generate more than 1MW of electricity, enough to power about 700 American homes.

Interior launches leasing process for commercial wind energy offshore Rhode Island and Massachusetts
As part of U.S. Department of the Interior's "Smart from the Start" offshore wind energy initiative to spur rapid and responsible siting, leasing, and construction of new wind projects, Secretary of the Interior Ken Salazar and BOEMRE Director Michael R. Bromwich announced the initial steps to develop commercial wind energy on the OCS offshore Rhode Island and Massachusetts. A Call for Information and Nominations (Call), which is available for review in the Federal Register, invites developers to identify locations within an offshore area in which they seek commercial leases for developing wind projects. BOEMRE is also seeking public comment – through a Notice of Intent to Prepare an Environmental Assessment – on important environmental issues and reasonable alternatives related to the proposed leasing, site characterization, and assessment activities in the offshore area under consideration. The designated location under consideration in this announcement — the Call area — is within an Area of Mutual Interest identified Rhode Island and Massachusetts in a landmark agreement in July 2010.

OTEC plant gets ABS Approval in Principle

Class society ABS has issued its first Approval in Principle (AIP) for a new concept renewable energy design in which a moored spar uses ammonia in a closed-cycle process to produce electrical power for a commercial utility grid. Unlike wind, tidal or solar power, the advanced design for this Ocean Thermal Energy Conversion (OTEC) system can deliver constant output 24 hours a day.

"This concept combines proven offshore principles with off-the-shelf power, technology and proprietary innovations, all assembled in a unique way," says Ian Simpson, ABS Director of Offshore Technology and Business Development, Americas Division. "The design application illustrates how ABS is able to use its novel concept approach and guidance to provide review of a concept within the framework of established safety standards."

Developed by OTEC International (OTI) LLC of Baltimore, Maryland, the approach converts liquid ammonia into gas in a heat exchanger using warm ocean surface water. The ammonia gas then drives turbines that turn generators to produce electricity, which is then exported through a submarine power cable to a land-based utility company. The ammonia is condensed back into a liquid phase using cold ocean water pumped from 3,000 feet below the water's surface, and the process begins again. The process is based upon the well-established thermodynamic Rankine cycle.

"OTI has integrated the OTEC power block into a large floating vessel, in this case a spar, for an economically and environmentally-efficient means of converting solar energy from the tropical oceans into affordable electricity," explains Barry Cole, OTI's Executive Vice President and Director of Technology Development.

Key elements evaluated by ABS include: spar hull sizing for the deep draft spar design; energy conversion equipment located in the spar; handling and storage of hazardous materials; deepwater mooring system; cold water pipe conduit suspended from the base of the spar; construction and attachment of the cold water pipe conduit; and power transmission cable with its securing, anchoring, and suspension arrangements. ABS reviewed the design for an extended 30-year facility on-station life.

ABS has issued AIP for both the 25MW and 100MW designs; OTI could be eligible for ABS' class notation A1, Floating Offshore Installation (FOI) Spar, SFA(30).

Texas offshore wind approved

Texas has most likely pulled ahead in the final stretch of getting the nation's first offshore wind farm. After achieving a major milestone in 2010 with more than 10,000MW of installed onshore wind energy capacity, the state will probably erect the first offshore production wind turbines in the U.S. this year off the coast of Galveston. The 12MW project must clear one final hurdle in obtaining a Purchasing Power Agreement, but with all the designs and permits already in hand, the installation could go up as soon as late 2011.

Offshore wind has undoubtedly benefited from the state's distinctive business environment. With stable, long-term policies, and its own transmission network, Texas offers unrivaled business opportunities for the offshore wind industry. Furthermore, the state offers an exceptional combination of laws and conditions due to its unique history as an independent nation; and therefore, its control over coastal waters extends approximately 10 miles out into the Gulf of Mexico – every other state is limited to 3 miles. Because of this, any project located within 10 miles off the coast of Texas does not have to deal with federal regulators. Project developers only have to obtain leases from the Texas General Land Office.

BOEMRE initiates study on regulating worker safety in offshore renewable energy operations

BOEMRE announced it has contracted with the National Research Council's Marine Board to conduct a study on regulating worker safety in connection with the development of offshore renewable energy on the OCS. The project will be important in establishing worker safety requirements for offshore renewable energy operations.

The study is expected to be completed by 31 July 2012.

"We are committed to ensuring that offshore energy development is conducted safely," said BOEMRE Director Michael R. Bromwich. "The results of this study will enhance and enlarge our understanding of the potential risks faced by workers during construction and operation of renewable energy facilities on the OCS."

The study will identify workplace risks involved in renewable energy operations, such as work performed in proximity to high-power electrical devices on offshore substations, use of elevators for wind turbines in highly corrosive environments, accessing turbine blades for repair; crane and diving operations during construction and the use of carbon dioxide fire suppression systems in potentially manned areas. The study will identify gaps in current regulations and make recommendations on additional areas of workplace safety regulation that are deemed necessary. The Marine Board will solicit input from experts in the areas of worker safety regulation, offshore oil and gas operations and maintenance, offshore construction, wind turbine/plant design, operations and maintenance and high-power electrical operations and maintenance.

For more information on BOEMRE's Technology Assessment & Research Program, go to www.boemre.gov/tarphome/index.htm.

2nd Texas Offshore Wind Energy Roundtable (TOWER) Conference in Houston

In order to explore the unique Texas marketplace and to move pace-setting companies toward action in the Gulf of Mexico, the Texas Offshore Wind Energy Roundtable (TOWER) and the Offshore Wind Law (OWL) conferences come ashore in Houston on Oct. 3-4, 2011 at the Four Oaks Place. Among other topics, presentations will include a general overview of offshore wind energy in the U.S. and Europe including case studies, transmission grid considerations, and finance.

The TOWER Conference features the policymakers and project developers who have authority over Texas offshore development and will combine the experience of the European offshore wind energy industry, the Gulf and European offshore oil industry, and the streamlined business opportunities of the Texas offshore wind industry. TOWER offers unparalleled networking opportunities with state and business decision-makers as Texas prepares for action in the America's first gigawatt-scale offshore wind installation.

Simultaneously to the TOWER conference, a side panel entitled "Offshore Wind Law" (OWL) will be offered. Attorneys will get a crucial understanding of the unique combination of laws governing Texas offshore wind energy development and learn how those laws make Texas a streamlined market opportunity. Last year's first TOWER Conference caught the attention of many key players of the offshore wind industry, including companies such as E.ON Climate & Renewables Europe, SIEMENS, Hochtief, Vestas, and SIAG, all of which actively supported the conference. For 2011, the organizers expect roughly 150 to 200 attendees.

TOWER and OWL are jointly organized by the German American Chamber of Commerce of the Southern U.S. and the Texas Wind Energy Clearinghouse, with the active leadership participation of the GLO.

For more information, visit www.tower-conference.com.

AWS Truepower updates and improves Deep-Array Wake Model used in openWind® wind plant design and optimization software

AWS Truepower has announced important updates and improvements to its Deep-Array Wake Model (DAWM), which was first released in openWind® Enterprise in 2010. Concluding a rigorous validation of plant production and wind data from several projects, AWS Truepower also confirmed that the so-called deep-array wake effect, which results in greater wake losses than predicted by standard wake models, can occur in onshore wind projects. Previous research had clearly established such an effect only for offshore projects.

Researchers in the wind energy community are aware that the current generation of wake models underestimates wake losses in offshore wind projects with multiple rows of turbines. This phenomenon results from the cumulative drag imposed by so-called deep turbine arrays on the planetary boundary layer, the lowest layer of the atmosphere. However, the jury has been out regarding whether the deep-array wake effect significantly impacts onshore projects. AWS Truepower's validation effort indicates that onshore projects are also susceptible to this issue and should be analyzed using the most up-to-date models.

"With developers planning larger and larger wind projects, it is critical that models estimate wake losses as accurately as possible," said Michael Brower, CTO at AWS Truepower. "AWS Truepower's DAWM accomplishes this by representing the cumulative drag induced by individual turbines as internal boundary layers, which grow and merge as they propagate downstream. This approach is both flexible and fast, and allows DAWM to handle arrays of any size and shape."

AWS Truepower compared DAWM to turbine production and wind data from five onshore and offshore wind projects. "We were pleased to learn that, after some modifications, the model behaves in a physically consistent manner across a variety of projects," said Nicholas Robinson, Director of openWind®, who led the research and software development. "The DAWM looks to be generalizing exceptionally well between the two offshore sites as well as doing a good job of capturing the effect that we see in the onshore sites."

"Our deep array model is fast, transitions smoothly from a handful to any number of turbines and captures the effect we're seeing in the operational data," he continued. "The validation results indicate that the DAWM employed in openWind® Enterprise captures wake effects in large projects both onshore and offshore more accurately than standard wake models."

Details on the theoretical background, its specific application, and validation can be found in the recently published technical paper,The openWind Deep-Array Wake Model, authored by CTO, Michael Brower and Director of openWind®, Nicholas Robinson.

Download the paper from our website: http://www.awstruepower.com/2011/06/the-openwind-deep-array-wake-model-development-and-validation/

For more information, visit www.awstruepower.com.

Aquamarine Power USA matches $100,000 grant to investigate wave energy potential in Oregon

Wave energy company Aquamarine Power USA has been awarded a $100,000 matching grant by the Oregon Wave Energy Trust (OWET) to gather data on the wave energy potential of the sea along Oregon's coast.

The grant is for acoustic doppler current profiler (ADCP) installation. The ADCPs will measure the wave energy resource at a number of points along the coast. This is an essential first step in finding areas suitable for wave power projects. Aquamarine Power's goal is to find a potential location for the installation of a demonstration array of three wave energy devices that the company aims to install by 2016. The company will match the grant with $100,000 of their own funds.

This follows the award of a $50,000 matching feasibility grant to Aquamarine Power USA by OWET in November 2010.

The two grants will support a study into the wave energy potential off the coast in the service areas of Central Lincoln People's Utility District and Tillamook People's Utility District.

For more information, visit www.aquamarinepower.com.

WACHS SUBSEA® GOES DEEP

A Deep Subject

With its **Deepwater Diamond Wire Saw (DWDWS)** series, Wachs Subsea redefines underwater pipe cutting. Designed for underwater cutting of horizontal or vertical pipe, three models are offered to cut from 4" to 52" O.D. (DN100-DN1300).

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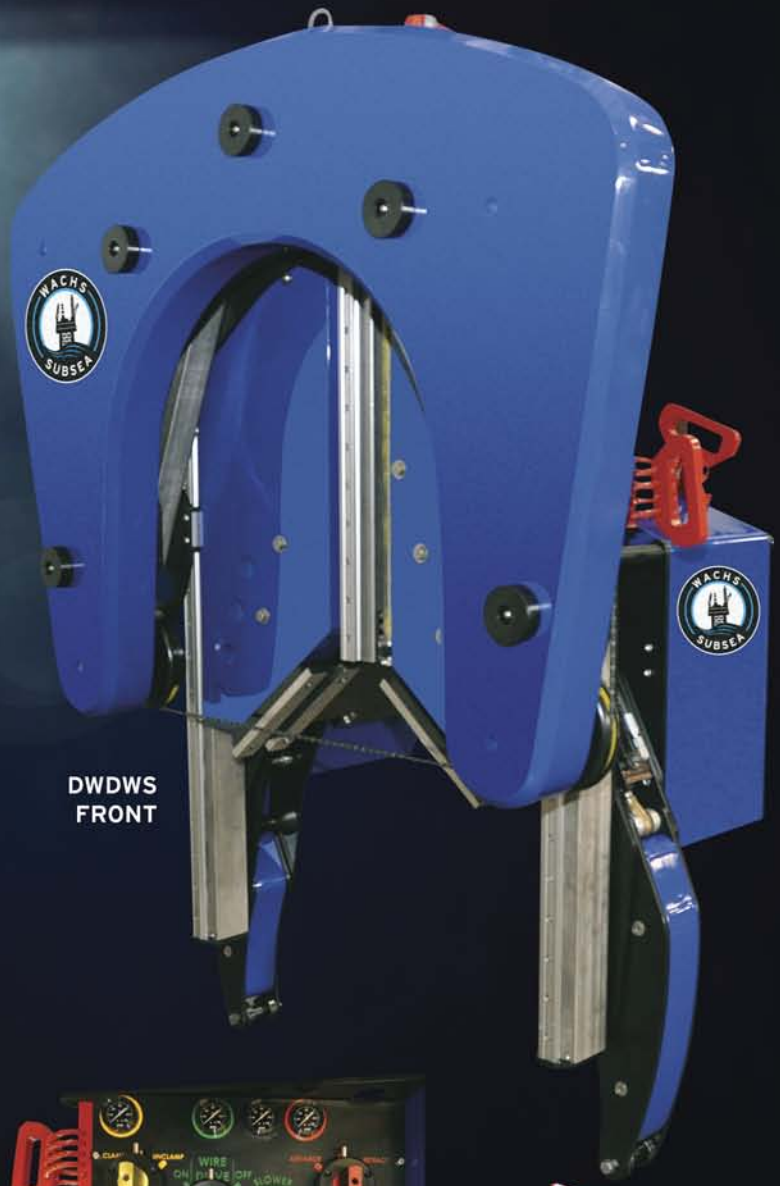

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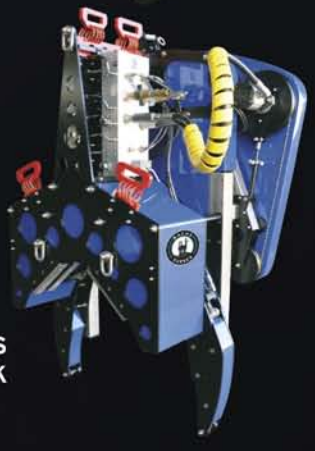
DWDWS CONTROL PANEL



DWDWS BACK

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Offshore Wind Power Projections

By Phil Walker and Cliff McDougall, Pharos Offshore Group Ltd.

Introduction

It can be difficult to see offshore wind renewable energy statistics and projections and determine what is meant for your business. The industry has a complex and interwoven supply chain with many players. We are primarily interested in the subsea power cable installation, trenching and burial business. However, subsea power cable is only one component of an entire offshore wind farm (OWF).

The work that will be required to connect the turbines to the eventual power customers will be significant. Companies, resources, equipment, and partnerships will be needed well in excess of today's current capacity. This represents a sizeable opportunity for company leaders and industry investors to take action now and invest in the rewards to come.

To help understand the opportunities ahead, we will take a closer look at these offshore wind projections.

The Big Picture

There are countless statistics that are constantly used in the media, in reports, and by companies to describe the huge growth potential of renewable energy. Some of you may be looking at these statistics for the first time while others may already be familiar with the data. Whatever your knowledge base might be, our goal is to frame the offshore wind related growth projections in a way that creates some new possibilities for you.

As with all projections, the only certainty is that they will not be 100% accurate. Some will be high, some will be low and some may even be close. Projections rarely turn out as originally expected. Government targets are not always met on time and the future keeps things interesting.

We have collected and organized data, projections and quotes from studies, organizations and governments specifically relevant to offshore wind power cable. We will refer to this data in additional white papers and presentations, and you will find the information grouped either by source or by subject. We hope you apply this information to your business and can use this global view to help analyze your market potential.

UK Taking the Lead in Offshore Wind

While there is a global trend to building out offshore wind generation, the UK is in the lead with their current Round 3 leasing of submerged land around their shores. It is important to look here for a glimpse of how things will unfold around the world. The UK Department of Energy & Climate Change released an Electricity Market Reform White Paper in July of 2011 titled, "Planning our electric future: a White Paper for secure, affordable and low-carbon electricity."

Two major highlights relative to offshore wind are: The UK government has set a new target for 18GW of offshore wind by 2020, up from 13GW, as well as a target of 15% of all UK energy from green sources by 2020.

European Wind Energy Association - EWEA Looking Ahead to 2050

The Heads of State have committed to reducing greenhouse gas emissions by 80-95% by 2050. This will only be possible with a 100% renewable energy power system in Europe by that date, with 50% of Europe's electricity provided by wind power. Wind power contributes to all of the EU's energy policy objectives: increased competitiveness, energy security and fighting climate change.

More new wind power capacity was installed in the EU in 2009 than any other electricity-generating technology. Thirty-nine percent of all new capacity installed in 2009 was wind power, followed by gas (25%) and solar photovoltaic (16%).[1]

AMA Research on Wind Energy

Renewable energy is central to the new coalition government's objectives to reduce carbon dioxide emissions by 30% by 2020 and to generate 15% of the UK's electricity supply from renewable sources by 2020. With onshore wind farms already making a considerable contribution in the UK, the key opportunities for larger scale development going forward lie offshore.

The UK is aiming for onshore wind to grow from around 3.5GW today to at least 13-14GW by 2020, and suitable sites for up to 32GW of offshore wind power development have been identified by the Crown Estate. This installation programme for UK offshore wind until 2020 captures the delivery of all Crown Estate Round 1-3 projects.[2]

With wind energy firmly on the new coalition government's agenda, the [AMA Research] report explores the market opportunities ahead for the construction industry and the wider supply chain.

1. The total future investment costs for 32GW of offshore wind and 14GW of onshore wind are estimated to be as much as £80-95bn, which will make the wind energy sector one of the fastest growing markets.[2]

2. A shift from current operating capacities represents a tremendous challenge to the sector, necessitating an average build rate of around 950MW onshore wind per year and around 2.2GW of offshore wind per year to 2020.[2]

3. The forward wind energy pipeline is very healthy, with 2.4GW of onshore and offshore capacity under construction, 6.5GW consented, and around 9.9GW in planning.[2]

4. Given the trend towards larger turbine sizes in both offshore and onshore projects, the completion of many projects will be increasingly influenced by wind turbine availability. There is a supply/demand imbalance in the turbine market, but both GE and Siemens have announced plans to set up turbine factories in the UK.[2]

European Wind Energy Association - EWEA Targets

In addition to their onshore targets, the European Wind Energy Association's (EWEA) offshore targets are 40 GW for 2020 and 150GW for 2030. In order for this to happen:

1. The 2009 Renewable Energy Directive, which sets a target of 20% renewables in the EU by 2020, must be effectively and rapidly implemented by Member States.[3]

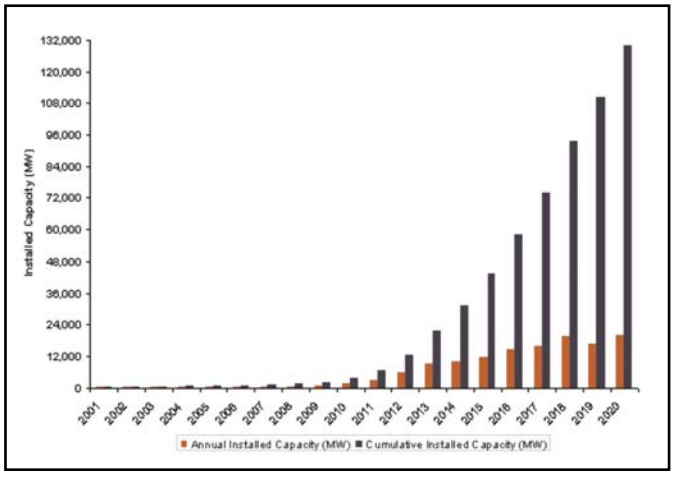
2. To meet the binding energy target, the share of renewable electricity in the EU must increase from 15% to at least 34% by 2020.[3]

3. Europe's offshore winds can bring a new, multi-billion euro industry with thousands of green jobs and a new renewable energy economy, with Europe established as the world leader in a technology that provides clean, indigenous and affordable electricity.[3]

4. There is enough wind around Europe's coasts to power Europe seven times over.[3]

5. Europe is the world leader in offshore wind with a cumulative capacity of 2,063MW spread across 39 offshore wind farms in nine European countries.[3]

6. Other offshore wind projects totaling over 100GW are already in various stages of planning. If realized, these projects would produce 10% of the EU's electricity while avoiding 200 million tons of CO_2 emissions each year.[3]



Global Offshore Wind Market, Historical and Forecast Installed Capacity, MW, 2001-2020 (Source: GlobalData)

The Supergrid

In order for a region to get maximum benefit from the many sources of renewable power, the energy must be connected between multiple sources and distribution points with some form of a "Supergrid." The power transmission system is the backbone of distribution that increases the security in supply for any given area. It is critical that renewable energy is managed with a flexible and intelligent control system if these ambitious targets are to be met. Because the power from a renewable energy source is effectively free when compared to conventional fossil fuel generation, it is advantageous to maximize the utilization of the renewable power whenever possible.

As those opposed to wind energy will quickly point out, wind does not blow all the time. Wind turbine makers actually account for this by designing turbines with a "capacity factor." This is calculated by dividing the total plant-produced energy by the energy the plant would have produced running at full capacity during a given time period. Today's modern utility scale wind turbines typically operate 65-90% of the time, but this is almost always at less than full capacity. Capacity factors of 25-45% are common for wind farms with offshore wind farms delivering more consistent power at a higher capacity factor than terrestrial wind farms over time.

Conventional power generation and distribution benefits from interconnecting adjacent regions in order to smooth out power generation/demand "hotspots." With conventional fossil fuel generation, entire plants can be regulated, started, or stopped to effectively manage generation. A conventional utility power plants' capacity factor can vary between 40 and 80% based on demand. Renewable energy is less controllable; Mother Nature decides when the sun shines and the wind blows.

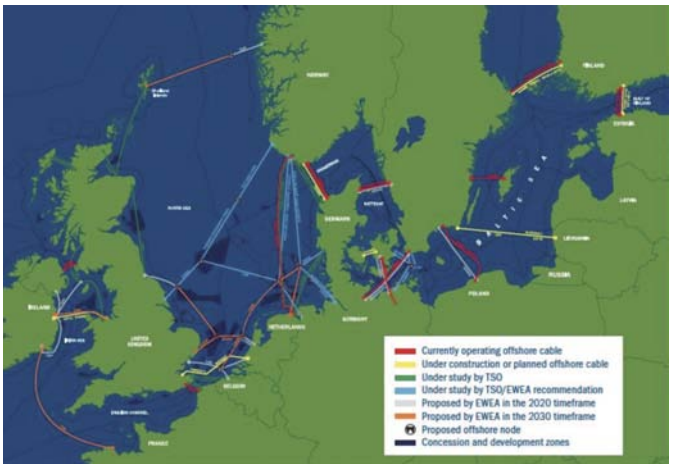
Another perhaps more urgent need for grid interconnection is supply risk. Whether planned terrorist activity, natural disaster or a more conventional dredging/anchor strike, the risk of losing power supply is growing all over the world. One example of such a casualty is when the NorNed interconnector between Norway and Holland broke 300 meters from the Dutch coast in April 2011. The repair time was estimated to take 10 weeks, and with the cause of the break unknown, the losses mounted for the Norwegian and Dutch electricity companies. The same risk exists for all offshore wind farms, which could cause serious financial repercussions.

For more information on successful power management check out the EMPS model used by the Nordic Grid. It monitors production, consumption, and transmission capacities between twenty price areas. It even uses over 50 years of Nordic Hydro power historic data to effectively manage the variability of hydropower. Studies have shown that by connecting multiple wind farms across a wide geographical area, the average power available will remain more consistent. Logically, this smoothed out power supply provides a more consistent and reliable energy supply while at an average capacity that is much less than the entire system's peak generation capacity.

A Few Points on the "Supergrid" From the European Wind Energy Association (EWEA)

• A European "supergrid" must be created by extending and upgrading the existing European electricity network.[3]
• In 2009, the EU institutions adopted legislation (the third liberalization package) aiming to open up the power markets and make them more fair. This must be supported by the development and interconnection of the grids onshore and offshore so that they become European highways of electricity trade.[3]

• EWEA also believes that wind farms should be pooled together to provide power so that their power levels stay consistent if the wind is blowing harder in one place than another. This would minimize costs. An intelligently managed smart grid using demand-side management techniques and storage capacities should be put in place. It should link generation and consumption of electricity irrespective of distance.[3]



EWEA's 20-year offshore network development masterplan

• This is the ideal opportunity to build a Europe-wide, modern grid that connects offshore and onshore wind farms with consumers.[3]

• Europe needs just such a grid, and properly functioning electricity markets, to cope with larger amounts of wind power and to make electricity trade possible, thereby driving down power prices.[3]

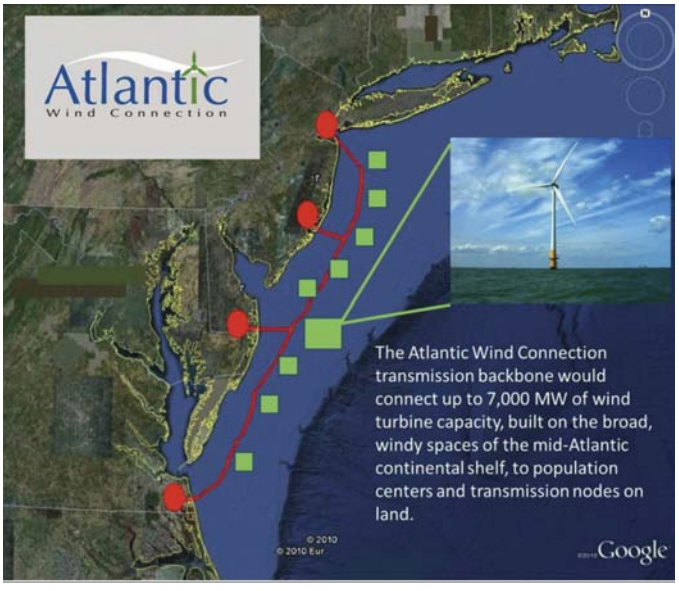
• The Europe-wide grid will help enhance Europe's competitiveness and energy security while creating hundreds of thousands of manufacturing and related jobs and technology exports.[3]

• By 2020, power capacity equivalent to 42% of the EU's current capacity needs to be built to replace ageing power plants and meet the expected increase in demand.[4]

The Mid-Atlantic "Supergrid"

There are plans for a supergrid approach in the US Mid-Atlantic regions as well. With a substantial investment from Google, the concept has received significant attention.

"This new American supergrid off the Mid-Atlantic coast will unlock an important untapped resource, creating the foundation for a new industry and jobs for thousands of American workers," said Bob Mitchell, CEO of Trans-Elect. "The Mid-Atlantic region offers more than 60,000MW of offshore wind potential in the relatively shallow waters of the outer continental shelf. These shallow waters, which extend miles out to sea, allow for the development of large, distant wind farms, mitigating visibility issues and allowing for greater energy capture from stronger winds. With few other renewable energy options ideally suited for the Mid-Atlantic coast, this transmission project will help states meet their renewable energy goals and standards by enabling the local offshore wind industry to deploy thousands of megawatts of clean, cost-effective energy."[5]



There is likely as much new subsea cable required for enhancing the grid as there is required for the new wind farms. While not all of these supergrid cables would require burial, a majority of each system installed would. The same trends leading to increased burial requirements apply here as well. We will cover these factors in more detail later.

Digest of United Kingdom Energy Statistics 2010

The UK has the largest offshore wind resource in the world, with relatively shallow waters and strong winds extending far into the North Sea. Offshore wind is expected to make the single biggest contribution towards the government's target of 15% of energy from renewable sources by 2020.[6]

In January 2010, The Crown Estate announced the successful bidders for each of the nine new Round 3 offshore wind zones, potentially totaling 32GW in capacity. This is considered sufficient to ensure that the 25GW that has been enabled by the government's SEA for offshore renewable energy can be achieved. This is in addition to the 8GW already enabled across Rounds 1 and 2. The combined total of all leasing rounds is over 49GW (including sites in Scottish Territorial Waters and Round 1/2 extensions).[7]

Emerging Energy Research

Offshore wind at YE2009 totaled over 2.1GW of installed capacity in nine European markets. By 2020, 16 European markets are expected to have activated just over 39GW of offshore capacity. By 2025, European offshore wind is expected to contribute 46% of annual additions and make up 24% of total installed wind capacity.[8]

The UK, Netherlands, Germany, Denmark and Belgium rank among Europe's key markets for offshore attractiveness; jointly, these five markets are expected to add over 80% of Europe's offshore capacity between 2010 and 2015.[9]

The Crown Estate: Round 3 Connection Study

The total cost for connecting the Round 3 wind farm projects, assuming no inclusion of Sizewell C and the optimal design solutions identified in this report, is £10,402 million (see table next page).[10]

Marine Hydrokinetic Generation

As another example of future cabling needs, the marine hydrokinetic (MHK) industry represents projected power cabling needs above and beyond the scope of offshore wind. The Ocean Renewable Energy Coalition (OREC) is an organization focusing on MHK. In a recent press release, OREC president, Sean O'Neill, reiterated their belief that 10 percent of current U.S. elec-

nationalgrid
The power of action.

ZONE	OWF	Total Installed Capacity	Connection technologies	Connection Point (s)	TOTAL COST	TOTAL COST Per MW
Moray Firth	C	500MW	AC	New substation on coast	£193m*	£386k
Firth of Forth	G	500MW	AC	Torness	£150m*	£300k
Dogger Bank	H1	1237.5MW	DC	Creyke Beck	£5,910m	£477k
	H3	1237.5MW	DC	Creyke Beck		
	J	1240MW	DC	Creyke Beck		
	H2	1237.5MW	DC	Keadby		
	H4	1237.5MW	DC	Keadby		
	H5	1237.5MW	DC	Killingholme		
	I1	1240MW	DC	Killingholme		
	I2	1240MW	DC	Killingholme		
Hornsea	M	1237.5MW	DC	New substation on Lincolnshire coast		
	N	1240MW	DC	New substation on Lincolnshire coast		
Norfolk (without Sizewell C)	T	1240MW	AC	Sizewell	£1,728m	£349k
	Z2	1240MW	DC	Sizewell		
	U	1237.5MW	DC	Norwich		
	Z1	1237.5MW	DC	Norwich		
Hastings	AA	500MW	AC	Bolney	£184m	£368k
West Isle of Wight	DA	500MW	AC	Chickerell	£175m	£350k
Bristol Channel	EA	1500MW	AC	New substation on Torridge Estuary	£430m	£287k
Irish Sea	IA	1237.5MW	DC	Deeside	£1,632m	£329k
	LA	1240MW	DC	Deeside		
	JA	1237.5MW	AC	Wylfa		
	NA	1240MW	DC	Stanah		
TOTALS		25,795MW			£10,402m	£403k

Table 1: Optimal Connection Costs broken down by Zone

*Total reinforcement costs dependent on GB transmission owner study currently in progress

11

tricity consumption can be met with MHK technologies.[12]

There are still many design ideas being developed for MHK technology without a clear leader identified. It will take more years of research and development before MHK is utilized on a utility scale like offshore wind. Through financial support and favorable laws, government policy around the world has the most impact on how fast this area grows. Eventually it will need significant power cable connectivity.

(1) EWEA: 2050:Facilitating 50% Wind Energy
(2) Wind Energy Construction Programme UK 2010-2020 – AMA Research
(3) Wind Energy Factsheets by the European Wind Energy Association (EWEA) - 2010
(4) EWEA: Pure Power, 2009
(5) AWC – Atlantic Wind Connection
(6) From Page 191 of the "Digest of United Kingdom Energy Statistics 2010"
(7) From Page 192 of the "Digest of United Kingdom Energy Statistics 2010"
(8) Page 13, Emerging Energy Research, Marc Mulenbach, April 7, 2010 Copehagen.
(9) Page 13, Emerging Energy Research, Marc Mulenbach, April 7, 2010 Copehagen.
(10) Page 4, Round 3 Offshore Wind Farm Connection Study, Prepared by Senergy Econnect for The Crown Estate
(11) Table 1, Round 3 Offshore Wind Farm Connection Study, Prepared by Senergy Econnect for The Crown Estate
(12) House Appropriations Committee Approves $50 Million for FY 2012 Water Power Program – OREC - June 15, 2011

EWEA
THE EUROPEAN WIND ENERGY ASSOCIATION

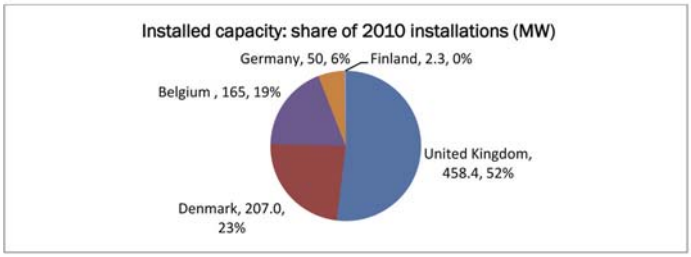
Additional information from EWEA complied by Ocean News

2010

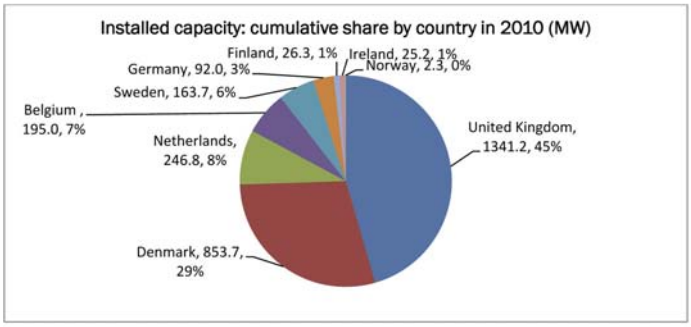
Cumulative offshore wind power market (in Megawatt)

Country	UK	Denmark	Netherlands	Belgium	Sweden	Germany	Ireland	Finland	Norway	Total
Capacity installed	1,341.2	853.7	246.8	195	163.7	92	25.2	26.3	2.3	2,946.2

Source: EWEA



Source: EWEA



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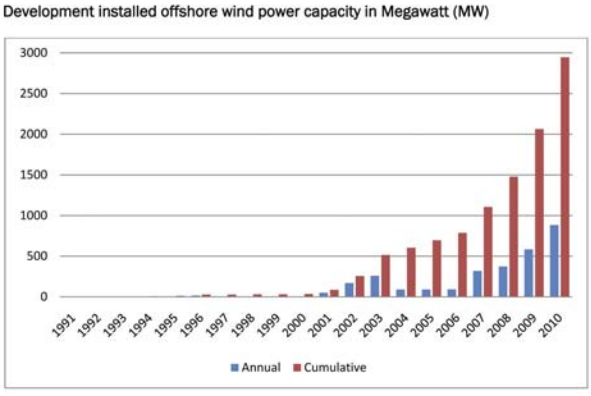

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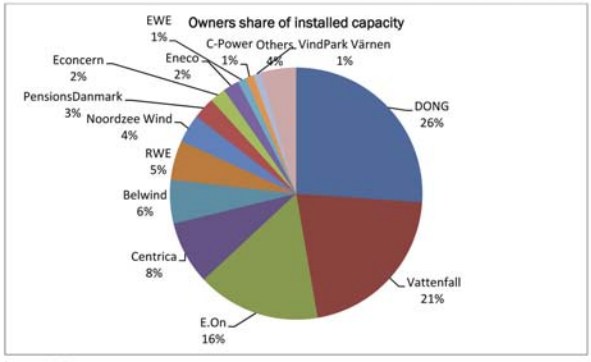


Source: EWEA

Vietnam gets frigates as tensions increase
On 22 August, Vietnam received the second of two Russian-made guided-missile Gepard-class frigates, boosting its naval firepower amid maritime tensions with China. The frigates were ordered several years ago as part of a naval upgrade by Hanoi, which is also buying six Russian submarines and foreign-built maritime patrol aircraft. Beijing and Hanoi have a long-standing territorial dispute over the Paracel and Spratly archipelagos, which are potentially rich in oil and gas deposits and straddle vital commercial shipping lanes. Relations reached their lowest point in years when Vietnam in May accused Chinese marine surveillance vessels of cutting the exploration cables of an oil survey ship inside the country's Exclusive Economic Zone.

China conducts sea trials of new carrier
China's state-run Xinhua News Agency announced 10 August the beginning of sea trials for China's first aircraft carrier, the former Soviet aircraft carrier Varyag. The United States said it would like China to explain why it needs an aircraft carrier amid broader U.S. concerns about Beijing's lack of transparency over its military aims. Debate and mystery still surround the former Kuznetsov-class carrier. Procured by a Hong Kong travel agency in 1998 for $20 million, purportedly to serve as a casino in Macau, the Varyag has been the focus of debate among China watchers ever since it bypassed Macau for the Dalian Shipyard in northeast China in 2002. Reports indicate that the Varyag has been outfitted with an active phased array radar (similar to the U.S. Aegis System), a Type 381 Sea Eagle Radar, a 30mm Type-1030 close-in weapon system, and an FL-3000 Flying Leopard.

Iran touts new torpedo
President Mahmoud Ahmadinejad unveiled a short-range marine missile and a torpedo system 23 August as Iran marked its annual "Defense Industry Day," state media reported. The torpedo system called "Valfajr" (The Dawn) is to be used by submarines. It has a payload of 485-lb and can be used in shallow and deep water. The unveiling ceremony was held at Tehran's Malek Ashtar University, which has close links to the Revolutionary Guards, the elite Iranian military force.

South Korea, U.S. launch massive exercise
South Korea and the United States launched a massive joint military exercise on 16 August, prompting North Korea to condemn the maneuvers as provocative and warn that war could erupt. The two allies have described the 10-day Ulchi Freedom Guardian exercise as defensive and routine, but the North habitually terms such joint drills a rehearsal for invasion and launches its own counter-exercises. CFC commander U.S. Gen. James D. Thurman said the drill was focused on "preparing, preventing, and prevailing against the full range of current and future external threats" to South Korea and the region.

Austal awarded Cape Class patrol boat contract

At a ceremony held on board Austal's next generation 102m trimaran, Austal was awarded a contract for the design, construction, and through-life support of eight new patrol boats for the Australian Customs and Border Protection Service.

This contract is Austal's second significant contract with the Australian Customs and Border Protection Service, having designed and constructed Customs' current fleet of eight Bay Class vessels, which have been in operation for over 10 years.

Austal will build the fleet of Cape Class Patrol Boats at its shipyard in Henderson, Western Australia. Construction of the first vessel is expected to commence in February 2012, with all eight due to be delivered between March 2013 and August 2015.

The In-Service Support contract extends for a minimum period of 8 years and encompasses a full range of intermediate and depot level maintenance activities. Further options can be exercised by the Australian Customs and Border Protection Service for In-Service Support for the life of the Cape Class Patrol Boat Fleet.

The eight 57.8m Cape Class Patrol Boats will play a significant role in protecting Australia's borders from multiple maritime threats, and have been designed to have greater range, endurance, and flexibility as well as enhanced capability to operate in more severe sea conditions than the current Customs' fleet.

USCG Fast Response Cutter launched

The U.S. Coast Guard's second, 154-ft Fast Response Cutter, the Richard Etheridge, was launched at Bollinger Shipyards in Lockport, Louisiana., marking a significant milestone in the Coast Guard's acquisition of the Sentinel-class patrol boats.

While in the water, the cutter will undergo a series of tests and evaluations prior to its planned delivery early next year. The launch is one of many steps in the construction process, leading to sea trials and crew training later this year and, eventually, to the commissioning of the vessel and commencement of its Coast Guard operations. The Sentinel-class patrol boats are the replacement for the service's legacy Island-class, 110-ft patrol boats.

The Richard Etheridge will be capable of reaching speeds in excess of 28 knots and is designed to independently conduct multiple missions, including port, waterways, and coastal security; fishery patrols; search and rescue; and national defense. The Sentinel-class patrol boat is equipped with a stern launch ramp that allows the vessel to deploy its cutter boat in a wide range of sea conditions.

The Richard Etheridge's 24-person crew will conduct additional testing and evaluation prior to the cutter's commissioning in 2012. The cutter will be homeported in Miami and primarily perform missions to save lives, enforce U.S. and international maritime law, and ensure security in the Coast Guard's 7th District area of responsibility that includes the nation's southeastern maritime border and the Caribbean Sea.

The third Fast Response Cutter, the William Flores, is tentatively scheduled to be launched 10 November.

All Sentinel-class Fast Response Cutters will be named after enlisted Coast Guard heroes. Richard Etheridge became the first African-American to command a life-saving station when, in 1880, the service appointed him as the keeper of the Pea Island Life-Saving Station in North Carolina.

OPT deploys autonomous PowerBuoy for U.S. Navy Maritime Security Program

Ocean Power Technologies, Inc., a leading wave energy technology company, has announced the deployment for sea trials of a unique autonomous wave energy device, marking an important milestone in the expansion of the company's PowerBuoy product line.

This latest deployment is an autonomous PowerBuoy® designed and manufactured by OPT under the U.S. Navy's Littoral Expeditionary Autonomous PowerBuoy (LEAP) program for coastal security and maritime surveillance. The LEAP PowerBuoy structure, incorporating a unique power take-off and onboard energy storage system, is significantly smaller and more compact than the company's standard utility PowerBuoy. It provides persistent, off-grid clean energy in remote ocean locations for a wide variety of maritime security and monitoring applications.

Under the LEAP program, OPT has integrated its autonomous PowerBuoy with radar network and communications infrastructure from Rutgers University's Institute of Marine and Coastal Sciences in partnership with CODAR Ocean Sensors. This PowerBuoy provides power at the lower levels needed for the sophisticated vessel detection and tracking system, enabling maritime surveillance in the near coast, harbors, and littoral zones worldwide. Mikros Systems Corporation provided data and systems architecture support for the PowerBuoy/radar network.

Currently, systems requiring remote power at sea are often powered by diesel generators, which need frequent maintenance and fuel replenishment. The LEAP PowerBuoy system was developed by OPT to provide constant power in all wave conditions for the sea-based radar and communications system. The company's proprietary power management techniques and onboard energy storage capability are key innovations of the system, and enable operation even in extended zero-wave sea conditions. In addition, the system has been engineered to require no maintenance for three years.

The LEAP system was deployed on 11 August 2011 by a U.S. Coast Guard vessel and will be ocean-tested approximately 20 miles off the coast of New Jersey. It will be integrated with the Rutgers University-operated, land-based radar network that provides ocean current mapping data for the National Oceanographic and Atmospheric Administration (NOAA) and US Coast Guard search and rescue operations. The ocean test of the LEAP vessel detection system will therefore demonstrate dual-use capability of the radar network and verify OPT's technology as a persistent power source for systems requiring remote power at sea.

For more information, visit www.oceanpowertechnologies.com.

HII delivers submarine ahead of schedule

Huntington Ingalls Industries has announced that its Newport News Shipbuilding (NNS) division delivered the Virginia-class submarine *California* (SSN781) to the U.S. Navy on 8 August. The delivery came more than 8.5 months early to the contract date and nearly five months faster than NNS' previous delivery of New Mexico.

California, the world's most modern and sophisticated nuclear-powered attack submarine, recently returned to NNS following the successful completion of its third and final round of sea trials. "This is the day that shipbuilders work toward," said Becky Stewart, Vice President for submarine programs at NNS. "Delivery marks the passing of ownership from the shipbuilder to the Navy, and we couldn't be more proud of this ship and the shipbuilders that built her. Our team put a lot of hard work into this submarine, and it shows. *California* is the fourth Virginia-class delivery for us, and each successive ship has been delivered with the highest quality at a lower cost and shorter schedule."

California is the eighth submarine in the Virginia class and the first delivered by NNS since the return of the Newport News Shipbuilding name. The ship's construction began 15 Febuary 2006, and the keel was laid during a ceremony held 1 May 2009. *California* was christened 6 November 2010, and launched 13 November 2010. The commissioning has been scheduled for 29 October by the Secretary of the Navy.

Designed to meet the Navy's requirements in a post-Cold War era, Virginia-class submarines use advanced technologies to increase firepower, maneuverability and stealth. The 377-ft long submarines are capable of submerged speeds of more than 25 knots and can stay submerged for up to three months at a time.

SeeByte provides SeeTrack Military training to the Polish Navy

SeeByte, the global leader in creating smart software technology for unmanned systems, has successfully provided the Gdansk University of Technology (GUT) and the Polish Navy full training to accompany their recent purchase of SeeByte's SeeTrack Military software.

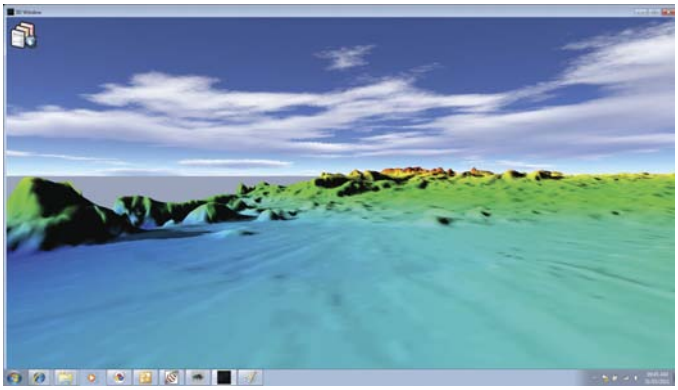
Having acquired SeeTrack Military earlier this year, SeeByte's team trained two engineers from GUT and two members of Poland's Naval staff, including Lieutenant Adam Polak of the Polish Naval Academy, at SeeByte's headquarters in Edinburgh. The Polish Navy's 8th Coastal Defense Flotilla commands the Mine Countermeasures (MCM) vessels, while GUT work closely with the Navy to ensure it is equipped with state-of-the-art, new generation technology to carry out these duties.

SeeTrack Military is a mission-planning, monitoring, and post-processing tool that provides users with the ability to view their operating environment in a single, integrated picture while saving time, money, and valuable man-hours. This latest purchase by GUT brings the current number of NATO-friendly countries utilizing the mission-planning, monitoring and post-processing software tool to 12.

For more information, visit www.seebyte.com.

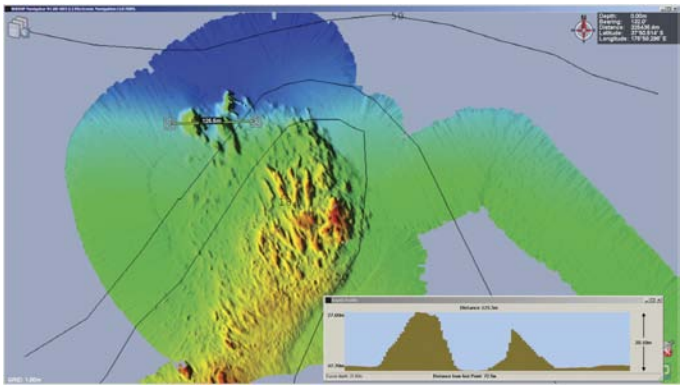
A Wide Angle Sonar Seafloor Profiler for Viewing and Recording Seabed Features Simultaneously

There is great news for skippers of any research vessel searching for a turn-key solution for gathering detailed information about the marine environment, collecting it faster than ever and utilizing that data in more meaningful ways. Furuno and Electronic Navigation Ltd. (ENL) are proud to introduce the Wide Angle Sonar Seafloor Profiler (WASSP) multibeam sonar, a groundbreaking new system that allows you to simultaneously view and record bathymetry and seafloor hardness, find fish targets and utilize true multibeam sonar technology to discover wrecks and structures, all at very high resolution. With WASSP, you now have the ability to see more, record more, discover more, and map more with more confidence than ever before.



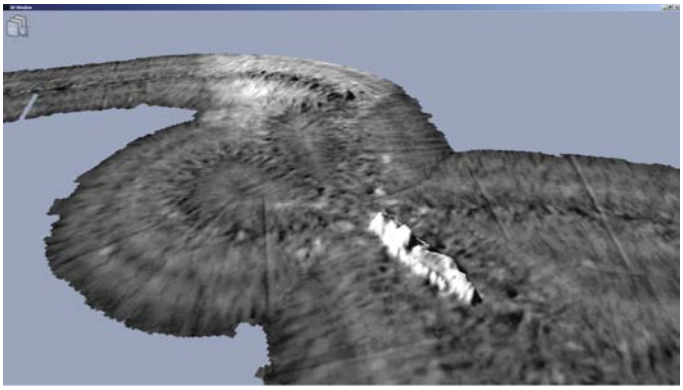
A 3D view of the seafloor allows you to zoom and pan the data

WASSP gives you the power to really see what's below and around your boat in a way never before possible. It offers unparalleled accuracy, resolution and versatility in a cost-effective package suitable for a variety of vessels.



Light areas depict hard or rocky ground while dark areas are soft or sandy ground

The system utilizes a unique combination of wide-angle, multibeam sonar and computer processing power to provide you with detailed information about the fishing environment with amazing resolution and clarity. The system processes 112 dynamic beams, with each beam sampling data from the water column and seafloor. From this wide, 120° port-starboard swath, WASSP allows you to find and georeference reefs and wrecks, fish schools, seafloor hardness changes and foreign objects both in the water column and on the seafloor.



Instantly view a cross-section profile of data

Sonar data is displayed in real time, while giving you the ability to save seafloor profiles for future reference and to overlay these profiles on WASSP's own Navigator plotter using Navionics charts, or on other existing plotting programs. Display options include real-time 3D view, 2D view, normal echosounder, sonar and side scan sonar views. Each of these views can be presented in full screen or in split screen to enable you to quickly and easily understand the detailed information generated.

Because WASSP is so easy to operate and delivers a turn-key, multibeam sonar solution, the system greatly enhances understanding and knowledge of the marine environment. WASSP enables seabed profiling at up to 100 times the speed of conventional single-beam Echosounders, while offering greatly improved accuracy at a significantly reduced cost. Information is presented in user-friendly displays, and the data is stored on a Windows-based operating system capable of sending the data to software chart plotting packages.

The WASSP transducer can be permanently mounted to the vessel or deployed via a pole or other temporary mount, depending on the vessel and application. This powerful, patented BTxR Transceiver transmits at up to 8 pulses per second. With its 120° swath, WASSP offers a 3:1 swath-to-depth scope, which means you'll cover a lot of ground in rich detail in no time at all!

For optimal performance, roll, heave, pitch, heading and position inputs may be incorporated via external equipment, such as the Furuno SC30 Satellite Compass. The WASSP system also includes a built-in tide correction database for almost anywhere in the world, resulting in more accurate seafloor profiles and fish school location.

For more information on WASSP or Furuno's full line of award winning marine electronics, contact: Furuno U.S.A., 4400 N.W. Pacific Rim Blvd., Camas, WA 98607. Phone: (360) 834-9300. Online boaters can also check out Furuno U.S.A.'s web site www.FurunoUSA.com.

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OFFSHORE INDUSTRY

Hornbeck Offshore reaches deal with Marine Spill Response

Hornbeck Offshore Services Inc. and Marine Spill Response Corp. reached a long-term deal for spill response services in the Gulf of Mexico. Financial terms were not disclosed.

Two multi-purpose support vessels owned by Hornbeck Offshore, which provides water transportation for the offshore petroleum industry, will be retained by Marine Spill Response, an energy industry cleanup consortium, and be equipped with spill response capabilities, Hornbeck said.

The 370-ft vessels have 24,000 barrels of recovered oil capacity and are based out of Port Fourchon, Louisiana. They are both being outfitted with skimming systems, an ocean boom, and a support boat.

The navigational systems on each vessel also will be upgraded to include infrared oil spill detection systems that could help the vessel crew conduct skimming operations during bad weather, low visibility, and night operations, Hornbeck said. The deal also includes a manned equipment site at Hornbeck Offshore's primary shore base facility in Port Fourchon. The facility will house a spill response school.

Exxon has largest proven gas reserves among top 15 companies

ExxonMobil Corp. had the largest portfolio of proven gas reserves among the top 15 international integrated companies at the end of 2010, according to a new report available on companiesandmarkets.com. The report benchmarks the top 15 companies on various operational and financial parameters.

Lukoil, with 13,319 MMbbl of proven oil reserves at the end of 2010 was top ranked in terms of oil reserves among the top 15 international integrated companies. ExxonMobil, with 78,815 bcf was the highest gas reserves holder within the peer group. The proven oil and gas reserves of top 15 companies decreased 0.4% during 2010, declining from 125.89 billion boe in 2009 to 125.39 billion boe in 2010.

Total costs incurred in oil and gas operations by top 15 companies increased at a CAGR of 9.9% from $143.7 billion in 2006 to $210 billion in 2010. Exxon Mobil, by spending $71,726 million in 2010, ranks first within the peer group. The company's total costs incurred increased at a CAGR of 49.4% from $14,385 million in 2006 to $71,726 million in 2010.

In addition to ExxonMobil and Lukoil, Royal Dutch Shell plc, Chevron Corp., Total S.A., ConocoPhillips, Eni S.p.A., OAO Tatneft, BG Group plc, OMV Aktiengesellschaft, Repsol YPF, S.A., Marathon Oil Corp., Hess Corp. and Cenovus Energy Inc. were included in the study.

Drilling activity down 52% across UK shelf; hits 9-year low

North Sea offshore drilling activity in the second quarter of 2011 fell 52% compared to the same period last year, according to the latest oil and gas industry figures released by Deloitte.

The North West Europe Review, which documents drilling and licensing in the UK Continental Shelf (UKCS), reveals a 43% decrease over the first 6 months of this year compared to 2010, with a total of 20 exploration and appraisal wells spudded in the UK sector between 1 January and 30 June, compared to a total of 35 during the same period in 2010.

Despite a 19% increase in wells spudded between the first and the second quarters of 2011, the mid-year total sits at its lowest rate since 2002.

Brazil to emerge as major oil exporter by 2020: GlobalData

The rapid increase in subsalt production in Brazil will allow the country to emerge as a major oil exporter by 2020, according to a GlobalData report. Brazil's oil production is expected to reach close to 5.2 Mbpd by 2020, making the country one of the top 5 oil exporters globally. A large part of this production, growth is expected to come from the subsalt basins as the total subsalt oil production in Brazil is expected to reach 1.8 Mbpd in 2020. Huge oil and gas finds in the subsalt areas have prompted the Brazilian government to develop a new petroleum regime for the region. The new regime will abandon the concession system and shift to production sharing contracts. Petrobras will be granted full ownership of new subsalt acreage and will be guaranteed a minimum 30% share.

Offshore floating production system development plans look solid to 2015

The future of floating production systems is solid, says Infield in its "Floating Production Systems Market Report to 2015". Technological drivers and long-term schedules have improved the market fundamentals.

Of the floating production capex to 2015, Infield forecasts that about 62% will go to FPSO installations, 18% to semi-submersible facilities, 11% to TLPs, 6% to other floating development types and 2% to spars.

Infield says it has increased its count of "firm" projects from the 2010 total of 67 to 91 today.

While Angola, Nigeria and Brazil are the primary markets, they are not the only ones. Australasian expenditures are expected to grow going forward with projects such as Ichthys and Prelude. In the North Sea, projects such as Skarv, Goliat, Schiehallion, Quad 204 and possibly the Rosebank FPSO push the spending.

According to a recent report by International Maritime Associates, Inc. (IMA), Brazil is the most active region for future projects, with 50 potential floater projects in the planning cycle. Next in line is Southeast Asia with 37 projects; followed by West Africa with 36 projects; Northern Europe 22 projects; Gulf of Mexico 17 projects and Australia 11 projects.

Of the 196 planned projects identified by IMA, 53 are in the bidding or final design stage. Major hardware contracts for these projects are likely to be awarded within the next 12 to 18 months, the report said. Another 143 floater projects are in the planning or study phase. Major hardware contracts for these projects are likely in the 2013 to 2018 timeframe, IMA said.

The IMA report also noted that the current order backlog consists of 53 production floaters, a net increase of 6 units since March.

BP successfully tests deepwater well capping stack offshore Angola

BP successfully tested a deepwater well emergency capping stack offshore Angola. The device, developed with Subsea 7, Oceaneering, FMC and Cameron, is a modified subsea assembly of valves, spools and fittings used to control flow. The capping device would be landed onto the top of a blowout preventer (BOP) once the top part, known as the lower marine riser package, has been removed.

A support vessel deploys a remotely operated vehicle (ROV) to lock the well cap connector to the wellhead and to do post-closure monitoring of the operation using its onboard umbilical system to control the well cap subsea control module.

When the capping device has been seated onto the wellhead and locked in place, the support vessel and ROV close the well bore caps and then activate the umbilical system to power-up the well cap. The process can be reversed, recovering the device to the surface.

Plexus Holdings to design mudline system targeting safer well re-entry

Wintershall Noordzee has commissioned Plexus Holdings to design and develop a mudline crossover subsea wellhead system with high pressure-high temperature capabilities.

Under the $800,000, 6-month contract, Plexus will engineer equipment that should allow Wintershall to complete and then produce from a temporarily abandoned exploration well that employed the Plexus TRT-S mudline system.

Through use of Plexus' proprietary POS-GRIP friction-grip technology, the tubing hanger diameter has been reduced to enable installation via a standard casing riser, rather than through a larger diameter high pressure riser system between the mudline and surface BOP.

The planned configuration will allow multiple riser strings to be re-established during the subsea production conversion of a pre-drilled mudline well, thereby complying with increasing requirements for multiple barriers.

Plexus will own the intellectual property rights to the new mudline crossover subsea wellhead system. Following the design process, it will quote for the manufacture and supply of two subsea wellhead systems for installation at the end of the 2013 second quarter.

In March, Plexus launched the HGSS JIP to develop a new method of engineering for subsea wellheads using the company's friction grip technology.

An aframax tanker is smaller than 120,000 dwt with a breath above 32.31m.

Aker, ExxonMobil sign letter of intent for two aframax tankers

Aker Philadelphia Shipyard ASA's sole operating subsidiary, Aker Philadelphia Shipyard, Inc. (APSI), signed a letter of intent with SeaRiver Maritime, Inc. (SeaRiver), ExxonMobil Corp.'s U.S. marine affiliate, for the construction of two aframax tankers. The 820-ft long, 115,000 deadweight ton tankers are intended to be used to transport Alaskan North Slope crude oil from Prince William Sound to the U.S. West Coast.

Project planning work is currently underway in conjunction with APSI's technical partner, Samsung Heavy Industries. Construction of the first vessel is expected to begin by mid-2012, and both vessels are scheduled for delivery in 2014. The vessels will be equipped with double hull protection, the latest navigation and communications equipment, and energy efficient engines.

It was expected that the parties would enter into definitive agreements based on the letter of intent during the 2011 third quarter. The execution of those agreements is subject to the satisfaction of certain conditions precedent, including board approvals and the completion of definitive documentation agreeable to all parties.

Aker Philadelphia Shipyard is currently constructing two 46,000 deadweight product tankers for delivery in late 2012 and early 2013.

Enarsa postpones auction of Argentinean offshore blocks

State-run energy company Enarsa has suspended the auctioning of oil exploration rights at 32 offshore blocks in Argentina because of adverse market conditions. The company will resume the auction process once conditions are more favorable.

The blocks are located in Valdes Peninsula, San Jorge, and Malvinas in the Atlantic Ocean. Enarsa has signed agreements with Petrobras Argentina and YPF to develop the region's resources as the nation struggles to find new sources of energy. Between 2003 and 2010, oil production fell by 18% to 34 million cubic meters and proven oil reserves decreased by 11% to 393 million cubic meters.

Natural gas production dropped 43% to 379 billion cubic meters and reserves fell by 8% to 47 billion cubic meters in 2010, Dow Jones reported.

Douglas-Westwood expects $225B to be spent on deepwater

Douglas-Westwood's latest global deepwater market analysis forecasts $225 billion to be spent 2011-2015, an increase in forecast expenditure of $7 billion from the firm's second quarter analysis.

With Petrobras' recent announcement that it will invest $53 billion in the development of its pre-salt reserves, as part of its 5-year budget plan, the outlook for the Brazilian deepwater market looks particularly strong.

In the July 2011 update of the Deepwater Service, Douglas-Westwood forecast that around $61 billion would be spent on deepwater fields in Latin America over the 2011-2015 period. A significant proportion of this forecast capex will come from the drilling and completion of over 470 subsea wells as well as the installation of numerous floating production platforms.

There have also been signs over the last 3 months that the North American deepwater market is beginning to recover. Santiago, the first drilling permit issued after the Gulf moratorium, proved a commercial success for operator Noble Energy. Production from this field, along with nearby Santa Cruz and Isabela prospects, is expected from early 2012. The development of the Tubular Bells field is also progressing with operator Hess Oil.

Chevron sells Union Oil's Alaska Cook Inlet interests to Hilcorp

The Alaska oil and gas assets of Union Oil Co. in Cook Inlet will be sold to Houston-based Hilcorp Alaska LLC. Union Oil's parent, Chevron, announced the sale. Terms were not disclosed. The deal is expected to close by the end of the year. Covered in the sale are Union Oil contracts and interests in Granite Point, Middle Ground Shoals, Trading Bay, and MacArtrhur River fields. Also included are interests in 10 offshore platforms, two onshore gas fields, and two gas storage facilities. Net production from these is about 3,900 bbl and 85 MMcft of natural gas per day. The sale includes interests in two pipeline companies.

Ensco takes delivery of new ENSCO 8504 ultra-deepwater drilling rig

Ensco plc has taken delivery of ENSCO 8504, the fifth of the seven ENSCO 8500 Series® rigs constructed by Keppel FELS Ltd. in Singapore. After mobilizing to Brunei to complete deepwater sea trials and final outfitting, ENSCO 8504 will commence a previously announced drilling contract with Total E&P Deep Offshore Borneo B.V.

"Brunei is an emerging deepwater basin, and we look forward to entering this market and expanding our relationship with Total," said Dan Rabun, Ensco's chief executive officer.

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

The uniform design of the ENSCO 8500 Series® streamlines operational functionality, repairs, training, spare part requirements, and maintenance, while also providing flexibility for customer-specific enhancements. In particular, the 8500 Series may be modified to drill and complete wells in water depths up to 10,000-ft.

Keppel-built ENSCO 8504 rig

Two additional ENSCO 8500 Series® rigs are under construction with deliveries scheduled for the first and second half of next year. Ensco has the world's newest ultra-deepwater drilling fleet comprised of drillships and semi-submersibles that operate in multiple markets around the globe, including Brazil, West Africa, U.S. Gulf of Mexico, Mediterranean and Asia.

Breton drills second evaluation well 40 miles offshore Louisiana

Breton Energy has started drilling a well in West Cameron lease 171 in the U.S. Gulf of Mexico. The primary focus of the OCS-G-01997-10 well is a proven undeveloped gas accumulation in shallow waters 40 miles offshore Louisiana.

Breton will use jack-up rig Hercules 253 to drill a vertical pilot hole in the target sand reservoir before the vertical well is plugged.

On successful evaluation, the company will abandon the well and drill a new sidetrack with a horizontal lateral of 800-ft, upstreamonline.com. reported. The well is the second of a six-well program, which was planned to increase revenues from Breton Energy's Gulf of Mexico assets.

ConocoPhillips sanctions Australia Pacific LNG project

ConocoPhillips approved the final investment decision for the initial train of a two-train liquefied natural gas (LNG) 9 million tons per annum (MTPA) project by Australia Pacific LNG in Queensland, Australia. Project sanction includes development of the necessary resources from Australia Pacific LNG's 24 tcf of coal seam gas (CSG) resources in the Surat and Bowen Basins to supply the first train requirements, installation of a transmission pipeline from the onshore gas fields to the LNG facility on Curtis Island, and infrastructure commitments to support a second train.

LNG exports from the first train are scheduled to start in 2015 under a binding sales agreement for 4.3 MTPA with China Petroleum & Chemical Corp. (Sinopec Corp.).

ABB to power icebreakers to serve platform off Sakhalin Island

ABB has won a $40 million-plus contract to provide energy-efficient power and propulsion systems for two new icebreaking vessels set to work offshore eastern Russia. The vessels, to be built by the Arctech Helsinki Shipyard in Finland, are designed to withstand extreme Arctic environmental conditions.

They will operate in drifting ice up to 1.7m thick and temperatures down to -35° C (-31° F). Both should be delivered in spring 2013 to shipping company Sovcomflot, which will use them to transport supplies to the Sakhalin-1 platform that will host the Arkutun-Dagi field development off Sakhalin Island.

ABB's equipment will comprise power generation and distribution systems; thruster motors; and two 6.5MW propulsion systems including drives and the Azipod energy-efficient electric propulsion units.

Chevron taps NASA's JPL for deepwater technology partnership

Chevron said it will work with NASA's Jet Propulsion Laboratory (JPL) to develop technologies to improve oil and natural gas production. The alliance will focus first on technologies around power transmission, signal processing, and equipment activation on deep-water exploration and production projects.

"We are proud that the same pool of talent that sends rovers to Mars, explores our universe, and studies Earth's environment will help contribute advanced technology towards our energy future here on Earth," said Dr. Charles Elachi, director of JPL, in a statement.

Technology developed at JPL, NASA's main research facility for space vehicles and robotics, can be applied to the extreme conditions the oil and gas industry faces while searching for and producting energy from the ocean depths, officials said in a statement.

For example, JPL technology that allows electronic communication over millions of miles in space could be applied to equipment sitting on the seafloor under the waves, where pressures and temperatures reach some of their greatest extremes on Earth.

Oil and gas leaks on UK continental shelf decline from previous report

The number of potentially serious offshore oil and gas leaks on the UK continental shelf has fallen, according to Britain's Health and Safety Executive (HSE). Latest analysis counts 73 major or significant hydrocarbon releases associated with UK offshore installations in 2010 -2011, down from 85 the previous year, but still higher than the 61 recorded in 2008-2009 – the lowest since HSE started regulating the industry's activities.

Overall, HSE added, there is a continuing downward trend in the total of all reported hydrocarbon releases offshore.

For the fourth year running, there were no fatalities resulting from offshore activities regulated by HSE. Serious injuries fell from 50 the previous year to 42, a total in line with the average of the previous 5 years.

HSE counted 432 dangerous occurrences in 2010-2011, 11 fewer than the previous year. More than a third were hydrocarbon releases, and just over a quarter were related to equipment failures.

SBM Offshore granted $1B loan to build FPSO
An SBM Offshore joint venture has secured a loan of $1 billion for the construction of the floating production, storage and offloading (FPSO) Cidade de Paraty. The FPSO will be owned and operated by the joint venture, which comprises SBM Offshore with a 50.5% stake, QGOG with 20%, Nippon Yusen Kabushiki Kaisha with 17.5% and Itochu Corp. with 12%. The SBM joint venture has also signed a 20-year agreement with the BM S-11 consortium to charter the FPSO for the development of the Lula Nordeste field, which is located 265 km offshore Brazil in a water depth of 2,100 m. The BM S-11 consortium consists of Petrobras, which has a stake of 65%, BG Group with 25% and GALP Energia with 10%. The FPSO consists of topside facilities to process 150,000 bbp/d of production fluids, associated gas treatment for five MMcm/d and a water injection facility for 150,000 bbp/d.

Subsea 7 wins Gorgon project umbilicals contract
Subsea 7 has secured an $80 million contract for the installation of offshore equipment at the Chevron-operated Gorgon project, offshore Western Australia. Work under the project includes transportation and installation of subsea umbilicals from Barrow Island to the Gorgon and Jansz fields. The umbilicals will be transported using the Seven Seas vessel and installed at a water depth of 1,350m using the onboard advanced deepwater flex-lay system. Subsea 7 will also undertake trenching work of up to 70km from Rockwater 2 to stabilize and protect the main umbilicals.

SeaBird awarded extended 2D surveys
SeaBird Exploration has won two new 2D seismic acquisition contracts with a combined value of $10 to $12 million. Osprey Explorer has a letter of intent from a major oil company for a 2D survey covering 4,971 to 6,835 mi. in South America. The vessel will mobilize to the region after completing its current commitment in the Gulf of Mexico and work on the survey between September and December. GGS Atlantic will mobilize from the Gulf of Mexico to the Barents Sea for a 5,344 miles, multi-client survey starting in July and continuing through mid-October 2011.

SMOE to build $492M platform offshore Myanmar
Sembcorp Marine subsidiary SMOE has secured a contract worth $492.11 million from PTTEP International to build an offshore platform in block M9 in the Andaman Sea, offshore Myanmar. Under the contract, SMOE will be responsible for the engineering, procurement, construction, transportation, installation, offshore hook-up, and commissioning of a processing and living quarters platform. The platform's 15,000-ton topsides will be integrated with a living quarters module for 128 personnel, a jacket with approximately 20,000-tons of piles and a 100m flare boom. The company will begin construction of the platform in October 2011 and is expected to be completed by November 2013.

Pemex, with production in steep decline, looks to develop deepwater assets

Pemex's desire to enter the deepwater market was recently confirmed with the signing of a 5-year contract of $850 million for SeaDrill's brand new West Pegasus ultra-deepwater rig, according to a report authored by market analyst Douglas-Westwood.

"Pemex is investing heavily in the exploration and development of its shallow water fields, despite significant production decline from many of its mature basins," the firm noted. "It is the company's assets in the deepwater Gulf of Mexico, however, that hold the key to increasing future output."

Mexico's offshore oil and gas production comes from five main areas – Campeche Bay, Burgos Basin (gas), Golden Lane, Tabasco, and Veracruz, all of which lie in the Gulf of Mexico. Nearly 30 oil fields are located in Campeche Bay, the largest (Cantarell) of which was discovered in 1976. The Cantarell complex was originally the largest offshore oil producing complex in the world, second only to the onshore Ghawar field in Saudi Arabia, and accounted for upward of 60% of Mexico's production.

SeaDrill's new West Pegasus rig

Lying in shallow water depths of 35m to 40m and producing from in excess of 30 platforms, Cantarell, among other major fields, is now in terminal decline. The necessity to offset the declining production profile, particularly amid robust commodity prices, is more important than ever before. The country's reserve base has also decreased, according to Pemex. Proven reserves have fallen for a twelfth consecutive year to 13.8 billion barrels.

Historically, the lack of foreign investment and expertise has limited Pemex to largely rely on shallow water prospects and only a limited volume of deep exploration and production has been carried out to date. However, the majority of prospective reserves lie in deep waters and it has been the focus of recent company strategy to explore and develop the huge potential volume of hydrocarbons off the Mexican shelf. It is expected that following recent announcements, Pemex will begin to offer deepwater drilling contracts to foreign players by early 2012, although the eagerness of foreign participation is yet to be determined.

The first deepwater exploration started in 1999 with Chuktah-201 (513m) and Nab-1 in 2000 (681m), but moved into a higher gear with Noxal in 2005 (689m), also known as Deep Coatzacoalcos. This was the first of a series of ten exploration wells Pemex planned to drill in the area off Veracruz state.

The Lakach-1 wildcat well in 2006 (988m) is close to Noxal-1 and is considered a much better proposition. Initial output from the Lakach field is expected in 2014, with its 1.4 tcf of reserves likely to be developed in conjunction with satellite fields, including Ahawbil, Labay, Piklis and Kuyah. Another possible deepwater development is the Lalail prospect which lies in water depths of 792 meters. Lalail is expected to come onstream in 2015 and may well be tied back to a floating production platform. During 2011 Pemex expects the Bicentenario rig to be drilling in water depths between 940 and 2,933m.

Apache CEO Eager to expand position in U.S. Gulf deep water

Independent producer Apache wants to boost its presence in the Gulf of Mexico's deep waters and hopes to build a position similar to the one it has staked in shallow depths where it is a leading producer, chief executive officer Steve Farris said.

"We're eager to get after an active exploration program to expand our position," Farris told investors during a conference call to discuss the company's second-quarter financial results.

Apache, long a top shallow-water producer, acquired interests in 110 deep-water exploration blocks when it bought rival Mariner Energy last year for $2.6 billion. That acquisition was part of a larger $11-billion-plus spending spree in 2010 that bulked up Apache's holdings, with fields in the U.S. Gulf, Egypt, west Texas and Canada.

Production from those fields helped Apache have its best quarter since the second-quarter of 2008, when surging in oil prices boosted profits. The Houston company reported record production equal to 749,000 bbl/d, which, combined with higher energy prices, lifted the company to record revenue of $4.34 billion.

Profits surged 46% to $1.26 billion, or $3.17 a share, up from $860 million, or $2.53 a share, a year earlier. Excluding foreign currency fluctuations and other impacts, earnings rose to $3.22 a share from $2.46.

Though Apache's Gulf of Mexico production and prices rose, Farris said it will be 3 years before the Gulf's deep waters are a "significant driver" of earnings. Some of that is due to the slower permitting for new drilling that has followed last year's Deepwater Horizon disaster and oil spill. "Our expectations were, by the end of this year we ought to be in pretty good shape with exploration permits," he said. "I think it's slower than everybody expected."

Steve Farris

As such, Farris said that Apache is accounting for 3- to 6-month delays into its Gulf plans. So far this year, Apache has applied for permits to drill four deep-water exploration wells and has received approval to begin two, Farris said. Still, Farris said, "I would see us over time increasing our interest in blocks that we have gotten from Mariner and also drilling some wells as the operator."

Lucius unitized, to process Hadrian South gas in U.S. Gulf

Anadarko Petroleum Corp. finished a unitization agreement with ExxonMobil Corp. and co-owners to develop the Lucius field. The unitization includes parts of Keathley Canyon blocks 874, 875, 918 and 919 in the Gulf of Mexico. Following the unitization agreement, Lucius' participants agreed with Hadrian South owners to process Hadrian South natural gas through the Lucius facility.

"We've already placed orders for the long-lead items, including the truss spar floating production facility, which will have a capacity of more than 80,000 bbl/d and 450 MMcf of natural gas per day," Anadarko President Al Walker said.

Anadarko and ExxonMobil anticipate sanctioning the project later this year, with first production expected in 2014, according to Walker.

Noble Corp. exercises options to build two high-end jack-ups

Noble Corp. exercised options with Sembcorp Marine's subsidiary Jurong Shipyard for the construction of two additional high-specification, heavy duty, harsh environment JU3000N jack-up drilling rigs. This order will bring the total number of new jack-up rigs the company will have under construction with the Jurong Shipyard to 6.

Total delivered costs for these latest two orders are estimated at approximately $245 million per rig, including project management, spares and start-up costs, but excluding capitalized interest. Payment terms are consistent with the order of the four previous rigs placed with the Jurong Shipyard since December 2010: 20% of the construction price due at contract signing, 20% due at steel cutting and the remainder due at rig delivery.

The two latest orders are expected to be delivered from the shipyard during the third and fourth quarters of 2014, following which would be mobilization and acceptance testing by their respective future customers.

The Friede & Goldman JU3000N design is an enhanced evolution of the JU2000E design and represents the latest generation of high-specification jack-up drilling rigs with greater capacities and capabilities than most existing units. The rigs, which are approximately 231 ft. in length and 270-ft in breadth, will have the capability to operate in water depths up to 400-ft and drill to depths of 30,000-ft. The rigs will each have a 75-ft cantilever, 2.5 million pounds of hook load capacity, a high-capacity mud circulating system and a 15,000 psi blowout preventer system. The units are capable of off-line pipe handling and offer accommodations for up to 150 people.

GeoGlobal confirms drilling rig contract for work offshore Israel

GeoGlobal Resources Inc. has finalized the terms of an assignment agreement entered into with a third party whereby GeoGlobal took assignment of the third-party's rights and obligations to an existing drill rig and associated services contract for a semi-submersible drilling rig.

The Noble Homer Ferrington is a fourth generation Enhanced Pacesetter design semi-submersible capable of drilling in water depths to approximately 7,000-ft. The rig will be available to the company on or after 1 Decmber 2011. The licenses are offshore Israel.

"The Homer Ferrington is an extremely competent rig and will have no issue with drilling to the depths we are looking at," said Paul B. Miller, President and CEO of GeoGlobal.

Statoil to use Transocean rig for Troll field in Norway's North Sea

Statoil is to use Transocean Leader, an Aker H-4.2 semi-submersible drilling rig, to drill the Troll oil and gas field in the Norwegian North Sea.

The project includes the drilling, completion, workover, plugging and abandoning of three wells in block 31/2 of production licenses 054 and 085, which are operated by Statoil.

The drilling is to begin next month and will be complete by 1 August 2012.

Songa Eclipse semi-submersible rig gets first award offshore Africa

The newbuild semi-submersible drilling rig Songa Eclipse has a letter of award to drill offshore West Africa, said Songa Offshore SE. The award is for 18 months and includes at least one well.

The $286 million agreement has three 1-year options at escalated day rates and requires government and partner approvals. Songa also has agreed to acquire 100% interest in the Eclipse, agreeing to acquire the 48.1% it does not already own. If the deal is completed, Songa will pay $65 million and conditional bonus payments to the Sector Umbrella Trust (35.1%) and Pareto World Wide Offshore AS (13.1%).

Songa Eclipse

Refurbished rig resumes work in Turkmen sector of Caspian Sea

Dragon Oil has refitted the previously stacked Rig 40, which has since started drilling in the Turkmen sector of the Caspian Sea.

The rig has spudded the Dzheitune (Lam) 13/160 well, the first of four to be drilled from the Dzheitune (Lam) 13 platform in the Cheleken Contract Area.

Dragon expects two wells and one side track to be completed by year-end, with the remaining two wells and another side track to be completed in 2012.

Keppel to complete Scarabeo 9 drilling rig for Italian firm Saipem

Keppel FELS is on track to complete the construction of a sixth-generation, ultra-deepwater semi-submersible drilling rig, Scarabeo 9, for Italian firm Saipem.

The company was responsible for the construction and commissioning of marine and drilling systems onboard the rig. The rig is equipped with a dynamic positioning 3 system and is capable of working at water depths of 3,600m.

Keppel Shipyard and Keppel Singmarine are jointly engaged in completing a newbuild pipe-laying vessel, Castorone, for Saipem.

Semi-sub Wilhunter to drill twice for MPX in UK sector of North Sea

MPX North Sea has exercised an option under its drilling contract with Awilco Drilling and SPD to use the semi-submersible Wilhunter for a second well in the UK sector of the North Sea.

This is the third well of the SPD-managed, multi-client 2011 drilling program and has an estimated contract value of around $7.3 million.

MPX's two wells should start in direct continuation of the rig's current well for Nautical Petroleum on the Kraken field in the northern North Sea.

WilHunter is one of Awilco's two Enhanced Pacesetter semis, capable of drilling in water depths up to 1,500-ft.

Maersk Deliverer starts Kora-1 probe off northwest Africa

The drillship Maersk Deliverer has started work on Kora-1, the first well in the deepwater AGC Profond PSC off northwest Africa.

The PSC covers the maritime zone between Senegal and Guinea Bissau, jointly administered by the two countries' governments. Ophir Energy is the operator. Kora is 174 miles south-southwest of Dakar in 8,858-ft of water.

"The well will provide valuable information on a previously underexplored part of the NW African margin and has the potential to open up a major new play system," Ophir managing director Nick Cooper said.

Pacific Drilling firms Scirocco contract for 2011 third quarter

Pacific Drilling SA said its letter of award for a 1-year contract for the Pacific Scirocco is now a definitive contract. The agreement takes effect in the 2011 third quarter.

The 1-year term includes client options for extension of as many as 4 more years. The fixed value of the award is given as $200 million plus client requested modifications.

The Pacific Scirocco can operate in water depths of up to 12,000-ft, or 3,658 m, and drill wells 40,000-ft, or 12,192m deep.

MODEC to supply FPSO to OSX 3 Leasing for Brazil's Campos Basin

MODEC has secured a contract from OSX 3 Leasing to supply the floating, production, storage, and offloading (FPSO) vessel OSX-3 FPSO to be used in the Campos Basin, offshore Brazil.

Under the contract, MODEC will be responsible for the engineering, procurement, construction, mobilization, installation, and commissioning of the FPSO, including topside processing equipment, hull and marine systems, and the external turret mooring produced by Sofec.

The FPSO, which will have a storage capacity of 1.3 MMbbl of oil, will be commissioned at a depth of 110m in block BM-C-39. It will be capable of processing 100,000 bbl/d from the Campos reservoir and will generate 60MW of power.

Delivery of the FPSO is scheduled for the third quarter of 2013, and first oil is expected in September 2013.

This is MODEC's first FPSO for OSX 3 Leasing B.V. and is the eighth FSO-FPSO MODEC will provide in Brazil. MODEC is currently operating the FPSO Fluminense, the FPSO Cidade do Rio de Janeiro MV14, the FSO Cidade de Macae MV15, the FPSO Cidade de Niteroi MV18, the FPSO Cidade de Santos MV20, and the FPSO Cidade de Angra dos Reis MV22. MODEC is constructing the FPSO Cidade de Sao Paulo MV23, which is scheduled for delivery to the giant pre-salt region of the Santos Basin in the fourth quarter of 2012.

One of many vessels in the OSX fleet

MODEC has delivered more than 30 floating production units and owns and operates more than a dozen FPSO-FSOs around the world. MODEC has delivered five TLPs and was recognized by the Offshore Technology Conference for innovative technology for its MOSES Self Stable Integrated Platform (SSIP) TLP.

OSX is developing the largest shipyard in the Americas and has an estimated order book of 48 offshore production units, amounting to $30 billion approximately, to serve the production demand of its client and sister company OGX, responsible for the largest private-sector exploratory campaign in Brazil.

Noble Energy FPSO Aseng nears completion for Equatorial Guinea

Keppel Shipyard is on schedule to complete conversion of the FPSO Aseng, which has been chartered by Noble Energy. The vessel, which will serve on the Aseng field offshore Equatorial Guinea, will be operated by Aseng Production Co., a joint venture between SBM Offshore and state-owned Compania Nacional de Petroleo de Guinea Ecuatorial (GEPetrol).

FPSO Aseng will be capable of processing 80,000 bbl/d of oil and storing roughly 1.7 MMbbl. Since 2000, Keppel and SBM have jointly delivered 13 FPSO-FSO conversion projects.

BP takes deepwater Trinidad and Tobago exploration plunge

BP was awarded two deepwater exploration and production blocks offshore Trinidad and Tobago. The company gained a 100% interest in blocks 23(a) and TTDAA 14, both in frontier acreage off Trinidad's east coast, under production-sharing contracts.

Block 23(a), around 186 miles northeast of BP Trinidad and Tobago's Galeota Point operations base, covers roughly 1,004-sq. mi. in water depths averaging 6,561-ft. Adjacent block TTDAA 14 covers 386-sq mi. in similar water depths.

The award, which will double the acreage held by BP-controlled companies in Trinidad and Tobago, followed detailed subsurface research and evaluation. BP's Trinidad operations, the company points out, currently account for more than half of Trinidad and Tobago's natural gas output and 12% of BP's global oil and gas production.

"Increasing our efforts in exploration and applying our deepwater experience and expertise to new basins around the world is a key part of BP's strategy to deliver long-term value growth," said Bob Dudley, BP group chief executive.

Petrobras confirms light oil in Guara discovery offshore Brazil

Petrobras confirmed the presence of light oil 5.7km south of the Guara well, which is located in the Santos Basin on block BM-S-9, offshore Brazil. Pre-salt reservoir tests confirmed the presence of oil following the drilling of the second extension well.

The company is carrying out an extended well test on the Guara discovery well, which flowed 15,274 bbl/d in February 2011 before a physical glitch occurred.

The well has been repaired, well tests resumed and a pilot production program is expected to begin in 2013, upstreamonline.com reported.

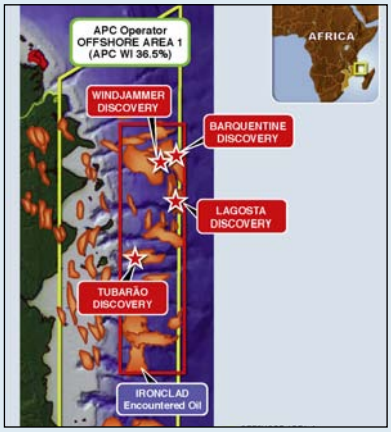
Block BM-S-9 is operated by Petrobras, which holds a 45% stake, while BG Group and Repsol hold 30% and 25%, respectively.

Eni finds hydrocarbons on block in Kutei Basin offshore Indonesia

Eni has made a new hydrocarbon discovery at an exploration well drilled on the Jangkrik North East structure, located in the Muara Bakau block of Kutei Basin, offshore Indonesia.

The Jangkrik North East NFW was drilled to 3,633m at a water depth of 460m and contains more than 60m of net gas pay in reservoir sands of the Pliocene and Miocene ages. Production tests also indicated the presence of high-quality gas at a tubing constrained rate of 30.6 Mscf/d.

The Muara Bakau block is operated by Eni, which holds a 55% interest through its Indonesian subsidiary, while the remaining 45% is held by GDF Suez.



Anadarko assessing Mozambique gas potential with appraisal wells

Anadarko has resumed exploration in Mozambique's deepwater Rovuma Offshore Area 1. According to partner Cove Energy, the drillship Belford Dolphin will drill two appraisal wells in the Barquentine gas discovery area.

Currently, the rig is top setting the upper casing strings for Barquentine 3. It will then drill Barquentine 2, 2.5 miles south-southeast of last year's discovery well, before returning to finish Barquentine 3.

The aim of the program, which includes flow testing and core analysis, is to prove sufficient resources in the Oligocene gas reservoirs of the Windjammer-Barquentine discovery area to fuel the first train of a proposed onshore LNG scheme.

Cove adds that around 1,717sq. mi. of new 3D seismic has been acquired over the southern and northern sections of the Rovuma Offshore block. Following processing, the data will be integrated with existing reprocessed 3D data in order to provide a consistent subsurface image throughout the entire deepwater hydrocarbon fairway.

Current studies on the LNG project, based on gas from the Windjammer, Barquentine, and Lagosta wells, could lead to a final investment decision in 2013.

To date, the study team has identified coastal land sites for the LNG facilities and a drawn up a preliminary gas development plan.

Cobalt International Energy draws up pre-salt Angola targets

Cobalt International Energy was preparing to start its pre-salt deepwater exploration drilling program on block 21 offshore Angola. The drilling rig Ocean Confidence became available in mid-July to start work on the two planned wells, after completing a current assignment elsewhere off Angola for Total.

Due to the proximity of the two well locations, Cobalt plans to first drill the surface hole of the Bicuar No. 1 well, transfer the rig to drill and evaluate Cameia No. 1; and return to drill and evaluate Bicuar No. 1.

Each well should take 80 to 100 days to drill and a further 10 to 20 days to evaluate, if successful. Cobalt has a 40% operating interest in each prospect, and shortly expects to complete its production sharing agreement for offshore block 20.

Statoil makes new oil discovery in Aldous Major South prospect

Statoil has encountered oil at the 16/2-8 well drilled on production license (PL) 265 in the Aldous Major South prospect, North Sea. The well, which contained a 65m oil column in Jurassic sandstone, was drilled using the Transocean Leader drilling rig.

Preliminary volumes from the drill test are estimated to be between 200 and 400 million boe and the company expects additional resources in the license both north and south of the discovery.

The 16/2-8 well indicated the same oil-water contact as in the Avaldsnes well, which shows the likeliness of communication between the two structures.

After completing drilling operations at Aldous South, the rig will be moved to drill the Aldous Major North well. The company has already secured rig capacity to drill two appraisal wells on PL 265 next year.

PL 265 is operated by Statoil, which holds a 40% interest, along with Det Norske Oljeselskap with 20% and Lundin Petroleum with 10%.

TGS, Dolphin team up on 2D seismic work off northwest Africa

TGS has an agreement with Dolphin Geophysical to jointly acquire, process, and market multi-client 2D seismic data offshore northwest Africa. The survey will provide 15,534 miles of long-offset seismic data off numerous countries. They have based the program on their analysis of the region's geology. TGS will handle the processing and expects to make certain data available to clients from late 2011 onwards.

CGGVeritas completes 3D survey over deepwater Gabon for Shell

CGGVeritas has completed a 3D BroadSeis survey for Shell over deepwater Gabon salt structures.

To complement a 3,050-sq. mi. conventional acquisition, the 3D BroadSeis acquired from the CGGVeritas Symphony operated 10 Sercel Sentinel solid streamers with Nautilus control devices. CGGVeritas' new acquisition and processing program, Dovetail, was deployed to reduce infill and give more regular sampling.

"We are confident that the enhanced low frequencies acquired by BroadSeis will meet the goals of Shell and achieve excellent penetration of the complex salt to provide clearer imaging of the pre-salt targets as well as simultaneously providing unrivalled bandwidth for the investigation of shallow amplitude anomalies," CEO Jean-Georges Malcor said.

Harrier Explorer begins systematic Barents Sea sweep for NPD

PGS has started acquiring 2D seismic for the Norwegian Petroleum Directorate (NPD) in Norway's newly agreed maritime zone in the Barents Sea. The vessel R.V. Harrier Explorer is performing the survey, the first time this area has been systematically mapped. One 26,575-ft. long streamer is being towed, with spacing for the seismic lines varying from 3.1 to 9.3 miles.

The program will also feature PGS' GeoStreamer, a new technology that involves towing the streamer deeper in the water than normal, so that the cable can withstand higher waves. This, PGS claims, makes the acquisition activity less weather-dependent and, therefore, more efficient.

Harrier Explorer has sailed from the Jan Mayen region between Norway and Iceland, where it has been acquiring more seismic data for NPD over 3.5 weeks, with no weather delays.

The Barents Sea program starts with five SSE-NNW lines, followed by acquisition of a few lines in the north-south direction in order to complete the southernmost part of the area first.

NPD plans to complete acquisition of the seismic data next summer, allowing results to be ready in spring 2013.

Argos Resources is upbeat on North Falkland basin 3D data

Further exploration prospects are said to be emerging on Argos Resources' acreage in the offshore North Falkland basin. Interpretation has confirmed the structural prospects Zeus and Demeter, and both are thought to be robust closures. A Competent Person's Report in June 2010, based on 2D seismic data, assessed their prospective oil resources at 258 MMbbl and 63 MMbbl.

New stratigraphic prospects and leads have also been identified in the new data and are undergoing detailed mapping. In the northern part of the North Falkland basin around PL001, there is evidence of a major delta system that has prograded southwards across the license area.

BP approves Quad 204 internal turret for project west of Shetland

BP has confirmed a contract under which SBM Offshore will supply an internal turret mooring system for an FPSO project in the northern UK sector, west of Shetland. The program calls for engineering, procurement, and construction of equipment for the new floater for BP's Quad 204 development.

Front-end engineering design is complete and, now that the full project sanction confirmed, continues into the final EPC phase.

SBM says the turret will be a large internal-mounted system with a bogie wheel bearing arrangement, which will moor the FPSO in the harsh environmental conditions. The turret will incorporate a swivel stack capable of handling total fluid throughput of 320,000 bbl/d, and accommodating 28 flexible and umbilical risers.

Delivery of the turret will be executed in sections to assist the FPSO construction sequence during 2013.

Beibu Gulf project on track for 2012 start-up offshore China

Preparations are continuing for the WZ 6-12 and WZ 12-8 West oil development in the Beibu Gulf, offshore China. CNOOC has assumed operatorship of the project and has established an operating subsidiary company, Weizhou Operating Co., into which five employees from partner ROC Oil have been seconded.

ROC says engineering design for platform and pipeline facilities was roughly 80% complete by mid-year, and procurement and contracting for fabrication of the platforms are both well advanced. The operator expects to achieve first production before end-2012.

In China's Bohai Bay, ROC is operator of the Zhao Dong C & D oil fields, unitized operator of the C4 oil field, and operator of the Zhanghai and Chenghai blocks.

Early in April, a 20-well development drilling program got under way, comprising 15 producers and five injectors. By mid-year, five producers and one injector had been drilled from the C & D field platform, of which three were pending completion.

Sea Trucks to support Usan FPSO hook-up offshore Nigeria

Hyundai Heavy Industries has contracted Sea Trucks Group to support the Total-operated Usan development off Nigeria. Sea Trucks will provide the Jascon 30 DP-3 accommodation support vessel and associated services for 430 personnel at the Usan FPSO, 62 miles offshore in water depths of 2,461-ft. The vessel was under tow from the construction yard in South Korea. The team will support mooring, hook-up, commissioning, and start-up of the FPSO. The work started at the end of July and continue for a minimum of 9months with options for an extension.

Jascon 30 will have a new custom-built portable accommodation block installed on deck to provide extra accommodation facilities for 184 persons. Total's partner Nexen said Usan remains on track for first oil in the first half of 2012. At full capacity, the project should deliver 180,000 boe/d.

Third Hengam jacket en route to Hormoz Strait in Persian Gulf

Offshore installations are progressing for the Hengam oil field development in the Hormoz Strait in the Persian Gulf.

Mahmood Zirakchianzade, managing director of National Iranian Offshore Oil Co. (NIOOC), told Iranian news service Shana that Hengam's second platform jacket was in place. At 279-ft, he added, it was also the tallest jacket installed to date in the Persian Gulf. The third jacket was being transported to the field and should be installed soon. Hengam is currently producing 23,000 bbl/d of oil, with a fourth well due to be drilled from the second jacket structure, eventually boosting output to 30,000 bbl/d.

Production is exported via a 43-mi. pipeline to the Bandar Abbas refinery. The Hengam field is 15-mi. long and 7.5-mi. wide, with 80% in Iranian waters and the remaining 20% offshore the Sultanate of Oman.

Earlier, Zirakchianzade told Shana that NIOOC expected to sign development contracts over the next 8 months for the Farzad B and Forouz A and B gas fields, all close to Lavan Island in the Persian Gulf. One of NIOOC's targets, he added, was to produce 10 bcf/d from Farzad A and B, and other offshore fields Balal, Kish, Lavan, and Reshadat by 2015.

Another Iranian official – Javad Oji, managing director of National Iranian Gas Co. – told Shana that the country's overland IGAT-7 gas trunkline has been extended to the city of Iranshahr.

Future plans call for further extensions towards Iran's border with Pakistan, where a subsea branch will be laid, allowing Iran to export gas to Oman.

Murray Douglas (left) and Stuart McAuley outside Senergy's offices

Business division launches Senergy into facilities engineering market

Global energy services company Senergy has bolstered its portfolio of specialist services by launching a new business division focused on facilities engineering and total project delivery, Senergy Development Solutions (SDS).

SDS takes Senergy beyond its long-established and successful subsurface and wells offering by introducing a comprehensive exploration and production capability that will open doors to a new market and new clients.

Senergy anticipates SDS will become a facilities engineering business of significant scale in its own right over the next two to three years. It will also complement the company's existing subsurface and well operations business and enable Senergy to offer a unique and distinctive integrated project delivery service.

Senergy also announced the appointment of two respected industry figures who will spearhead the growth of the new Aberdeen-headquartered division. Stuart McAuley and Murray Douglas, who collectively have more than 40 years' expertise in oil and gas facilities engineering, anticipate creating around 30 new jobs over the next 12 months as part of their growth plans for SDS. Stuart previously founded Aberdeen-based front-end engineering consultancy, HPHT Solutions, and Murray was formerly Head of Integrated Solutions at AMEC.

"Stuart and Murray each have an impressive track record in facilities engineering and well-established industry networks, which will be key assets for the SDS team and, indeed, Senergy," said Daren Wallwork, Senergy's vice president, energy services North Europe and West Africa. "They will play a pivotal role in driving forward the expansion of SDS with the same innovation and vision that has made Senergy the company it is today."

Production

Vietsovpetro to boost output from Vietnamese blocks

Vietsovpetro, a joint venture of PetroVietnam and Russia's Zarubezhneft, is to increase production from its offshore exploration blocks in Vietnam. Output will rise to 140,600 boe/d by 2015.

Vietsovpetro intends to reach maximum production from block 09-1 of the Bach Ho field and to augment exploration activities in blocks 04-3, 04-1, and 16-2 to further expand its oil reserves. The firm has also set a target of six million tons of crude oil production for 2011-13, upstreamonline.com reported.

CNOOC restarts production in BoZhong oilfields

CNOOC has resumed production at its BoZhong 28-2 South (BZ 28-2S) oilfields in Bohai Bay, China. The fields were suspended in April 2011 due to a malfunction that occurred on the single point mooring system of the FPSO vessel Haiyangshiyou 102.

Production resumed to about 39,000 boe/d, which is almost equal to the level before the suspension. The oilfields comprise BZ 28-2 S, BZ 28-2 SN, BZ 34-1N, and BZ 29-4, which are wholly owned and operated by CNOOC.

HRT reveals Namibian prospect's resource estimates

HRT Participacoes em Petroleo blocks 2813-A, 2814-B and 2914-A in the Orange Basin, Namibia have a net potential resources volume of 7.9 Bboe.

Consultant DeGolyer & MacNaughton's report estimated that HRT now has total net potential resources of 815 MMboe, of which 649 MMbbl are crude oil and 166 MMbbl are gas.

HRT will drill four exploration wells offshore Namibia in 2012 and is in discussions to secure a rig capable of drilling in water depths of 800 to 1,500m.

Iran reviews production options for Soroush

National Iranian Offshore Oil Co. (NIOOC) is in talks with a foreign oil company about raising oil production from the Soroush field in the Persian Gulf.

NIOOC's Mahmoud Zirakchianzade told Iranian news service the other party was prepared to invest in further development of the field, which has been producing around 90,000 bbl/d since 2004. Their initial aim would be to increase the threshold by 40,000 bbl/d, which might be achieved via gas injection and other methods.

"A new exploratory well will be drilled in the Soroush oil field as soon as possible to get better information on the field's reserves," he said.

Shell developed the latest phases of the 15 Bbbl field and the 4 Bbbl Norouz field in 2000. They are among the largest oil fields in the western part of the Persian Gulf.

Recoverable reserves at the time were estimated at 585 MMbbl for Soroush and 560 MMbbl for Norouz. But, recent studies suggest the rate of recovery could be increased substantially.

Maintenance constrains Talisman's North Sea output

Talisman Energy's second-quarter UK North Sea averaged 73,200 boe/d, up 14% compared with the corresponding period in 2010. However, output was markedly lower than in the 2011 first quarter. This was due to a planned turnaround at the Piper-Tweedsmuir complex and natural decline at the Tweedsmuir field.

Talisman expects its UK production to be further impacted in the third quarter, with shutdowns planned at the Claymore, Tartan, Buchan, and Ross-Blake facilities. Offshore Norway, the company averaged 32,300 boe/d in the second quarter, 36% down on the same period in 2010 and 27% below the figure for the previous quarter. Main factors given were completion of maintenance turnarounds at Brage and Veslefrikk, with similar impacts expected during the third quarter due to a planned turnaround at Rev.

Expro's fleet of subsea safety systems will be expanded under a new program

Oilfield service firm Expro to grow under new investment program

International oilfield services company Expro has announced a major new investment program that will reinforce the company's leading position as a supplier of innovative technology and specialist services to the upstream oil and gas sector.

The program includes expanding Expro's established fleet of subsea safety systems and well test packages as well as globalization of the group's strong drill stem testing (DST) heritage and emerging, innovative telemetry capability.

Investments are also being made to fuel specific customer growth initiatives in the wireline and production systems product lines as well as new product developments in production surveillance (multi-phase metering) and fluid analysis.

The funds for the program are being provided by a $250 million equity injection from the company's shareholders. Additional flexibility and the opportunity to accelerate growth have also been provided by increased covenant headroom under the mezzanine facility and the expansion of the group's revolving credit facility from $100 million to $160 million.

Commenting upon the investment program, Charles Woodburn, Expro's chief executive officer, said, "This is excellent news for Expro and our customers and demonstrates the shareholders continued confidence in Expro. We are now even better positioned to deliver our market-leading technology and uniquely personalized customer service to the highest standards of safety and quality."

Aker Solutions unveils turnkey software solution Coabis Express

Aker Solutions in Aberdeen, Scotland has developed a new compact version of its market-leading international software product for comprehensive integrity, inspection, and corrosion management for the oil and gas industry. Used by 90% of North Sea operators, Coabis provides a turnkey software solution for subsea and topside operations that streamlines the planning, reporting, and tracking of structural inspection program, enhancing data transparency and improving cost efficiency for operators.

Following industry feedback, Aker Solutions has now developed Coabis Express, a condensed version of the package that provides the basic key functions in a more economical format, making it ideal for smaller, independent operators and developing regions.

Coabis Express includes full asset inventory management, online logging, and anomaly tracking facilities as well as workpack planning and editing, allowing for fast and simple workscope creation and data gathering.

With digital video interface, hardcopy datasheets, and a complete drag-drop reordering system for components coming as standard, it not only optimizes inspection, maintenance, and repair programs but is tailored to meet each organization's individual needs by using client-specific procedure and coding formats.

Pipeline Services International awarded 300th job for a pipeline abandonment on Matagorda Island

Pipeline Services International LLC (PSI), which started in 2007 to service the Gulf of Mexico pipeline commissioning and decommissioning markets, continues to grow and expand. The company now offers its full range of services to the international oilfield markets and the continental U.S. onshore markets. PSI has built its reputation around quality and dependable service and an outstanding safety record.

On 15 July 2011, the company was awarded its 300th project, an offshore pipeline abandonment job in the Gulf of Mexico.

Gordon Barksdale, PSI's CEO, stated, "We are extremely appreciative for the response and support PSI has received from the customer base and will continue to strive to be first in class offering the safest and most efficient pipeline services available to both the offshore and onshore pipeline industries."

They can be contacted at Tel: (713) 358-9350, or Fax: (713) 358-9351.

Portable C.L.A.M. excels at measuring water quality

One critical issue after the catastrophic *Deepwater Horizon* spill was detecting pollutants suspended in the water column. The spill's sensitive nature demanded direct, quantifiable measurements of ultra-trace levels of oil and toxins. C.I.Agent Storm•Water Solutions came to the rescue with its Continuous Low-Level Aquatic Monitoring (C.L.A.M.) System, providing valuable extraction data for 3 months. While thankfully such post-disaster monitoring is rare, the portable C.L.A.M. essentially brings the water quality laboratory to the field for many other applications.

This state-of-the-art, small submersible extraction sampler uses EPA-approved SPE (Solid Phase Extraction) media to sequester oil, gas, pesticides, herbicides, and other trace organics from water. With approximately 100 substances now controlled by regulation, the C.L.A.M. is the ultimate water monitoring solution.

The device can be used on urban water systems, rivers, wells, watersheds, lakes, stormwater and agricultural runoff as well as marine environments such as marinas and boatyards. Submersible to depths up to 100-ft., it weighs just over one pound including four AA batteries, and measures 2.5-in by 8-in. This compact size makes it easy to change batteries or sampling disks in the field. For more information, visit www.ciagent-stormwater.com.

Exxon grants Nippon first license for new field welding technology

ExxonMobil Corp. has granted Nippon Steel Corp. the world's first license for patented field welding technology used to construct high-pressure pipelines made with X120 ultra high-strength steel linepipe.

ExxonMobil pursued a comprehensive X120 development program to ensure that field welding technology would meet X120 strength requirements and be compatible with conventional pipeline construction practices. The X120 welding technology uses the pulsed gas metal arc welding process (PGMAW) with a proprietary solid welding wire and argon-based shielding gas to achieve high-strength welds with high toughness. Welding is performed using standard automated and semi-automated welding tools familiar to pipeline industry welders.

The technology now licensed by ExxonMobil to Nippon Steel also includes the right to manufacture the proprietary welding wire. The signing of the license agreement makes Nippon Steel the world's first and sole pipe manufacturer having available both a mill to manufacture X120 linepipe and ExxonMobil welding technology for pipeline construction.

X120 ultra high-strength linepipe was jointly developed by ExxonMobil's Upstream Research Company and Nippon Steel. X120 linepipe is 50% stronger than the strongest linepipe steel (X80) commonly used in gas transmission pipelines and is a cost-effective and safe method of transporting natural gas from remote regions to urban customers using high-pressure, large-diameter pipelines. Natural gas demand is forecast to grow 60% globally in the next 20 years.

Sea Trials of the 881L Narrow Beam Imaging Sonar using the Minesweeper VT-100 as a Target

By Helmut Lanziner, Imagenex Technology Corp.

The 881L Narrow Beam Imaging sonar, one of the latest product releases by Imagenex Technology Corp., operates on Ethernet communications, and has an extra narrow horizontal beam angle of 0.75° to achieve very high sonar resolution.

For the purpose of obtaining a single sonar image of the entire shipwreck of the Minesweeper VT-100, it was decided to start with a position around the longitudinal center of the wreck, but slightly off laterally to the SW (2-3m), on the down-slope side. In order to achieve the optimum "view," a number of different positions relative to the wreck were eventually chosen, taking sonar scans at various elevations (depths).

Figure 1 *Imagenex 881L Narrow Beam Imaging sonar being lowered over the side of Monitor V*

A framework holding the sonar is suspended from two lines over the side of Monitor V, the company test vessel, fitting tightly against its hull for the purpose of transferring its heading/orientation (**Figure 1**).

The heading chosen for Monitor V (045°) was reciprocal to that of VT-100. This, in turn, makes it possible to know within a reasonable degree of accuracy, in what horizontal direction (azimuth) the sonar is "looking." The vertical bottom segment of the framework, to which the sonar is attached, is hinged at the top and weighted at the bottom, thereby allowing the sonar to look out in a consistent orientation with respect to its vertical viewing angle. There is also an adjustment mechanism to permit changing of the depression angle (**Figure 2**). The two lines were marked with tape at one-meter intervals to allow relatively fine vertical control .

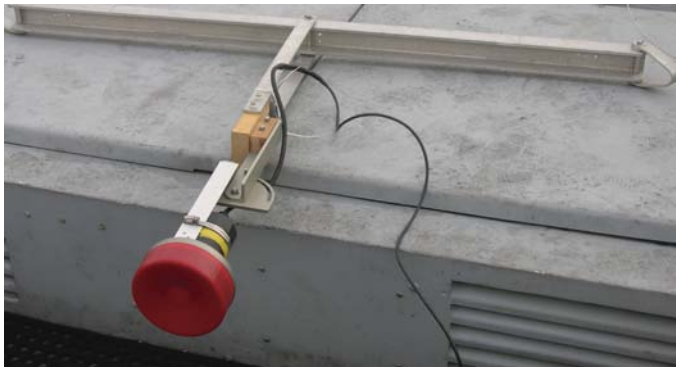


Figure 2 *Hinged framework allows for sonar to remain vertical regardless of suspension line lengths*

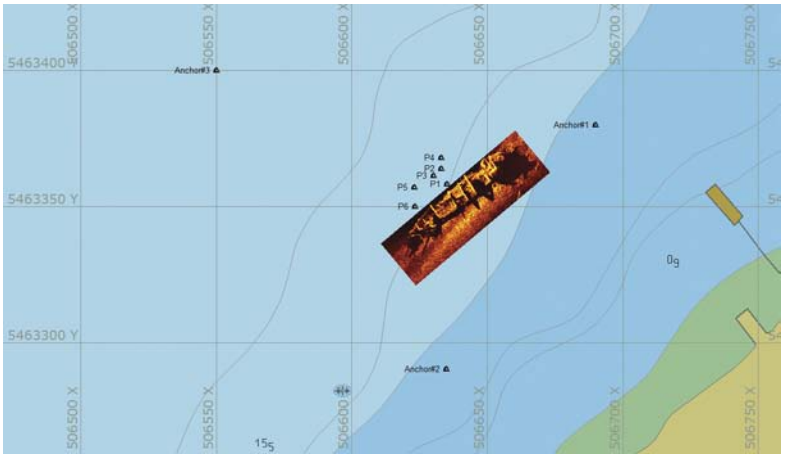


Figure 3 *Chart showing the location of the wreck, anchors, and the positions at which the scans were taken*

Sonar operations started in Position #1 (**Figure 3**), with the sonar at a water depth of 11 m, going to 16 m at scanning intervals of 1 m. The 11m scan showed only the very top edges of the superstructure, while the scan at 15m and 16m showed only features below the deck level of the wreck. General viewing at different gain levels were also undertaken. This position was considered to be too close to the wreck, so the Monitor V was moved to Position #2, where additional scans were taken at depths of 11m to 16m. Up to now, the vertical depression angle of the sonar was still set to zero, looking out horizontally.

At this point, it was decided that a significant vertical depression angle had to be used in order to capture the entire wreck in one scan. To accomplish this, three variables had to be considered, namely horizontal position, vertical position and sonar depression angle. Since the angle adjustment on the sonar framework is only possible in one plane (fore and aft alongside Monitor V), it required changing the framework orientation (azimuth) by 90°. The quickest way to accomplish this was to remove it from the side of Monitor V and to deploy it across the stern. Of course this generated a new position offset from the sonar to the DGPS receiver, which is now referred to as Position #3, although Monitor V was still in the same place, retaining the same heading. Looking at the overall sonar coverage and uniformity across the deck of the wreck along the sloped bottom, a depression angle of 30° was applied to the sonar. Starting at a water depth of 5m, the sonar was again lowered in 1m increments to a maximum depth of 9m.

The displayed sonar illustrations present two out of nine different color tables that are available to highlight different aspects of sonar images. In general, the multi-colored "Normal

High" table display shows greater emphasis on reflection intensities identifying relative echo strengths, while tables such as "Brown / Yellow" tend to outline shapes and impressions of features in a more direct way for ease of recognition. All of them are displayed with a color reference bar.

Position #3 ended up being the best position to get an image of the entire wreck in one scan (**Figure 4**). In an effort to get a closer look at the stern of the wreck, Monitor V was maneuvred to Position #4 where only one scan was taken from a sonar depth of 7m (**Figure 5**). Additional scans were taken in Position #5 and #6 to get more detail of the bow of VT-100, which is pointing down-slope. The scans at Position #5 were at a depth of 4m, one on the 30m, and one on the 40m range scale. More scans in Position #6 provided additional detail in this area of the wreck at depths of 4m, 7m and 8m.

Wreck Scanning Procedure

Since the position of the Minesweeper VT-100 was quite well known from previous sonar tests, it was not necessary to conduct a search. Its general orientation on the bottom was also known to be along an approximate NE-SW azimuth, with the bow at the bottom of a downward slope toward the SW.

In order to establish a stable position and prevent rotation or lateral movement for the sonar scanning process, it was decided to use a 3-point moor for the Monitor V. Although a 3-point fix cannot prevent slight vessel rotation compared with a 4-point moor, it takes less time to set up. It was decided to set the Monitor V on a reciprocal heading to that of the wreck for two reasons. This orientation (NE-SW) closely matches that of the shoreline, therefore reducing tidal flow forces on a moored vessel to a minimum. It also permits an easy, slow transit of the Monitor V from bow to stern of the wreck with the use of mooring lines.

The shipwreck sits on a slope at a water depth ranging from about 15m to 20m, so that anchor position distances selected were between 80m and 120m from center to insure a reasonably secure position in moderate weather conditions. Anchor line length chosen was 180m to allow transits of Monitor V between all anchor positions during setup and anchor recovery. Anchor #1 (Monitor V's bow anchor) was placed in line with and directly extending out from the stern of VT-100. Anchor #2 and #3 were spaced 120° apart, centered on Monitor V's stern (**Figure 3**).

Prior to anchor deployment, a brief confirmation crossing of the bow and stern position of VT-100 was made, using Monitor V's echo sounder. Sonar deployment on a single line is subject to cable rotation resulting in poorly known sonar orientation, although it may be equipped with a magnetic orientation sensor. Major errors are often caused by ferrous metal on the wreck and/or the support vessel.

Once anchors were placed, the Monitor V was maneuvred by hand-hauling on mooring lines to see if it was possible to capture the entire wreck in a single sonar sweep. Subsequent scans at different elevations (depths) were made to establish the optimum height above the wreck. It turned out that this position was too close to the wreck, which necessitated moves to positions #2, #3 and #4, followed by similar vertical tests and trials with the sonar.

It was of interest to see more detail near the forward section of the wreck, which prompted a move closer to that area, namely positions #5 and #6 (**Figure 6**).

The navigation and manoeuvring process was conducted with the use of Hypack/Hysweep, an advanced data acquisition and processing system, which permits the inclusion of hydrographic navigation charts. The UTM (Universal Transverse Mercator) grid projection was used to make coordinate and distance calculations simple and easy to use. A laptop computer served as a data processing and sensor input control system, as well as providing graphic display output to a large screen for primary navigation and manoeuvring operations. Input for position and heading was obtained from a Hemisphere V101 DGPS satellite receiver with a position accuracy of 0.6m and a heading accuracy of 0.3° from its dual antenna system.

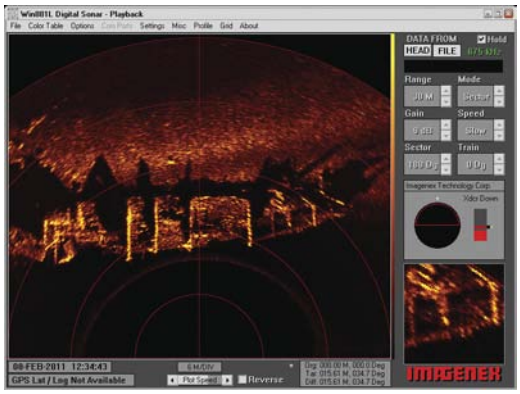


Figure 4 *Screen capture taken from Position #3 at a depth of 7 m on the 30m range scale*

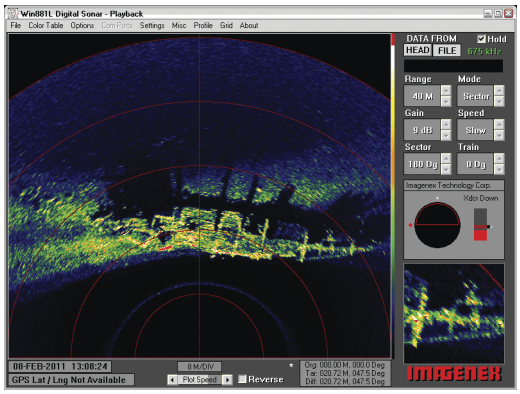


Figure 5 *Position #4 screen capture at a depth of 7m on the 40m range scale*

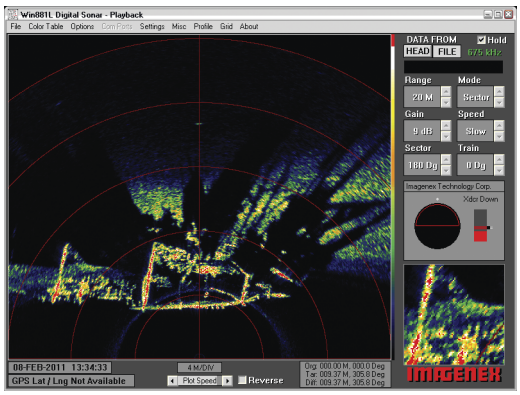


Figure 6 *Screen capture taken from Position #6 at a depth of 7m on the 20m range scale*

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E-mail: imagenex@shaw.ca
Web: http://www.imagenex.com

Trencher for the wind farm market

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

The new Inter Turbine Array Trencher, the ITAT 800™, is an 800-hp (600kW) self-propelled trenching ROV that can be more easily maneuvred by the operators onboard its support ship than a towed plough.

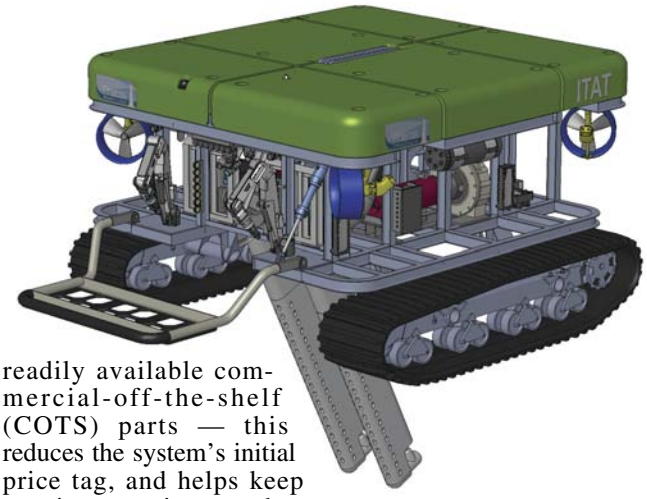
It uses a unique water jetting technology to cut the seabed. The technology is safer than a metal plough share or mechanical cutter around the valuable power cable. The water jets "fluidize" the seafloor material and allow the interconnecting power cables of a wind farm to sink in up to 3m deep.

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

This industry practice of subsea cable burial ensures cable protection in distribution systems worldwide and is widespread best practice in the telecoms industry. Left unprotected, power cable, fiber optic telephone cable, and oil and gas pipe are vulnerable to damage from ship anchors, fishing activity, and other threats.

The design of the ITAT 800™ has been a priority for Pharos Offshore Group due to demand from customers for safer trenching methods, particularly for the offshore wind market.

The ITAT 800™ is about the size of large car. The concept and design have been developed from the experience gained from many tens of thousands of kilometers of cable burial in the telecoms and oil and gas sectors. It is built using many proven and



readily available commercial-off-the-shelf (COTS) parts — this reduces the system's initial price tag, and helps keep ongoing operating costs low. The ITAT's maneuverability, survey equipment, low profile and jetting power provides the flexibility required for infield cable work.

The cable maintenance version of the ROV named the MENTOR 800™ provides the ITAT's powerful jetting capability to depths up to 3000m for deeper cable and O&G pipeline work. Interchangeable tooling systems provide the flexibility to accommodate the most demanding undersea cable installation and maintenance operations.

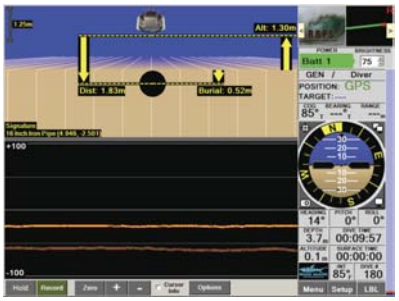
Pharos Offshore Group plans to sell and lease multiple vehicles to serve Round 3 wind farm projects in the United Kingdom and upcoming projects in North America. For more information, Pharos Offshore Group main offices in the UK can be reached at +44 (0) 1501 752539.

Pipe, cable tracking added to diver hand-held

St. Catharines-based Shark Marine Technologies Inc. announced the latest in accessories for their Navigator, diver-held sonar and navigation system. The SDG-N300 digital gradiometer allows a diver to locate and track any underwater pipe or cable of ferrous content.

The SDG-N300 gradiometer is plug and playable with the Navigators Divelog software. The digital properties of the gradiometer allow the sensors to be "zeroed," thus eliminating any ambient magnetic fields in the area. When combined with an optional altimeter the SDG-N300 can also determine the depth of burial depth of the pipe. Using any one of the Navigator's selection of positioning systems, (GPS, LBL, DNS) and Divelog's mapping module, the diver may also track and record the location of the pipeline or cable for post-processing and re-location purposes. Images of the pipeline may be simultaneously recorded using the Navigator's USB connected video camera or, if the visibility is too restricted, its high-resolution, multi-beam sonar.

The gradiometers software module in the Divelog operating program provides an easy-to-read, graphical image of the position of the Navigator relative to the seafloor and the location of the pipeline being tracked. At the touch of a button, displays may be alternated between the gradiometer control and Divelog's mapping module to verify the diver's position and the recorded route.



The SDG-N300 is also adaptable for use on Shark Marine's line of remote operated vehicles.

For more information, visit www.sharkmarine.com.

INTECSEA Canada awarded Phase 1 of trenching system development contract

Canada has been awarded a contract by Petroleum Research Atlantic Canada (PRAC) for Phase 1 of a Joint Industry Project (JIP) for the "Development of a Trenching System for Subsea Pipelines, Flowlines and Umbilicals in Ice Scour Environments."

The trenching system will be relevant to Arctic and SubArctic waters wherever ice gouging is an issue. INTECSEA will be responsible for the management of Phase 1 of the JIP and the provision of consulting services to support the program. The JIP is sponsored by the Hibernia, Terra Nova, White Rose, and Hebron Projects.

The goals of the new trenching system will be a system is capable of:

a) trenching to depths greater than current industry norms (burial depths greater than 3m, with potential trench depths as much as 7m);
b) trenching in soil conditions that are difficult and highly variable, including the presence of boulders;
c) trenching in water depths beyond the majority of trenching requirements (water depths up to approximately 300m); and
d) operating in harsh marine conditions (for example, the Western North Atlantic).

The JIP is planned to be a research and technology development project with four phases. The objective of the project is to prove a trenching system capable of meeting the above requirements and concluding with a full-scale field demonstration project in Phase 4. The goal of Phase 1 is to shortlist a number of potential technology solution providers who will carry out more detailed engineering and feasibility studies in Phase 2.

For more information, visit www.intecsea.com.

CTC Marine Projects mobilizes the Volantis and UT-1 to the Far East

CTC Marine Projects, Ltd., a subsidiary of DeepOcean Group Holding AS, has announced that the multi-role construction vessel, Volantis, part of CTC's fleet of world-leading subsea equipment, has arrived in the Far East for the first time since it commenced operation in 2008. The vessel is equipped with the world's most powerful jet trenching ROV, the UT-1 Ultra Trencher.

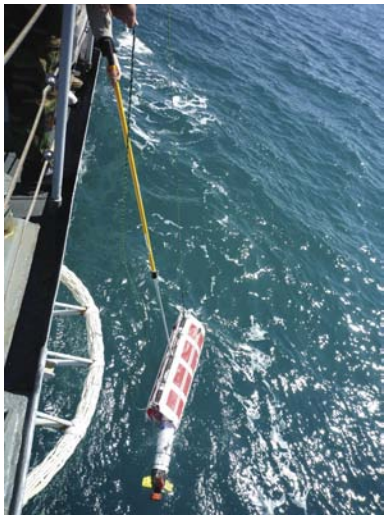
The innovative spread, which has an impressive track record from operation in Europe and North Africa, will be used to complete trenching activity on

the Jeju Island project in South Korea for KT Submarine. The Volantis has joined the Maersk Responder, which is currently laying the two 105km HVDC power cable bundles between Jeju Island and Jindo Island prior to the jet trenching using UT-1.

CTC is a global installation and burial contractor with 20 years of experience in the oil and gas, and telecommunications markets. It owns and operates the most technically advanced fleet of marine trenching vehicles in the world, including ploughs, jet trenching ROVs, and mechanical trenchers. The Volantis is part of CTC's impressive fleet of long-term chartered vessels and is DP Class II designed for operation in severe weather conditions, demonstrating high station keeping capability while remaining environmentally friendly. The vessel will remain in Korea until later in the year when the project is due to becompleted.

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

OceanServer receives orders for 4 new AUVs



OceanServer Technology, Inc. has recently received new orders for four Iver2 AUVs; two for U.S. end users, one from a European research organization and the first for a South American survey company. The applications for the vehi-

cles include water quality/environmental monitoring, hydrographic survey, navigation algorithm development, and general educational research. One of the awards for an Iver2 EP30 resulted from a competitive procurement by Eltex Echipamente Electronice Industriale srl in Romania. Eltex expects to develop and integrate additional sensors for educational research and mapping projects. The Applied Physics Laboratory of the University of Washington has procured their first Iver2 AUV for use in an ongoing research project. The two remaining vehicles will be sold through YSI Environmental for use in water quality monitoring and general survey work.

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

Kreuz Subsea boosts fleet with Saab Seaeye Cougar XT, Fugro adds six Seaye ROVs

After winning a 5-year contract with Shell in Brunei, Singapore-based Kreuz Subsea has added a Saab Seaeye Cougar XT to its ROV fleet.

'We needed a trusted brand,' says operations manager, Robert Black...that is why we chose a 2000 meter-rated ROV that does what it says it can do.'"

More maneuverable than any other ROV on the market, the Cougar XT's greater control and response comes from its six thrusters: four of which are vectored horizontal thrusters and two vertical. Each thruster has velocity feedback for precise control in all directions and is interfaced to a fast-acting control system and solid-state gyro for enhanced azimuth stability.

The Cougar XT configuration chosen by Kreuz in conjunction with Oceanvision, Saab Seaeye's Singapore-based distributor and Far East service hub, makes the ROV a versatile light work vehicle suitable for a wide range of operations.

It includes a Tritech Super SeaKing Sonar; a Kongsberg high-definition low light camera and a color zoom camera; a dual five-function heavy-duty manipulator; and a CP proximity probe and contact probe.

A tether management system is also supplied with a stainless steel cage and 200m of tether along with its own Seaeye mini wide-angle B&W camera.

An A-frame launch and recovery system is included with 1,600m of armored umbilical.

The whole system comes with its own purpose-built, 20-ft air-conditioned control and workshop container.

In addition, the Subsea Services business line of Fugro has added six new Saab Seaeye ROV systems to its worldwide ROV fleet in the first half of 2011 in a deal that sees Fugro continue their relationship with Saab Seaeye stretching back to the early 1990s. In addition to the six new ROV systems, Fugro has also taken the opportunity to update three of its earlier generation Saab Seaeye ROV systems to the latest specification and standard.

The 2011 newbuild order, worth almost £5 million, includes four Lynx and two Panther XT ROV systems.

For more information, visit www.seaeye.com.

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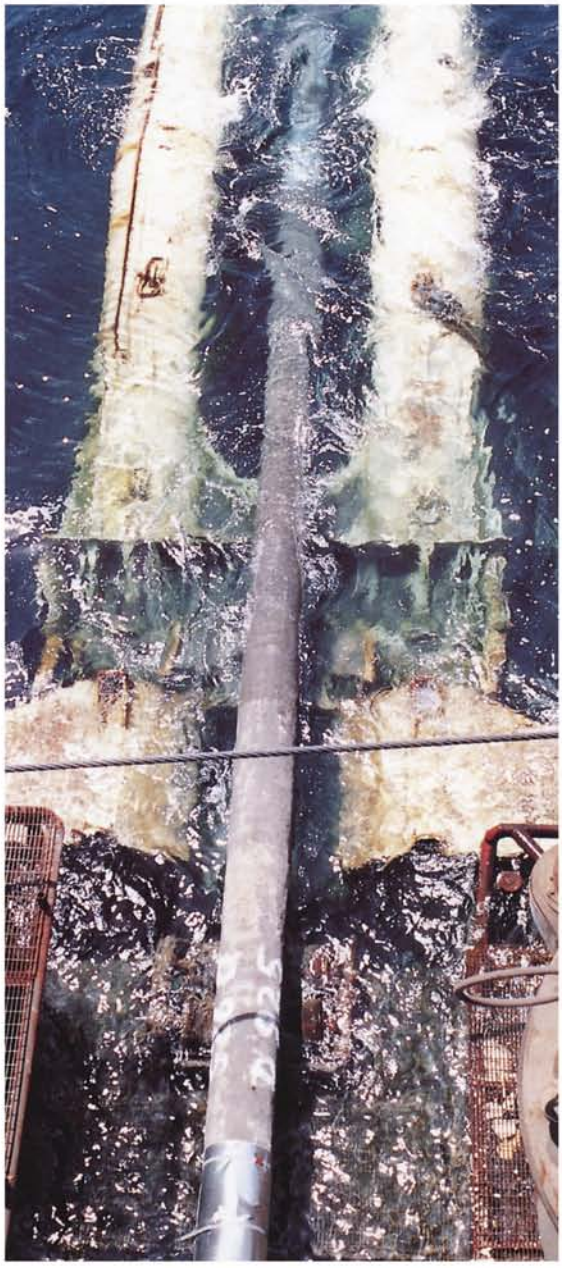

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Maritime Communications

EADS acquires Vizada for its Astrium Division
Astrium, an EADS subsidiary has entered into an agreement to acquire Vizada from Apax France, a French private equity fund and the majority shareholder, for $960 million. The transaction is subject to customary regulatory approvals.

Stratos acquires assets of Blue Ocean Wireless
Stratos BV has purchased most of the operational assets of Blue Ocean Wireless Ltd. (BOW). BOW was a provider of shipboard GSM services that enabled crew members to use their personal GSM phones to communicate with family and friends by voice and SMS. As part of the acquisition, Stratos assumes responsibility for providing services to most of BOW's customers, including many large commercial shipping companies worldwide.

C A Clase selected as preferred supplier for marine telecom gear to Essex Boatyards
C A Clase, the UK's leading distributor of marine electronics has been selected as the preferred supplier for satellite television and communication equipment by Essex Boatyards. The deal will see KVH's line of products offered as a preferred option onboard boats sold by the Number One boats for sale center (www.caclase.co.uk).

Ocean Signal V100 gains certification
Ocean Signal has announced that its SafeSea® V100 GMDSS hand-held radio has been awarded the Marine Equipment Directive (MED) product certification from BABT for conforming to the relevant requirements for a portable survival craft two-way VHF radiotelephone. The new Ocean Signal SafeSea V100 is a rugged, fully featured hand-portable GMDSS radiotelephone that exceeds GMDSS environmental requirements. With ergonomic design, durable laser etched keypad, high-contrast backlit LCD, and backlit keys, the radio is supplied with all 21 international simplex channels required.

Simon Møkster chooses Marlink for a further five years
Marlink has extended its contract with offshore vessel operator Simon Møkster Shipping AS for another 5 years. As part of the latest agreement, Marlink will continue the provision of its Sealink™ VSAT services aboard 18 existing vessels, as well as supply to 5 new vessels scheduled for build in 2011 and 2012. Simon Møkster Shipping AS operates its fleet of vessels primarily in the North Sea within the areas of platform supply, anchor handling, subsea, Ro-Ro cargo and emergency services. The company has worked with Marlink for over 10 years. This latest contract will see Marlink supply its innovative satellite communications services to a total of 23 vessels in the Simon Møkster fleet.

Emergency VHF Antenna
Time is of the essence in an emergency, so quickly finding and mounting a spare VHF antenna can make all the difference. The 5910 Emergency Stowable Antenna from Shakespeare Electronic Products Group is easy to spot, grab, and connect, helping save valuable minutes. A 9-in bright yellow, metal tube helps protect the antenna during storage and becomes part of the mounting system. It hangs neatly on a bulkhead, or wherever it's accessible yet out of the way. After assembly, the antenna is 16-in long. The dependable VHF whip comes with 20-ft of RG-174 mini coax cable and a pre-installed PL-259 connector.
(www.shakespeare-marine.com)

ORBIT receives order for OrBand Maritime VSAT

ORBIT Communication Systems, Ltd., a subsidiary of Orbit Technologies Ltd, announced a contract with an Asian Navy for multiple OrBand (AL-7107) maritime C-Band VSAT systems.

OrBand leverages breakthrough technology to deliver RF performance equivalent to industry-standard systems, in a much smaller footprint. Industry-standard systems feature a 3.8m radome, while OrBand features an extraordinarily compact 2.7m radome, requiring substantially less deck space. OrBand is also 30% lighter than competitive solutions. Small enough to be shipped as a single, fully assembled and tested unit in a standard 20-ft container, OrBand drastically lowers cost and time for shipping and installation.

OrBand supports extended C-Band and extended Ku-band frequencies as well as multiple RF feeds. Electrically switchable polarization facilitates satellite switching and increases system versatility. In addition, automatic beam switching (ABS) enables seamless global coverage through the industry-standard OpenAMIP protocol.

ORBIT offers a diverse portfolio of advanced satellite communications solutions for maritime and land-based applications. ORBIT's systems are installed on over 3,500 marine platforms, from naval vessels to cargo ships, ocean liners, oil rigs, fast trains, enabling TV reception and broadband IP connectivity for always-on applications such as Internet, video, telephony, and more.

For more information, visit www.orbit-cs.com.

Inmarsat launches voice distress service

Inmarsat has announced the commercial availability of a new voice distress service on FleetBroadband. The free-to-use service ensures that, in the event of an emergency, all non-priority telephone calls underway on the vessel's FleetBroadband are interrupted, connecting the caller directly to a Maritime Rescue Coordination Centre (MRCC). The new voice distress service requires a simple software and hardware add-on, which provides a "red button" for one-touch easy use.

The new service also utilizes the enhanced capability of the FleetBroadband network as it simultaneously sends an e-mail to the MRCC and network controllers to alert them to a call, providing additional data such as vessel name, identification, and position.

The development of a voice distress service on FleetBroadband was supported by the European Space Agency and the UK's Technology Strategy Board.

Inmarsat is the only mobile satellite operator to be approved for use within the Global Maritime Distress & Safety System (GMDSS), and the introduction of a voice distress service with red button access is the first step in obtaining compliance for FleetBroadband with GMDSS.

Thrane & Thrane is the first manufacturer to support the service with its Sailor 3771 Alarm Panel. Other terminal manufacturers are expected to follow shortly.

FleetBroadband users who need emergency assistance but don't have access to the red button voice service, can still use Inmarsat's 505 Emergency Calling facility, which routes calls free of charge to an MRCC.

For more information, visit www.inmarsat.com.

Vizada provides key maritime solutions

Vizada will provide the new Inmarsat FleetPhone maritime handset with email and data transfer capabilities to its extensive network of service provider partners. Vizada will optimize the phone's capabilities by adding several Vizada Solutions™ including SkyFile® Mail, Universal Card™, and Satellite Direct®. Vizada's FleetPhone is packaged with a unique crew calling promotion, providing cost-effective crew calling to shipping companies, while eliminating upfront hardware investment.

Inmarsat's new entry-level voice service will feature not only high-quality voice calls and voicemail, but also text and email messaging capabilities. A supplemental voice line enables the captain to benefit from dedicated private communications while the crew maintains their own lines for personal or professional calling. The PBX integration allows for simple calling between the different phones located on the ship. Inmarsat is offering a choice of robust terminals and antennas to support the FleetPhone service.

The Vizada Solutions offered as part of the service have been upgraded for FleetPhone compatibility: Universal Card, Vizada's crew calling card solution; SkyFile Mail a messaging software enables email compression as well as anti-virus protection and spam filtering; and Satellite Direct, which allows end users to also benefit from cheap rates to call FleetPhone units from shore locations around the world.

Vizada has already received pre-orders from service providers eager to provide the optimized FleetPhone service to their maritime customers.

For more information, visit www.vizada.com.

Fastnet media success for Volvo Ocean Race yachts

FleetBroadband was put through its paces by the three Volvo Ocean Race entrants in the Rolex Fastnet Race 2011. The Inmarsat service was used to beam live video, photos and blogs during the 608-mile race along the English coast from Cowes to Plymouth, via the Fastnet Rock off Ireland.

Three Volvo 70s — Abu Dhabi Ocean Racing, Groupama 4 Sailing Team, and Team Sanya — were among the first in a field of more than 320 yachts of different classes to complete the race.

Groupama 4 recorded a 'first' when its skipper, Franck Cammas, became the first to test live video streaming. Cammas did two live TV interviews with BFM TV's news team based in Paris, France.

The Fastnet race served as a useful run-out for the Volvo 70 yachts ahead of the start of the Volvo Ocean Race from Alicante, Spain. The round-the-world Volvo Ocean Race sets off from Alicante, Spain on 29 October. Inmarsat has been appointed Global Partner for the race and will be providing a range of communications services, including FleetBroadband, to the teams and organizers.

For more information, visit www.inmarsat.com.

Subsea Cables

SEACOM invests in South African Infrastructure

SEACOM has invested R100 million in additional South African infrastructure to meet the continuous high growth in demand for broadband services and applications. The investment includes the purchase of physical optical fiber links from Dark Fibre Africa (DFA) as well as installing the equipment required for SEACOM to manage the network linking KwaZulu Natal's coast where the SEACOM submarine cable lands to two redundant Points of Presence (PoPs) in Gauteng. Initially, 100Gbps of the fiber will be lit (using current 10Gbps technology) and a further 20 waves are expected to be lit within the next 12 months. Using ultra-modern transmission technology of 100Gbps per wavelength gives the new link a design capacity of over 8Tbps. This is in line with SEACOM's plans to expand the submarine portion of the cable to over 4.8Tbps.

Level 3, Global Crossing approve transaction

Level 3 Communications, Inc. and Global Crossing Limited have announced that, at separate special meetings, stockholders of both companies voted to approve Level 3's proposed acquisition of Global Crossing. The merger of Level 3 and Global Crossing would combine two of the largest U.S.-owned submarine fiber optic cable networks, including high-capacity cables across the Atlantic and connecting North and South America.

ADB, World Bank to support Tonga cable

The Asian Development Bank (ADB) and the World Bank are seriously considering a project that will help the Pacific island nation of Tonga gain high-speed Internet access for its population of 100,000 people through a submarine fiber optic cable. The high-speed Internet connection to Tonga will build on the successful telecommunications reform over the past five years in the country, which has resulted in a six-fold increase in mobile phone coverage in the same period.

Van Oord to install, bury cabling for wind farm

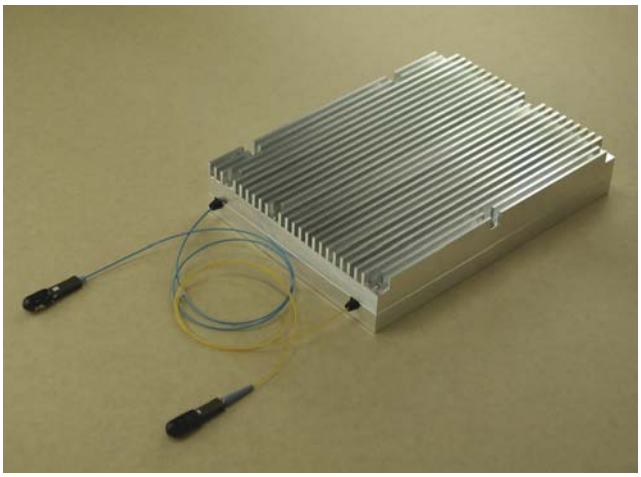
Van Oord has been awarded the contract for the infield cabling and burial of the DanTysk offshore wind farm project 70km off Sylt, Germany. The laying work will begin in the spring of 2013 and be completed around 6 months later. The DanTysk wind farm is a joint venture between Vattenfall Europe Windkraft GmbH and Stadtwerke München. Vattenfall is responsible for the construction and operation of the wind farm located some 70km to the west of the island of Sylt in the German North Sea. The 80 wind turbines (Siemens 3.6MW) have a total capacity of 288MW and can generate electricity for up to 300,000 households (www.vanoord.com).

NKT Cables lands Baltic 2 submarine project

NKT Cables has entered into a contract with 50Hertz Offshore GmbH at a value of around 95 million euros for the offshore wind farm Baltic 2. For NKT Cables, Baltic 2 will be another turnkey project that includes armored high-voltage subsea cables, accessories, and installation. The cables will be manufactured at the production facilities in Cologne.

Under the terms of the contract, NKT Cables will deliver approximately 60km of 150kV, AC, 3-core submarine power cable (www.nktcables.com).

NEC introduces first 100 Gbps digital coherent optical transceiver module



NEC Corporation announced the sales launch of the world's first 100 Gbps optical receiver module using the digital coherent technologies and the introduction of a 40 Gbps version as well. Optical transceiver modules are key components for WDM equipment for large capacity/long distance transmission across optical fiber.

The primary features of the new products are large capacity transmission due to the adoption of Dual Polarization Quadrature Phase Shift Keying (DP-QPSK) modulation technology and stable long-distance transmission featuring a built-in optical hybrid mixer using Planar Lightwave Circuit (PLC) technology and digital coherent transceiver circuits that compensates the waveform distortion due to optical fiber transmission. With this latter feature, the modules can transmit over 2,000km without using dispersion compensation fiber, which is more than 20 times further than current products.

The transceiver module size has been reduced to 127mm x 177mm x 33mm, which conforms to optical module industry standards — for 100Gbps version, 100GLH-ME of Optical Internetworking Forum; for 40Gbps version, 300pin-MSA (Multi-Source Agreement).

NEC plans to ship the 40Gbps digital coherent optical receiver module in November 2011 and the 100Gbps digital coherent optical receiver module in March 2012. The company expects to ship 50,000 units over the next 3 years.

For more information, visit www.nec.com/global/prod/nw/submarine/.

Alps develops lead-free aspherical glass lens

Alps Electric has developed the FLGS3 Series aspherical glass lens for optical communication, including submarine fiber optic cable networks. The FLGS3 Series lens has high optical coupling efficiency and is compatible with wide-angle laser diodes. Mass production and shipments began this month.

Transceiver modules employing glass lenses are used for optical communication in submarine cables and base stations. Aspherical glass lenses, in particular, are ideal for transmitting light signals to optical fiber with low loss and have recently been incorporated into palm-size projectors.

The FLGS3 Series is a highly efficient 1 × 1mm square aspherical glass lens — the industry's smallest. Alps harnessed technologies in the areas of optical design, mechanical design, mold and die manufacturing, molding, and simulation to expand the effective numerical aperture (NA) to 0.65 × 0.13 (from 0.5 × 0.1) while retaining the industry's smallest size, and, as a result, raise optical coupling efficiency, which is a measure of light transmission efficiency, to 73% from 68%. With low loss, the light input required for a given output is smaller.

For more information, visit www.alps.com.

TE-NORTH enters service using 40G technology

Telecom Egypt (TE) and Alcatel-Lucent have announced that the TE-NORTH Cable System, provisioned with 40Gbps (40G) wavelengths across the Mediterranean, is in service. TE-NORTH is the first Mediterranean cable network to provide commercial service using this newest 40G technology.

The 3,600km system connects Abu Talat, Egypt, to Marseille, France, with a branch to Pentaskhinos, Cyprus, and also includes other branching units for further expansions in the Mediterranean basin. The introduction of this advanced technology essentially doubles the original design capacity of the system from 10 Tbps to over 20Tbps, equivalent to the transfer of over 32,000 HD movies in 60 seconds.

TE-NORTH's expanded design capacity enables Telecom Egypt to meet the growing demand of their customers and the region on this important international telecommunications route. By boosting connectivity across the Mediterranean basin, the 40G technology enhances Telecom Egypt's ability to serve global operators whose international services transit Egypt and rely on Egypt to hub the services in the Middle East, Asia, and Africa region.

To implement the upgrade, Alcatel-Lucent used the latest 1620 Light Manager product, which was previously deployed as part of the original $125 million contract and which was subsequently upgraded to 40G.

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

HitecVision acquires North Sea Communications from TeliaSonera

Telia Norge AS and HitecVision have signed an agreement under which HitecVision will acquire Telia Norge's subsidiary North Sea Communications AS (NSC). Telia Norge AS is 100% owned by the TeliaSonera AB group.

NSC operates a fiber optical cable system between Norway and the UK, providing the offshore oil and gas industry in the southern part of the North Sea with high-speed and low-latency communications. The fiber optic cable system runs from Stavanger and Kårstø via the Draupner, Ula, Ekofisk, Valhall, and Murdoch fields, also connecting several surrounding fields. The cable lands at Lowestoft with onwards connections to London and Aberdeen. The cable system has a length of 1,150km from Kårstø to London.

HitecVision also owns Tampnet, which operates a similar network in the central and northern parts of the North Sea. The two companies will be fully integrated, providing a strong and solid telecom carrier to serve the growing communications needs of the offshore oil and gas industry. The companies have through more than a decade developed high capac-

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Admiral Thad Allen, USCG (Ret.)

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ity, resilient, and low-latency communication networks serving both the Norwegian and the UK sectors of the North Sea.

Tampnet and NSC have further growth potential in the North Sea; however there is also a potential for further growth through international expansion. The oil and gas industry in the North Sea is often a role model when new offshore basins are developed.

For more information, visit www.tampnet.com, www.norseacom.com.

New Zealand-Australia cable

The Pacific continues to be a strong market for submarine fiber optic cables. One of the new projects under development is by New Zealand-based carrier Kordia, which is working on plans for a New Zealand-Australia cable called OptiKor.

OptiKor is a POP to POP system with beach landings in Sydney and Karioitahi Beach in South Auckland. The approximate system length is 2,300km. Although the specifications have not yet been finalized, it will probably be a 2 fiber pair system, initially configured at 40G wavelengths; although given the short length, 100G is possible even today.

OptiKor's goals are to provide additional well-priced competitive capacity across the Tasman, provide customers low latency redundancy to the Southern Cross Cable Network capacity, and provide New Zealand's USA/Asia bound customers with alternatives by delivering traffic to Sydney, which is the most competitive capacity hub in the region.

For more information, visit www.kordia.co.nz.

Transpacific circuit prices plunge

Data from TeleGeography's Wholesale Bandwidth Pricing Database reveals that transPacific circuit prices have plummeted over the past two years. Between the first quarter of 2009 and the second quarter of 2011, the median monthly lease price for a 10Gbps wavelength from Los Angeles to Tokyo fell 63%, from $98,500 to $36,000. Prices are tumbling on other transpacific routes, too: Over the past 12 months, median 10 Gbps wavelength prices from Los Angeles to Singapore fell 33%, while Hong Kong-Los Angeles 10 Gbps prices declined 39%.

A key driver of falling transPacific circuit costs has been the construction of three new undersea cables since 2007: the Asia-America Gateway (2008), Trans-Pacific Express (2009), and Unity (2010) cable systems. The construction of these cables introduced both new capacity and a host of new competitors.

For more information, visit www.telegeography.com.

SEA-ME-WE-4 maintenance ends

East African submarine cable operator SEACOM announced that planned maintenance on the SEA-ME-WE-4 submarine fiber optic cable was completed on 29 July. The maintenance began on 25 July and was finished ahead of schedule.

SEACOM, which had suffered outages to its services in the past from problems on SEA-ME-WE-4, said in a statement that the maintenance was completed without any impact to SEACOM services.

The SEA-ME-WE-4 maintenance was conducted in the Mediterranean along a segment of the cable system between Egypt and Italy. It had been scheduled for April, but turmoil in Egypt earlier this year delayed the project.

For more information, visit www.seacom.mu.

ABB wins order for offshore wind power connection

ABB has won an order worth around $1 billion from the Dutch-German transmission grid operator TenneT to supply a power link connecting offshore North Sea wind farms to the German mainland grid.

This is the largest power transmission order in ABB's history. It will deploy the world's largest offshore HVDC (high-voltage direct current) system with a rating of over 900MW, keeping electrical losses to less than 1% per converter station. The completed link will be capable of supplying more than 1.5 million households with clean wind-generated electricity.

ABB will design, engineer, supply, and install the offshore platform, the offshore and onshore converter stations, and the land and sea cable systems. ABB's innovative and environmentally friendly HVDC Light transmission technology will transport power from the 400MW Gode Wind II and other wind farms to an offshore HVDC converter station, which will transmit the electricity to the onshore HVDC station at Dörpen on the German coast via 135km of underwater and underground cables. A converter station here will feed electricity into the mainland grid.

For more information, visit www.abb.com.

Prysmian secures HelWin2 project

Prysmian has been awarded a new major contract worth in excess of €200 million by the Dutch-German grid operator TenneT for the connection project HelWin2, linking offshore wind farms in the North Sea to mainland Germany.

Prysmian will provide complete supply, installation, and commissioning of the submarine and land cable connections as part of a larger contract worth approximately €600 million, awarded to the consortium of Prysmian and Siemens Energy. Siemens will deliver the Voltage Sourced Converter (VSC) system, with a rating of 690MW. The turnkey connection will link the offshore wind park Amrum Bank West in the 'HelWin' Cluster zone located about 55km offshore in the North Sea to the mainland with the purpose of transmitting power from renewable source into the German Grid.

For more information, visit www.prysmian.com.

PR-VI cable feasible, study says

The Virgin Islands Water and Power Authority has received the final report of a study that confirms that a submarine electric power interconnection between Puerto Rico and the Virgin Islands is not only feasible but will greatly improve reliability, lower customer costs, and reduce carbon emissions.

Siemens Power Technologies, Inc. conducted the study, which was funded by grants from the Virgin Islands Legislature and the U.S. Department of Energy and was supported by the Virgin Islands Energy Office under the Office of the Governor.

For more information, visit www.viwapa.vi.

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Fiber Optic Permitting in Marine Environments

By Tony Martin, Global Marketing Manager, CSA International, Inc.

Up-to-date fiber optic cable systems are becoming vital as communication requirements continue to increase. Residents of islands, big and small, are no longer content to be off the grid. Many fiber optic cable systems span thousands of kilometers and connect multiple countries. However, accomplishing a successful subsea fiber optic cable system is not always as easy as it sounds.

There are numerous considerations that must be evaluated and balanced in order to achieve a successful project, including design and construction methods and costs, environmental regulations, resources present in the project area, and schedule, to name a few.

Most Coastal States (161 signatories) follow the United Nations Convention on Law of the Sea (UNCLOS). UNCLOS Article 79 subpart 1 states that Coastal States are entitled to lay submarine cables on the continental shelf, in accordance with the provisions of the Article. As a signatory to UNCLOS, Coastal States have the right to dictate to the cable owners the routes and grant Rights-Of-Way within their 3 nmi Territorial Seas. Outside of the 3nmi Territorial Sea limit, the cable owners can route or delineate where their cable system routes are laid unless the cable is being attached to an offshore artificial island or structure that is to be utilized in the exploitation of the natural or mineral resources within the 200 nmi Exclusive Economic Zone (EEZ). Coastal States manage and enforce this right through the permitting process as required and designed by each country.

Subsea Fiber Optic Cable System Routing

Within the offshore territorial and spatial boundaries, fiber optic cable projects may impact a range of resources (e.g., cultural, biological, and geological) along their designated cable route. To understand the impacts and determine how to avoid or minimize those impacts as required by most Coastal States, an assessment must be completed to determine the spatial and temporal extent of the laying, operation, and maintenance over the cable system lifespan (cable laying to out-of-service status). The principal impacts usually involve sensitive habitats, including, but not limited to, beaches, marsh, mangroves, seagrass, coral reefs (in tropical climates), kelp stands, oyster reefs, hard bottom (in subtropical and temperate climates) and pinnacle-mounds, and seep/vent communities (in deep waters). In addition to the habitat impacts, other impacts include water quality (vessel emissions – MARPOL compliance, turbidity, dredging), air quality (vessel emissions), and cultural resources/socioeconomic (archeological, social impacts, fisheries).

Typically, the initial route taken for a subsea system is as direct as possible (i.e., straight-line design) since this is often the most cost effective from the engineering and construction standpoints; however, this approach is not always the most cost effective in the long run since this approach can result in significant mitigation costs and permitting schedule delays. Yet, having a solid understanding of the permitting process can help reduce the mitigation costs and schedule delays.

There are several important financial issues that must be evaluated when planning fiber optic cable systems. A key financial issue for project managers is balancing the design of the most efficient and cost-effective system (generally a straight-line structure) against the costs of impacting the resources that exist between the two end points. These resources can be biological, geological, and/or social in nature, and impacting them can require costly mitigation and schedule delays. A key financial issue for the cable system sponsor is minimizing the time variable in the "Return-on-Investment" equation. In other words, when does the project start making money? These two financial issues must be balanced correctly in order to achieve a successful project. In order to make informed decisions regarding what will result in the most cost-efficient and time-effective project, an understanding of the permitting process is vital. If the permitting process is not understood and considered during project development, permitting issues often crop up at the most inopportune time, typically impacting the project schedule and overall cost.

Most subsea fiber optic cable system projects cannot be constructed in an effective cost and schedule manner using the straight-line design model because the marine environments where these cables are laid are often dynamic and highly geomorphologically and biologically diverse. Because of these marine environmental factors and the extensive spatial footprint (i.e., length) of the cable system, these types of projects can be some of the most complicated to permit. However, some complications can be reduced and informed decisions made by the project team through an understanding of the permitting process and an accurate assessment of the resources that exist along a preferred system route.

Permitting Feasibility Study

In order for a cable system owner or contracted consulting firm (which may be responsible for acquiring the necessary permits) to efficiently manage a subsea fiber optic cable laying project, they must also manage the permitting process efficiently. This should involve gaining an understanding early in the project planning and design phase of the permitting process in the respective area of cable laying and of the natural and cultural environment resources that are present in the proposed area of activity. An effective approach involves engaging environmental permitting specialists to prepare a permitting feasibility study that provides a framework for the permitting process, identifies the permitting timeline and critical path items, and preliminarily identifies resources within the area of activity that should be avoided to minimize impacts.

One of the key steps of a permitting feasibility study should involve completing an exclusionary mapping study, which includes compiling a large Geographic Information Systems (GIS) database that can accurately and spatially depict the presence and extent of the resources that are located along the proposed cable route. Another means of determining the natural resources within a project area is through spectral image analysis of satellite imagery. The imagery can be assessed and a classification analysis performed to develop habitat categories. Once the initial assessment has been conducted, an in-field ground-truthing effort is required to verify the accuracy of the analysis and calibrate the spectral frequencies utilized during data interpretation in order to reduce errors. Utilizing remote sensing provides an accurate assessment of the shallow water resources along a proposed cable route for less than 20% to 30% of the cost of a traditional field assessment or geophysical survey. Notably, CSA International, Inc. (CSA), a U.S. marine environmental consultancy firm, has successfully used spectral image analysis (remote sensing technology) to assess the natural resources within a proposed project area as part of the permit feasibility study process (Figure 1).

The permit feasibility study provides the cable installers, project manager, and system owner with information for making informed financial and design decisions regarding cable system routing and design, project timeline and critical path items, and

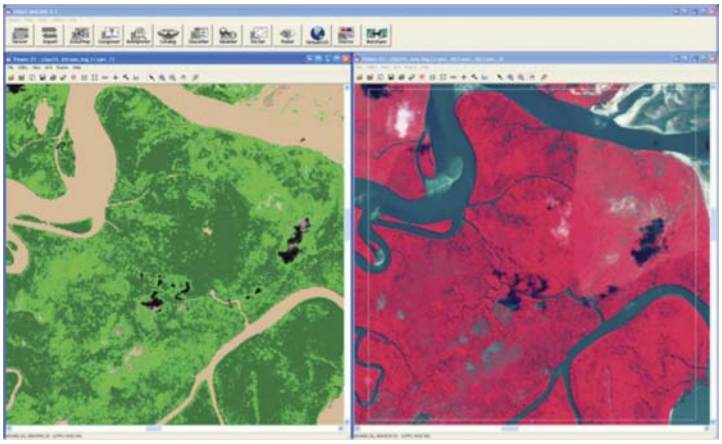


Figure 1 *Classified spectral image showing different habitat types (left). Source satellite imagery (near infrared band shown) (right).*

additional studies/surveys that may be necessary for successful permitting of the project. The permit feasibility study provides preliminary data to start the initial engineering route design, which can avoid and minimize impacts to known resources, prepare an initial cost estimate, and prepare a project schedule or Plan of Work (POW). In addition, the feasibility study data and information should be utilized for the permit documents and applications.

After completion of the permit feasibility study and to begin the permitting process, the feasibility study should be used to design a route and document the associated impact corridor that balances the engineering and construction costs with the impacts to resources that may be present in the project area. Once the route design is complete, the permitting process can be completed and any associated impacts to resources must be identified in the permit applications.

Environmental Impact Assessment

A key component for most permit applications is the Environmental Impact Assessment (EIA), which generally has scripted content mandated by the lead permitting agency within the Coastal State. Some funding agencies, such as the International Finance Corporation (IFC) and the World Bank, require the submission of an EIA that follows a detailed format compliant with their internal risk assessment reviews in order to ensure that the projects they are financing do not exploit or impact the local environments or human populations to a degree that is unmitigatable.

Another environmental risk management protocol that has been designed and implemented by over 72 international banking institutions is known as the Equator Principles (EPs). The EPs are a credit risk management framework for determining, assessing, and managing environmental and social risk in project financing. Project finance is often used to fund the development and construction of major infrastructure and industrial projects such as telecommunications. The EPs are adopted voluntarily by financial institutions and are applied where total project capital costs exceed US$10 million. The EPs are primarily intended to provide a minimum standard for due diligence to support responsible risk decision-making.

As part of the EIA process, all impacts to the natural, social, cultural, and economic resources must be assessed and minimized to the most practicable level. To accomplish this, the preliminary data obtained during the permitting feasibility study will need to be further investigated through the performance of surveys along the proposed subsea fiber optic cable route. These surveys may include, but are not limited to, geophysical surveys and video and still photographic surveys. From these detailed surveys, any minor modifications can be made to the pipeline routing within the surveyed corridor that avoids and minimizes impacts to resources to the maximum extent practicable while balancing the cost and schedule impacts. If the impacts to the environment cannot be avoided, the permitting agencies, in most cases, will require a mitigation plan.

Mitigation Plan

There are three basic steps to creating mitigation plans:

- Identify and quantify benthic habitats/resources within the area along the proposed cable route;
- Assess the relative sensitivity of the identified benthic habi tats/resources to potential impacts associated with the con struction of the project (the nature of the impacts will be assessed as well as the size of affected areas); and
- Recommend specific mitigation measures to offset these impacts.

Relevant Projects

Some examples of project that CSA has completed that avoided the need for mitigation include the Europe-India Gateway (EIG) Segment 3 fiber optic cable network and the Suriname-Guyana-Trinidad Cable System (SGCS) connecting Suriname, Guyana, and Trinidad. CSA was responsible for all environmental analysis and permitting activities associated with 7,015-km Segment 3 section of the EIG submarine fiber optic telecommunications cable system, which extends from London, England to Mumbai, India. Permitting was required for seven landing sites in six different countries (Zafarana, Egypt; Jeddah, Saudi Arabia; Djibouti, Djibouti; Barka, Oman; Mumbai, India; and Fujairah, United Arab Emirates (UAE)) and one territorial sea and exclusive economic zone crossing (Yemen). CSA coordinated, assisted, and prepared all permit applications for the project to secure survey and installation permits for all landing sites and routings, including facilitating vessel permits for the client's survey contractors where needed. For the SGCS permitting project, CSA was responsible for all environmental analysis and permitting activities for the 347.23-km cable system, which extends from Maqueripe Bay, Trinidad to Totness, Suriname with a branching unit (BU) installed midway to land in Georgetown, Guyana. Permitting was required for the three landing sites, and CSA coordinated, assisted, and prepared all permit applications for the project.

Because of the in-depth analysis of the resources that were present along the preferred cable routes and the recommended avoidance of sensitive habitats of the two highlighted projects above, both projects have obtained permits in an efficient manner, reducing the time variable in the "Return-on-Investment" for the system owners as well as the environmental impacts of the two projects located in highly diverse and productive environments.

Conclusion

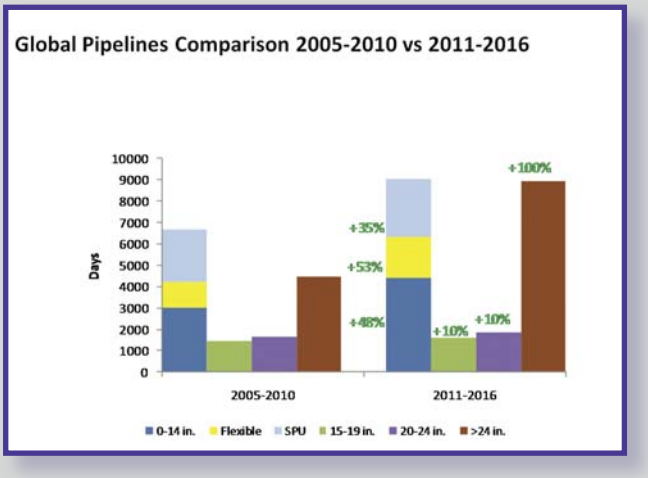
The avoidance and minimization of impacts to resources as well as an understanding of the permitting process are vital to the successful installation of a subsea fiber optic cable system. The chances of having a more successful project increase tremendously if project managers and system owners contract environmental permitting specialists, such as CSA, in the planning stages of a cable system project and keep them involved throughout project development in order to identify the regulatory framework and potential permitting pitfalls, provide permitting and critical path schedule information, and identify resources to be avoided.

For more information on CSA's capabilities, contact Mr. Tony Martin by phone at (772) 219-3000 or by e-mail at tmartin@conshelf.com or visit www.csaintl.com.

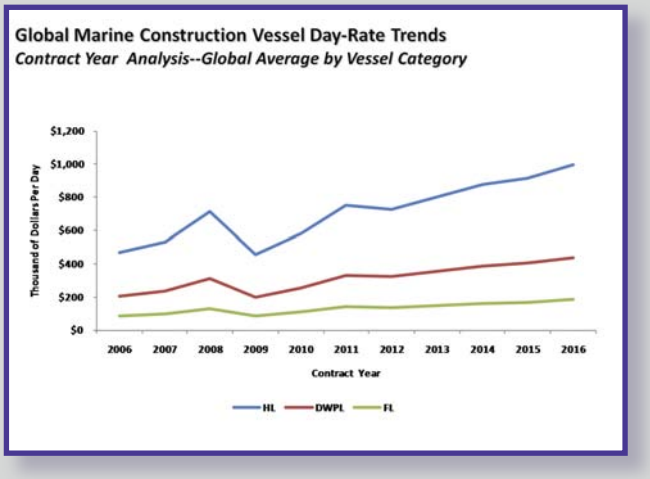
Offshore At-A-Glance

Quest Offshore Activity Report

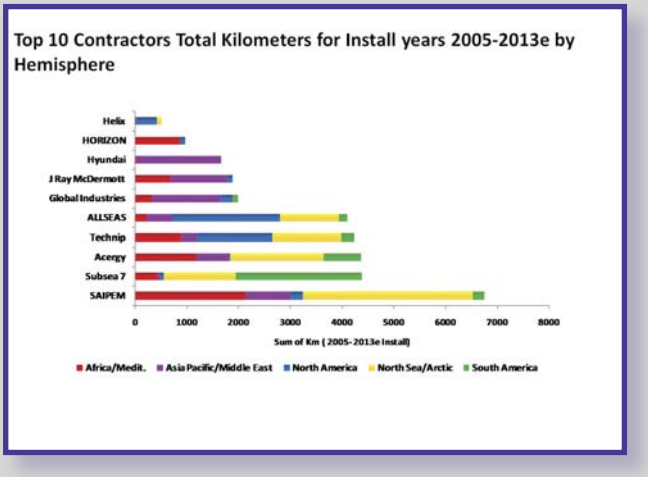
Global Pipline Comparisons



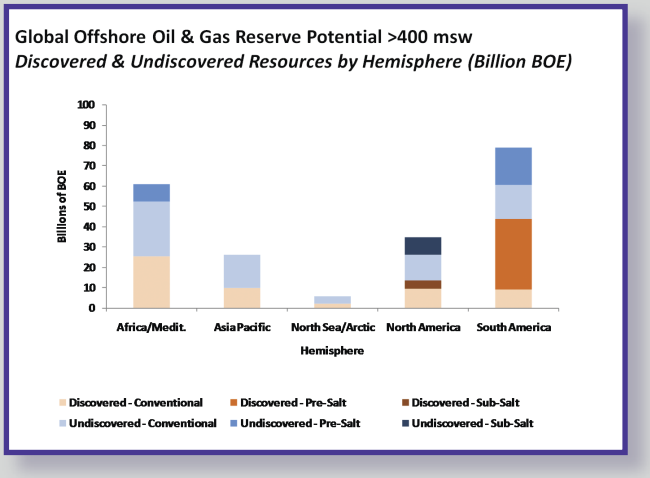
Global Marine Const. Vessel Trends



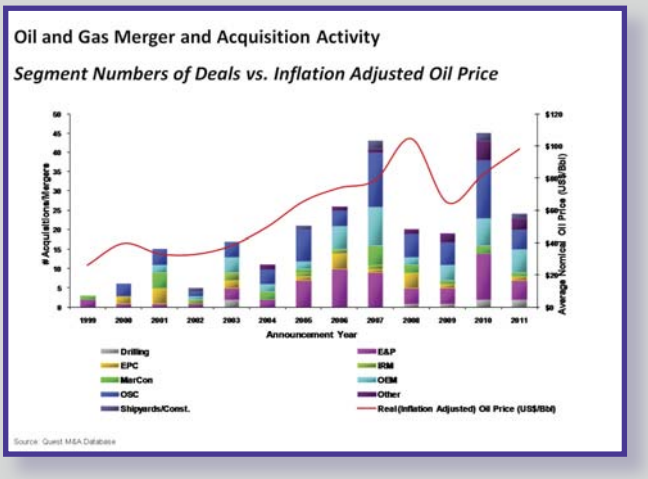
Top 10 Pipeline Contractors



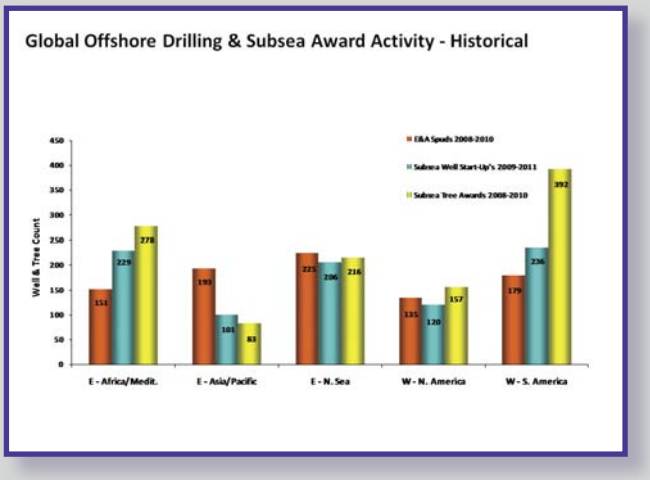
Global Offshore Oil & Gas Reserves



Oil & Gas Merger and Acquisitions



Offshore Drilling & Subsea Awards



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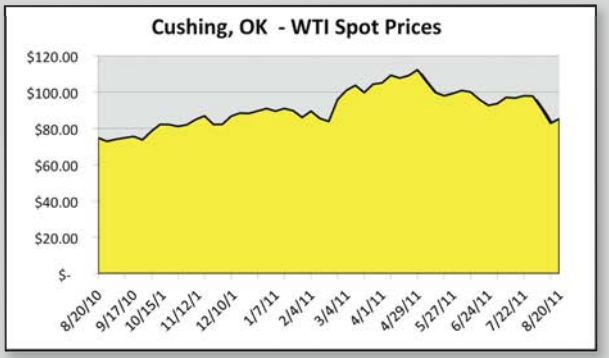
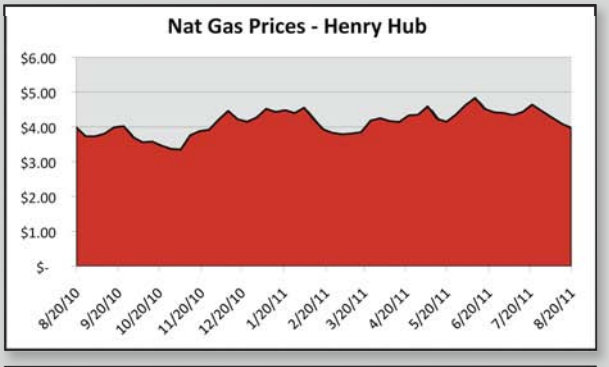
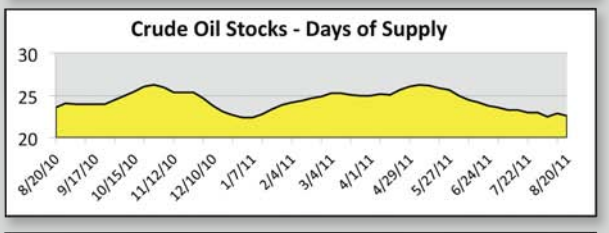
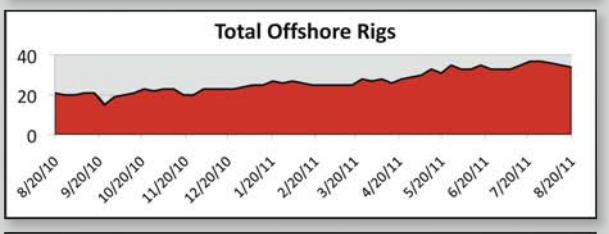
Oil & Gas Industry Trends

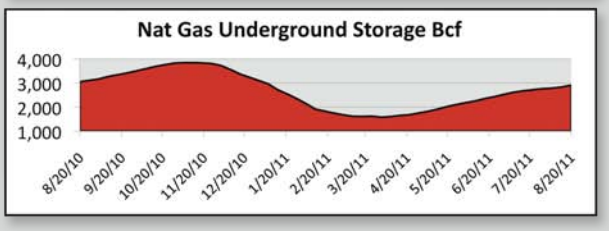
Monitoring the pulse of the US Offshore Oil & Gas Industry

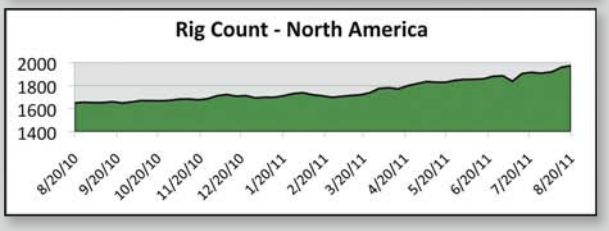










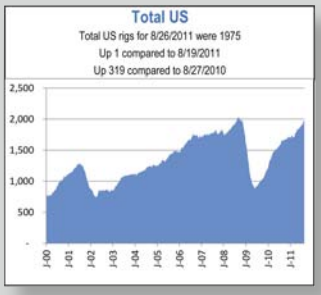


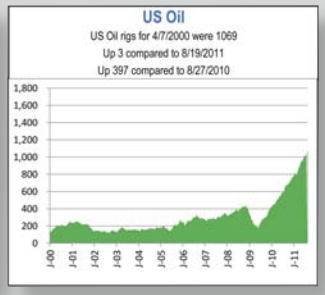
positive trend at least 3 weeks
changing trend < 3 weeks
negative trend at least 3 weeks

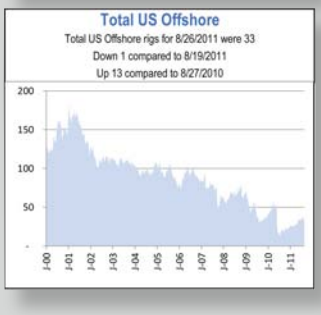
Baker Hughes Rig Report

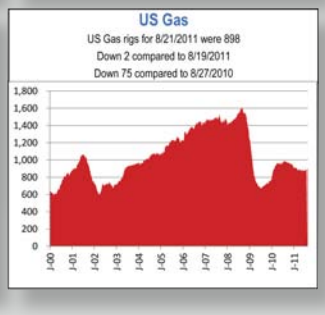
North American Rig Report
August 26, 2011

Location	Week of 8/26	+/-	Week Ago	+/-	Year Ago
Land	1925	4	1921	303	1622
Inland Waters	17	-2	19	3	14
Offshore	33	-1	34	13	20
U.S. Total	1975	1	1974	319	1656
Gulf of Mexico	32	-2	34	12	20
Canada	508	22	486	122	386
N. America	2483	23	2460	441	2042









Gulf of Mexico Data

Current Deepwater Activity

Operator	Area/Block	OCS Lease	Rig Name	Prospect Name	Water Depth(ft)
Shell Offshore Inc.	AC 859	G20871	NOBLE DANNY ADKINS	Tobago	9,627
Shell Offshore Inc.	AC 857	G17565	H&P 205	Great White	7,816
Statoil Gulf of Mexico LLC	WR 969	G26419	T.O. DISCOVERER AMERICAS		7,813
Shell Gulf of Mexico Inc.	MC 348	G19939	T.O. DEEPWATER NAUTILUS	Camden Hills	7,256
ExxonMobil Corp.	KC 919	G21447	MAERSK DEVELOPER	Hadrian	6,941
Chevron USA Inc.	KC 736	G22367	T.O. DISCOVERER INSPIRATION	Moccasin	6,750
Chevron USA Inc.	KC 785	G25806	T.O. DISCOVERER DEEP SEAS		6,590
BP Exploration & Production inc.	GC 743	G15607	T.O. DEVELOPMENT DRILLER III	Atlantis	5,405
Eni US Operating Co. Inc.	MC 728	G16644	T.O. DEEPWATER PATHFINDER	Triton (mc)	5,376
Noble Energy, Inc.	GC 723	G21813	ENSCO 8501	Deep Blue	5,040
BHP Billiton Petroleum (GOM)	GC 738	G16786	T.O. DEVELOPMENT DRILLER I		4,468
Chevron USA Inc.	GC 640	G20082	T.O. DISCOVERER CLEAR LEADER	Tahiti	4,298
BHP Billiton Petroleum (GOM)	GC 653	G20084	GSF C.R. LUIGS	Shenzi	4,232
ATP Oil & Gas Corp.	MC 941	G16661	NABORS 202	Mirage	4,000
Anadarko Petroleum Corp.	EB 646	G20725	CAL DIVE Q-4000	Shackleton	3,905
Shell Offshore Inc.	MC 935	G07976	NOBLE DRILLER	Europa	3,789
Nexen Petroleum USA Inc.	GC 504	G22968	ENSCO 8502		3,600
ATP Oil & Gas Corporation	GC 299	G22939	DIAMOND OCEAN VICTORY	Clipper	3,456
Murphy E&P Co.	GC 338	G21790	NABORS MODS 200	Front Runner	3,325
Marathon Oil Co.	GB 515	G20792	DIIAMOND OCEAN MONARCH	Ozona	3,287
Shell Offshore Inc.	MC 762	G07957	NOBLE JIM DAY	Deimos	3,140
Shell Offshore Inc.	GB 158	G07995	H&P 202	Brutus	2,985
Shell Offshore Inc.	MC 807	G07963	H&P 201	Mars b	2,945
Shell Offshore Inc.	GB 426	G08248	AUGER	Auger	2,861
Shell Offshore Inc.	GB 427	G07493	NOBLE JIM THOMPSON	Auger	2,719
Chevron USA Inc.	VK 786	G10944	NABORS 87	Petronius	1,754
Stone Energy Corp.	MC 109	G05825	H&P 206	Amberjack	1,030

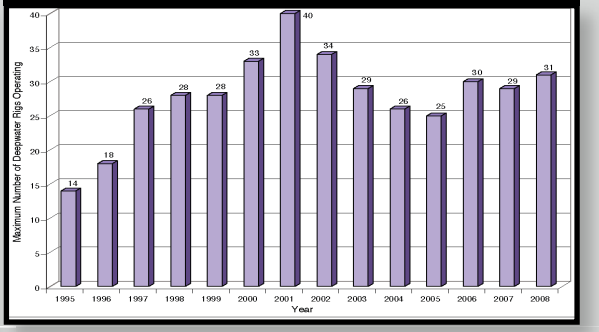
Deepwater prospects with drilling and workover activity: 27

Current Deepwater Activity as of Monday, August 15, 2011

Activity by Water Depth

Water Depth in Meters	*Active Leases*	*Approved Applications*	*Active*
0 to 200	*1,918*	*33,838*	*3,167*
201 to 400	*129*	*1,111*	*20*
401 to 800	*288*	*835*	*10*
801 to 1,000	*391*	*514*	*7*
1,000 & above	*3,275*	*1,657*	*26*

Rig activity by year



Activity by water depth Information current as of Monday, August 15, 2011

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

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

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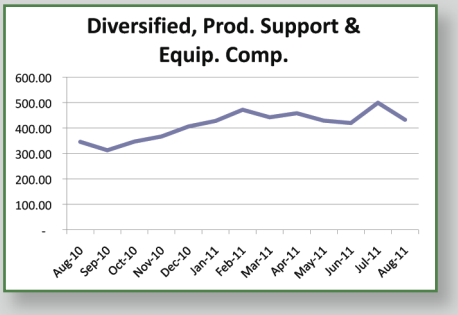
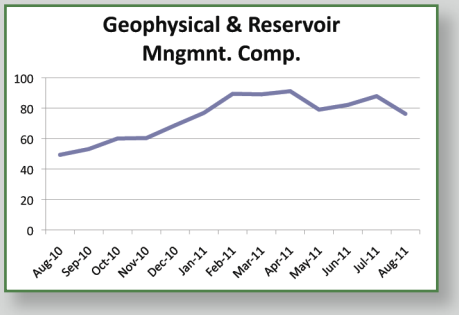
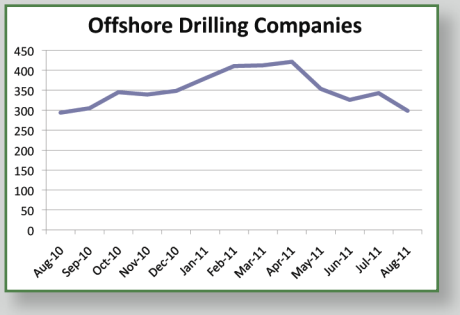
Monthly Stock Figures & Composite Index

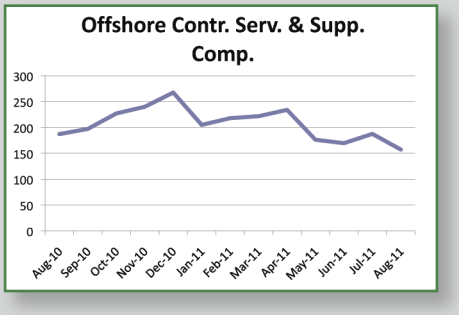


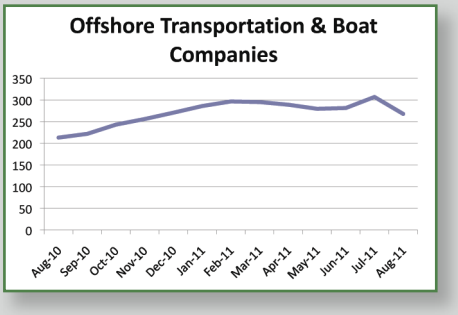


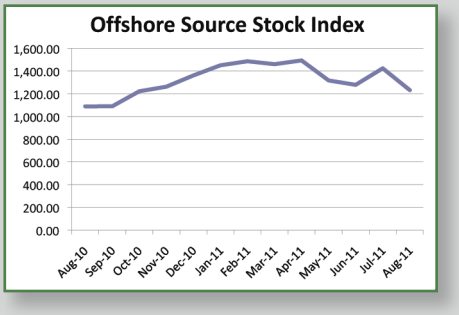


Industry Company Name	Symbol	Close *Mid-August*	Close *Mid-July*	Change	Change %	High 52 week	Low 52 week
Diversified, Production Support and Equipment Companies							
Baker Hughes, Inc.	BHI	63.06	78.46	-15.40	-19.6%	79.24	36.76
Cameron Intl. Corp.	CAM	48.80	51.17	-2.37	-4.6%	63.16	34.38
Drill-Quip, Inc.	DRQ	59.56	72.08	-12.52	-17.4%	83.80	46.39
Halliburton Company	HAL	45.62	55.18	-9.56	-17.3%	55.29	27.36
Tenaris SA	TS	34.25	44.59	-10.34	-23.2%	51.07	32.91
Newpark Resources, Inc.	NR	8.07	9.28	-1.21	-13.0%	10.00	5.12
Schlumberger Ltd.	SLB	79.29	88.80	-9.51	-10.7%	95.64	52.91
Superior Energy Services, Inc.	SPN	35.02	39.75	-4.73	-11.9%	41.65	20.40
Weatherford International, Inc.	WFT	17.40	18.70	-1.30	-7.0%	26.25	14.42
Deep Down, Inc.	DPDW	0.09	0.10	(0.01)	-10.0%	0.29	0.05
FMC Technologies	FTI	41.10	40.99	0.11	0.3%	50.33	29.93
Total Diversified, Production, Support and Equipment.....		**432.26**	**499.10**	**-66.84**	**-13.4%**	**556.72**	**300.63**
Geophysical / Reservoir Management							
Dawson Geophysical Company	DWSN	35.05	34.77	0.28	0.8%	50.81	23.45
Mitcham Industries, Inc.	MIND	16.72	19.25	-2.53	-13.1%	20.00	6.26
Compagnie Gnrale de Gophysique-Veritas	CGV	24.50	33.82	-9.32	-27.6%	38.12	16.42
Total Geophysical / Reservoir Management.....		**76.27**	**87.84**	**-11.57**	**-13.2%**	**108.93**	**46.13**
Offshore Drilling Companies							
Atwood Oceanics, Inc.	ATW	42.44	46.88	-4.44	-9.5%	48.84	23.75
Diamond Offshore Drilling, Inc.	DO	62.35	72.34	-9.99	-13.8%	81.19	56.40
ENSCO International, Inc.	ESV	45.66	51.81	-6.15	-11.9%	60.31	39.51
Nabors Industries, Inc.	NBR	19.06	26.88	-7.82	-29.1%	32.47	15.54
Noble Drilling Corp.	NE	31.76	37.32	-5.56	-14.9%	46.72	27.68
Parker Drilling Company	PKD	6.23	6.85	-0.62	-9.1%	7.45	3.58
Rowan Companies, Inc.	RDC	34.47	37.54	-3.07	-8.2%	44.83	23.36
Transocean Offshore, Inc.	RIG	56.60	63.07	-6.47	-10.3%	85.98	49.05
Total Offshore Drilling.....		**298.57**	**342.69**	**-44.12**	**-12.9%**	**407.79**	**238.87**

Monthly Stock Figures & Composite Index



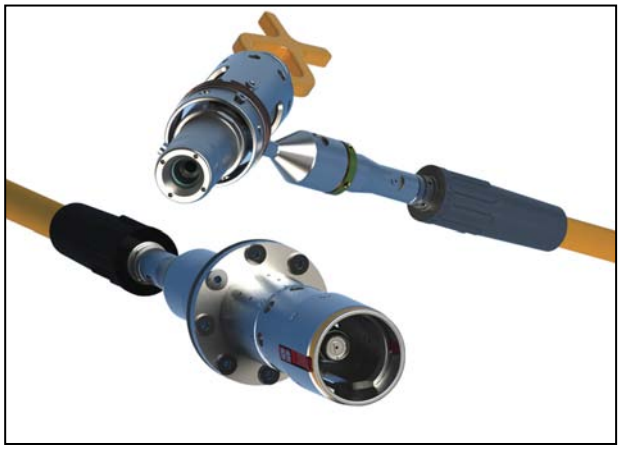




Industry Company Name	Symbol	Close *Mid-August*	Close *Mid-July*	Change	Change %	High 52 week	Low
Offshore Contractors, Services and Support Companies							
Helix Energy Solutions Group, Inc.	HLX	16.48	17.85	-1.37	-7.7%	21.65	8.38
Gulf Island Frabrication	GIFI	26.56	33.98	-7.42	-21.8%	36.00	14.47
Global Industries, Ltd.	GLBL	3.78	5.53	-1.75	-31.6%	10.23	3.09
McDermott International, Inc.	MDR	14.18	20.29	-6.11	-30.1%	26.14	11.82
Oceaneering International	OII	38.87	43.96	-5.09	-11.6%	46.19	24.12
Subsea 7 SA	SUBCY.PK	23.69	26.65	-2.96	-11.1%	27.52	14.34
Technip ADS	TKPPY.PK	23.47	26.24	-2.77	-10.6%	28.35	15.76
Tetra Technologies, Inc.	TTI	10.21	13.04	-2.83	-21.7%	16.00	8.00
Total Offshore Contractors, Service and Support……..		**157.24**	**187.54**	**-30.30**	**-16.2%**	**212.08**	**99.98**
Offshore Transportation and Boat Companies							
Seacor Holdings, Inc.	CKH	89.33	106.19	-16.86	-15.9%	116.00	76.14
Gulfmark Offshore, Inc.	GLF	39.74	44.50	-4.76	-10.7%	49.95	25.24
Bristow Group	BRS	41.75	52.04	-10.29	-19.8%	52.89	32.42
PHI, Inc.	PHII	20.65	22.22	-1.57	-7.1%	23.55	14.01
Tidewater, Inc.	TDW	52.58	54.82	-2.24	-4.1%	63.55	38.97
Trico Marine Services, Inc.	TRMAQ.PK	0.09	0.09	0.00	0.0%	0.37	0.01
Hornbeck Offshore	HOS	23.66	27.01	-3.35	-12.4%	31.77	15.16
Total Offshore Transportation and Boat ……..…….		**267.80**	**306.87**	**-39.07**	**-12.7%**	**338.08**	**201.95**
Total Diversified, Production, Support and Equipment		**432.26**	**499.10**	**-66.84**	**-13.4%**	**556.72**	**300.63**
Total Geophysical / Reservoir Management		**76.27**	**87.84**	**-11.57**	**-13.2%**	**108.93**	**46.13**
Total Offshore Drilling		**298.57**	**342.69**	**-44.12**	**-12.9%**	**407.79**	**238.87**
Total Offshore Contractors, Service and Support		**157.24**	**187.54**	**-30.30**	**-16.2%**	**212.08**	**99.98**
Total Offshore Transportation and Boat		**267.80**	**306.87**	**-39.07**	**-12.7%**	**338.08**	**201.95**
Total Offshore Source Index…		**1,232.14**	**1,424.04**	**-191.90**	**-13.5%**	**1,623.60**	**887.56**

8-ch. connector available, 24-ch. under development

SEACON Advanced Products, LLC's optical 8-channel wet-mate HYDRALIGHT connector (below) is now also available in a hybrid configuration. Fully underwater mateable, oil filled, and pressure balanced, this field proven connector incorporates four modular optical and four electrical contacts with a voltage rating of 1,000 VAC and a current rating of 5 amps. This connector is qualified to 7,000m, with an average single-mode insertion loss of less than 0.2dB and an average single mode back reflection of -50dB. With a design life of 25 years and a life cycle of a minimum of 100 mate/de-mates, this connector meets 'Optical Wet-Mate Connector Specifications' for Norsk Hydro, Statoil, Elf Exploration, Total, Hess, and BP.



In addition, a high count optical wet-mate HYDRALIGHT (above) is currently under development with a maximum of 48 Angled Physical Contacts (APC) optical channels using a modular approach. The external size is identical to the current standard field proven 8-channel HYDRALIGHT family of connectors with an increased fiber interface utilizing high-density optic ferrules. The design is being driven initially through the need to optimize optical data transfer between the surface platform and a vast array of optical sensors that are deployed subsea.

For more information, visit www.seacon-ap.com.

Sonardyne's calibration-free acoustic positioning delivers major cost savings for CSA International

CSA International Inc., a marine environmental consulting firm working in the Gulf of Mexico, has become the first organization in the world to purchase a new, "calibration-free" acoustic positioning system launched by Sonardyne International Ltd. The GyroUSBL integrates Sonardyne's Lodestar Attitude and Heading Reference System (AHRS) and sixth generation (6G®) Ultra-Short BaseLine (USBL) transceiver into a single unit and was shown to offer significant operational benefits during a deepwater ROV survey carried out this summer.

Most USBL positioning systems need to undergo a calibration process to determine the precise alignment offsets between the acoustic transceiver and the vessel's own attitude sensors. This is often a time-consuming exercise involving the vessel undertaking specific maneuvres over several hours while all the necessary data are collected and then processed.

With Lodestar GyroUSBL, any sensor offsets have largely been removed by the tight mechanical coupling of the survey-grade AHRS unit and the USBL array during its assembly and calibration at Sonardyne's factory. This integration also enables the attitude sensor data latencies associated with conventional USBL set-ups to be virtually eliminated, further improving precision and accuracy. Lodestar GyroUSBL can, therefore, be deployed on any vessel and put to work very quickly without users first having to perform a calibration.

The Lodestar GyroUSBL was supplied to CSA as part of a Sonardyne Ranger 2 positioning system and was installed on an over-the-side deployment pole fitted to the offshore supply vessel HOS Sweetwater. During the survey, the Lodestar GyroUSBL was put to the test tracking an ROV as it descended to 1,478m. Out-of-the-box, the factory calibration produced a slant range accuracy result of 4.25m (0.3%). For many projects, this performance would meet positioning specification; however, it was decided that a single calibration would be run to make a fine determination of the pitch roll alignment errors. This further improved the slant range accuracy to 1.9m, or just 0.13% of water depth.

Because of their versatility, USBL systems are routinely moved from vessel-to-vessel to support a wide range of subsea tasks. As soon as this happens, the relationship between USBL transceiver and the attitude sensors is lost. The only way to re-establish the relationship is to re-calibrate the system on the new vessel. As the Lodestar GyroUSBL is a combined unit, the precise alignment is carried within the unit-meaning that when installed on a new vessel, a repeat calibration is not required. A simple 'spin-test', which can be performed enroute to the vessel's work location, is all that is now advised to verify the GPS antenna offsets for the new installation.

For more information, visit www.sonardyne.com and www.csaintl.com.

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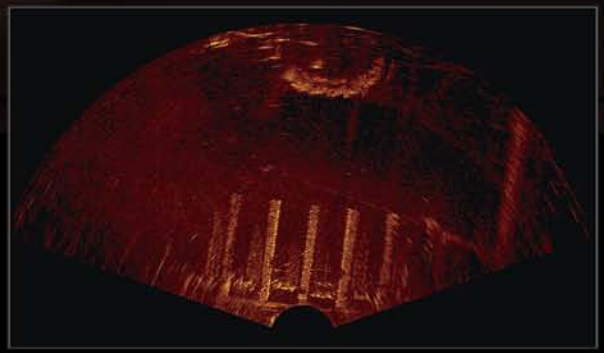

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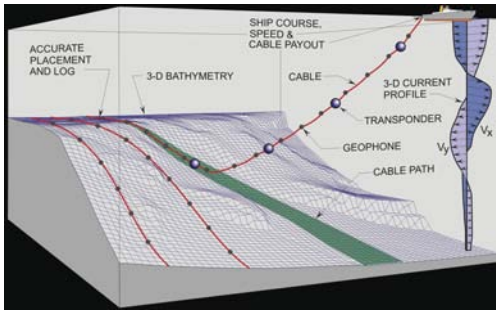
Makai Ocean Engineering releases new submarine cable software for the seismic industry

Makai Ocean Engineering, Inc. has released MakaiPlan Pro Seismic, an extension of its successful cable simulation and installation software, MakaiPlan Pro, which is a PC-based, deep-sea cable modeling software used by over 75% of the cable installers in the Telecom industry. MakaiPlan Pro Seismic has been specifically designed to address the new challenges faced by the seismic industry to properly plan and accurately install and retrieve Ocean Bottom Cables (OBC) in mid- and deepwaters.



MakaiPlan Pro's rigorous 3D dynamic model of the cable operates in real-time on a desktop PC, allowing detailed planning of cable installation and retrieval.

For more information, visit www.makai.com.

Seaflex leads the way with 50t WaterLoad Bag

Seaflex Ltd., a Unique Maritime Group Company, is a leading provider of marine buoyancy products and water filled test weights. Seaflex's product range includes subsea air lift bags, inflatable buoyancy units, WaterLoad test weights, cable and pipeline buoyancy, lifeboat testing ballast bags, yacht fenders, and yacht racing marks.

Seaflex is a BS EN ISO 9001:2008 company, independently certified by Lloyds Register Quality Assurance, and its products comply with current IMCA and EC regulations.

The Seaflex prototype 50t WaterLoad Bag has achieved over 201t (safety factor of 4 to 1) during its independent type test at the TUVNEL test rig Scotland.

Managing Director Graham Braiding, said, "Ideally, we would have liked to achieve a 6 to 1 safety factor (300t) but we were limited by the test rig itself which is only rated to 200t." "He added, the bag, including all of its lifting components, has been designed with a 6 to 1 safety factor in mind."

This picture of the bag on the test rig with an operative in the shot gives some

perspective of the size of the bag. No other manufacturers of WaterLoad test weights have type tested a 50t WLB so far.

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

Sea Scan HDS side scan sonar used by FBI to find drug semi-submersible that held $180M worth of cocaine

The operation made national news when a sunken semi-submersible was found using the Marine Sonic Technology, Ltd Sea Scan HDS system. This system is designed for ease of use from any vessel and with its high definition sonar images finding and identifying targets is more conclusive. There was no question of what the FBI operators were looking at when the semi-submersible appeared on the display because of the image quality Marine Sonic is known to produce.

For this search, a 600/1200kHz dual frequency tow fish was used, but higher frequency systems are available from Marine Sonic Technology, Ltd for more detail and for finding smaller targets.

For more information, visit www.marinesonic.com.

Nautronix secures multi-million dollar contract from Noble Corporation

Nautronix has been awarded significant orders to supply NASDrill RS925 deepwater acoustic positioning systems for Noble Corporation's three new ultra-deepwater drillships due for delivery second and fourth quarters of 2013 and second quarter of 2014.

These new rigs will be constructed at Hyundai Heavy Industries shipyard in Ulsan, Korea and are based on a Hyundai Gusto P10000 design. The rigs will have DP-3 station keeping abilities and the ability to handle two complete BOP systems allowing for operation in water depths of up to 12,000 feet.

Nautronix received orders for itsNASDrill RS925 systems through a well-known Norwegian DP Supplier who will supply its dynamic positioning (DP) system for these vessels.

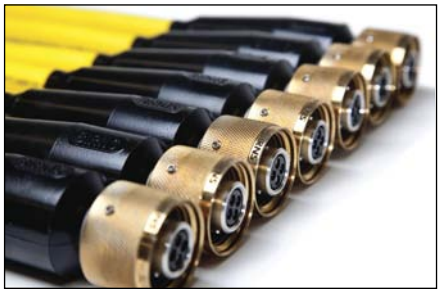
NASDrill RS925 systems have been designed specifically to meet the requirements for a reliable, stable DP and position reference system for demanding offshore operations, in particular deepwater drilling vessels.

NASDrill RS925 combines the two most accurate deepwater acoustic positioning technologies — Short Baseline (SBL) and Long Baseline (LBL) — to calculate multiple independent position solutions, providing reliable, repeatable input to the vessel DP system. The SBL mode providing accuracies of 0.15% slant range, and LBL mode provides accuracies up to 1m RMS independent of water depth.

The Noble vessels will be fitted with dual redundant, six-hydrophone NASDrill RS925 systems offering significant built-in redundancy in both topside and subsea elements.

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

Birns Inc. launches Millenium™ connector stocking program



BIRNS, Inc., an ISO 9001:2008-certified global innovator in the design and manufacture of unique lines of high performance connectors and lights for the world's most demanding environments, has just introduced a new stocking system that allows the company to deliver BIRNS Millennium™ connectors and cable assemblies with an average lead time of just 4 weeks.

The breakthrough new program for these high-density, deep submergence metal shell underwater connectors includes an upgrade in manufacturing software to track and forecast orders and equipment and enhanced injection molding capabilities. BIRNS can now deliver standard BIRNS Millennium™ connectors and even custom cable assemblies in a matter of days for certain connectors off the shelf, and less than a month for most others.

The popular BIRNS Millennium™ series is rated to 6km and tailored for a

wide range of optical, electro-optical, and coax, electro-coax configurations and electromechanical applications (to 3 tons). The versatile series can be configured for high voltage — hybrid electro-optical options can include both high-voltage (≤ 3.6kV) and low-voltage (≤600V) conductors. The connectors reliably transmit huge data streams while minimizing electrical noise — typical loss recorded for a cable assembly of the series is <1dB.

For more information, visit www.birns.com.

BlueView signs OEM agreement with SeeByte

BlueView Technologies, a world leader in compact acoustic imaging and measurement technology, and SeeByte, the global leader in creating smart software technology for unmanned systems, agreed to expand the capabilities of BlueView's sonar systems with advanced sonar analytics software from SeeByte.

BlueView is the leader in 2D imaging and 3D scanning sonar solutions with more than 500 installed systems worldwide. BlueView's Technologies advanced sonar systems are currently deployed on AUVs, ROVs, surface vessels, fixed installations, and portable tripods and have been adopted by leading manufacturers and service providers to support mission critical operations. SeeByte is renowned for the development and application of software-based solutions for the offshore energy and military sectors. SeeByte software adds enhanced capability to a range of underwater sensors, vehicles, and integrated systems.

For more information, visit www.blueview.com and www.seebyte.com.

Locating a lost underwater mooring with an EdgeTech 4125

On 22 May 2011 a trawl resistant mount with an ADCP was deployed in 20m of water near Deer Island Boston, Massachusetts. Over the next few months, it was expected that the mooring was collecting data as required by the NOAA program. The data were to be used to update NOAA tide current predictions in the region. Unfortunately, during a scheduled retrieval trip on 4 August it became clear that the ocean had tossed another challenge to the awaiting crew. It was suspected that the mooring may have been moved, turned over, or damaged by fishing activity. The crew knew the mooring was close by, but they needed an exact position for the divers. The EdgeTech 4125 ultra high-resolution side scan sonar was called in to assist in the important task.

EdgeTech's 4125 Side Scan Sonar System is a rugged, portable, easy-to-use system that provides ultra high-resolution underwater imagery. The 4125 utilizes EdgeTech's Full Spectrum® CHIRP technology, which provides higher resolution imagery at longer ranges than traditional systems. This translates into more accurate results and faster surveys, both critical components for missions such as mooring recovery. The 400/900kHz frequency set provides an excellent combination of long range search capability and high-resolution images for detection of very small objects like the NOAA trawl resistant mooring in this case. The 4125 can be powered by both AC and DC; in this case, it was running off a standard 12V car battery on the vessel. EdgeTech's easy-to-use Discover acquisition software is included with the system and has both Target Logger and Coverage Mapper modules. The standard 50m multi-conductor Kevlar tow cable was used to tow the systems behind the boat at approximately 7m off the seafloor.

Using the EdgeTech 4125, operators Rob Morris from EdgeTech and Stephen O'Malley from OceanTechUSA, Inc., were able to locate and precisely position the lost underwater object within 1 hour of searching the suspected area. The mooring had been moved approximately 70m from the deployment location. They were also able to determine that the anti-trawl mount was most likely upside down. As seen in the images here the mooring was visible in the high resolution imagery and was easily identified. The use of the EdgeTech 4125 side scan sonar successfully enabled the location and recover of an important underwater mooring.

Caley supplies CALM buoy hose deployment system

Offshore handling systems specialist, Caley Ocean Systems, has supplied a large diameter hose deployment system to SBM Offshore N.V. for the installation of two large-diameter, reinforced, bonded rubber hose offloading lines for a catenary anchor leg mooring (CALM) buoy.

Based on an SBM design concept, the hose deployment system will be used to assemble and deploy lengths of Trelleborg Trelline hose, some of which will be fitted with buoyancy modules. Caley Ocean Systems has built on the SBM concept, teaming up with SBM to refine the hose deployment and lifting system's design, reducing the size and weight of the A-frame structure and the overall cycle times. In addition, guidance of the hose both above and below the deployment system's friction clamp enables safer operation.

The Caley hose deployment system comprises an A-frame assembly, which includes winches and lifting gear with a top tension of 26 tons, outrigging platform structure designed to withstand 200 tons of load, including clamp, guidance system, handrails and walkways, and 6.8m diameter deployment wheel.

The hose deployment system was fully tested at Caley's quayside facility in Glasgow prior to being shipped for integration onboard SBM Normand Installer. The system was then successfully used to deploy two offloading lines without any disruption in the assembly process.

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

Knudsen, Chesapeake demonstrate "Pinger" SBP System

Knudsen Engineering put their new 15kHz "Pinger" sub-bottom profiling system through its paces on Lake Champlain Vermont with the support of Middlebury College on their research vessel R/V Baldwin. Data processing was performed with Chesapeake Technology's SonarWiz 5 software.

The Pinger features chirp transmission and a large aperture receiver using the latest PVDF technology that provides higher directivity while remaining lightweight. Another advantage of the Pinger SBP receive array is its wide bandwidth. The same receive array can be used simultaneously for multiple frequencies. Designed to be very portable and lightweight, the Pinger is well suited for small boats and shallow water applications that have been problematic with traditional SBPs on the market. During the demonstration the Pinger was operated in water as shallow as 1.5m. Shallow water has always been a problem for conventional SBPs because of transmission pulse ringing.

SonarWiz 5 SBP software was used to process and display the data collected

with the Pinger SBP. Chesapeake is the leading producer of software for the real-time acquisition and post-processing of side scan sonar and sub-bottom profiler data. SonarWiz 5 has become the standard for Navies, government agencies, survey companies, and universities around the world. The software is designed to be very user friendly and fast at processing the data.

The results from the Pinger were exceptionally good, with very high-resolution mapping of the layers and bedrock as well as depth of penetration. Two very experienced observers onboard during the demonstration, Tom Manley and Garry Kozak both agreed the data were very good and produced results that rivaled conventional large heavy SBP systems. The lightweight system will open up new possibilities in shallow water for surveyors.

For more information, visit www.knudsenengineering.com or www.chesapeaketech.com.

German submarine U-513 found with JW Fishers side scan

The remains of the German submarine U-513 were recently discovered off the coast of Brazil. The sub was sunk by bombs dropped from an American plane in July 1943. Only 7 of the 53 men onboard survived the attack.

Researchers from Kat Schurmann Institute and Vale do Itajai University located the U-513 almost 68 years to the day after it sank. Using a combination of high tech equipment the 252-ft long submarine was discovered lying at a depth of 245-ft, 75 miles off the Brazilian state of Santa Catarina. Members of the Schurmann family, founders of the Kat Schurmann Institute, were actively involved in the search. The family had procured a JW Fishers side scan system shortly after opening the institute, an organization that was devoted to fostering sustainability and preservation of the oceans and coastal habitats. The primary use for the sonar was to map the reef structures off the Brazilian coast.

At every opportunity, a group from the institute, including Schurmann's sons, would take the side scan out and survey the underwater obstructions. The youngest son, Wilhelm, had attended a training course at Fishers factory in Massachusetts and was well versed on the operation of the side scan and use of the SONAR VIEW software. On 14 July 2011, their hard work paid off and the side scan produced definitive images of the remains of a pressure hull on the ocean bottom. The final resting place of the U-513 had been uncovered.

For more information, visit www.jwfischers.com.

Fugro Chance detailed 3D mapping

When your project lays 300-ft underwater within the mysteries of the Gulf of Mexico, detailed mapping is important to the success of the entire development.

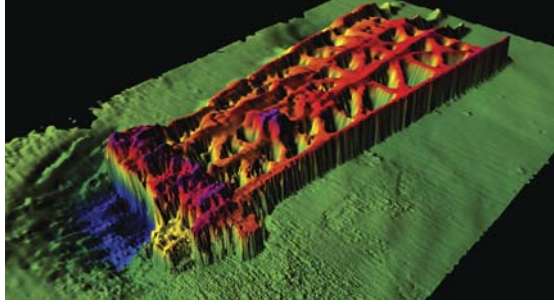
Detailed 3D mapping technology through offshore survey company Fugro Chance Inc. has been enhanced through its multibeam imaging software and services. In-depth imaging of the topography of the seafloor and subsea assets (structures, wells, etc.) is available – for assets installation, dredge campaigns, or decommissioning services.

Multibeam technology employs a fan-shaped coverage of the seafloor, including an ability to map inaccessible areas, such as breakwaters and shoal areas. This ensures a confidence that seafloor features and hazards are mapped without voids.

Fugro multibeam surveys provide a real-time view of the high-density point cloud data sets. High-resolution imagery of seafloor, pipeline, structures, and other assets are produced onsite as the project progresses. These 3D graphics images prove valuable in providing project managers and engineers with critical planning information.

With the use of a pre-calibrated, rotatory mounted multibeam system, a swath of data can be collected in a 360° circle, without having to take the vessel off position. This is especially useful as data can be obtained without stopping work to collect multibeam data.

Another platform for acquiring multibeam data is through Fugro's ROV. The more comprehensive dataset offered by



this survey makes it an excellent choice for surveys of toppled structures where P&A of wellheads are required. Not only is a top view of the structure offered, but also side and inside views allowing for comprehensive multibeam dataset for project planning.

These techniques enable Fugro to provide the client with the highly accurate multibeam 3D imagery that assist in risk mitigation and add efficiency to project execution.

For more information, visit www.fugrochance.com.

Kongsberg Maritime secures over £1 million in orders from Fugro

Kongsberg Maritime has announced an order of over £1 million from Fugro, the largest, worldwide integrated supplier of geoscience, survey, and geotechnical related services. Kongsberg Maritime will supply a range of its latest high-resolution cameras and Mesotech scanning sonar systems as part of Fugro's 2011 ROV Sensor Refurbishment and Newbuild programme.

The contract represents Kongsberg Maritime's fifth consecutive year working as prime camera and scanning sonar supplier under a consolidated supply framework with Fugro. By the end of this project the leading underwater camera supplier will have delivered over 500 cameras to Fugro to date.

During 2011, Kongsberg Maritime will supply more than 170 high-resolution underwater cameras and over 40 avoidance sonar systems for use on Fugro's existing global fleet of ROV systems and the Company's planned newbuild ROV Systems, including its own in-house designed and built FCV 3000 and FCV 2000 Work Class ROV Systems and the new Lynx and Panther XT Saab Seaeye ROV Systems.

The order includes a number of the latest OE14-502 multi standard High Definition (HD) cameras. Other equipment purchased includes the latest Low Light, OE13-124/125 BIT navigation camera; the OE14-366 color zoom camera, the OE14-376/377 color light ring camera; and the OE15-108 general purpose mono camera together with the latest ultra high resolution imaging sonar.

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

Introducing a Modular Seafloor Communications Network

A pre-engineered, expandable system that can be deployed (and redeployed) anywhere in water depths of up to 3,000 meters.

The Offshore Communications Backbone (OCB)

CSnet's Offshore Communications Backbone (OCB) consists of a network of power and fiber optic cables and sensor ports connected to a surface communications buoy. The OceanNET™ buoy, was designed and built by Maritime Communication Services MCS, a subsidiary of Harris Corp. and serves as the command control and data backhaul for the OCB.

Expandable, Adaptable, Portable

- Each OCB or networked array of OCBs can be deployed to service multiple clients ...or dedicated to a specific project.
- *Once the mission(s) are completed, the OCB can be moved to a new location. The OCB is particularly suited to remote areas or areas located far offshore.*
- Suited both for long-term and short-term projects

Cost Effective

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

Typical Projects Served by the OCB

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

Finally, an End-to-End Service Provider

CSnet and its partners CSA International, Inc. (CSA), Ocean Specialists, Inc. (OSI) and Maritime Communication Services, Inc. (MCS) offer an end-to-end solution, providing system design and construction, site survey and selection, permitting, environmental impact and assessment, installation as well as ongoing operation and maintenance services.

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www.mcs.harris.com

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Project process of the ATLAS IS³ for National Institute of Oceanography in India on schedule

At the end of 2010 the National Institute of Oceanography in India (NIO) chose ATLAS HYDROGRAPHIC for delivery of an ATLAS IS³ for the new-build research vessel Sindhu Sadhana, currently under construction at ABG shipyard in Surat, India.

Delivery will be completed within this year. At this time a group of NIO scientists is in Bremen for comprehensive training.

NIO, with its headquarters at Dona Paula, Goa, is a large oceanographic laboratory of international reputation. The institute has about 200 scientists and since its foundation in 1966 the focus of research has been on observing and understanding the special oceanographic features that the North Indian basin offers.

Although NIO owns a 60m research vessel named Sindhu Sankalp, vessels from other countries or the Government of India have been hired frequently in order to be able to conduct all the different oceanographic applications. With the 80 m new building Sindhu Sadhana, which is already in making at ABG shipyard in Surat, India, the institute will increase independency and flexibility.

Figure 1 RV Sindhu Sadhana of NIO

NIO has awarded ATLAS HYDROGRAPHIC a contract to supply a hydrographic turnkey solution. In this context ATLAS HYDROGRAPHIC specifically designed an ATLAS Integrated Survey Sensor System (ATLAS IS³) according to NIO's needs.

The system will be composed by the following components:

- ATLAS DESO 35 shallow water single beam echosounder with thermal printer
- ATLAS DESO 35 DS deep sea single beam echosounder with thermal printer
- ATLAS HYDROSWEEP MD/50 shallow water multibeam echosounder
- ATLAS HYDROSWEEP DS deep sea multibeam echosounder
- ATLAS PARASOUND parametric deep sea sub-bottom profiler
- Software for sensor control, data acquisition, post processing and seabed classification

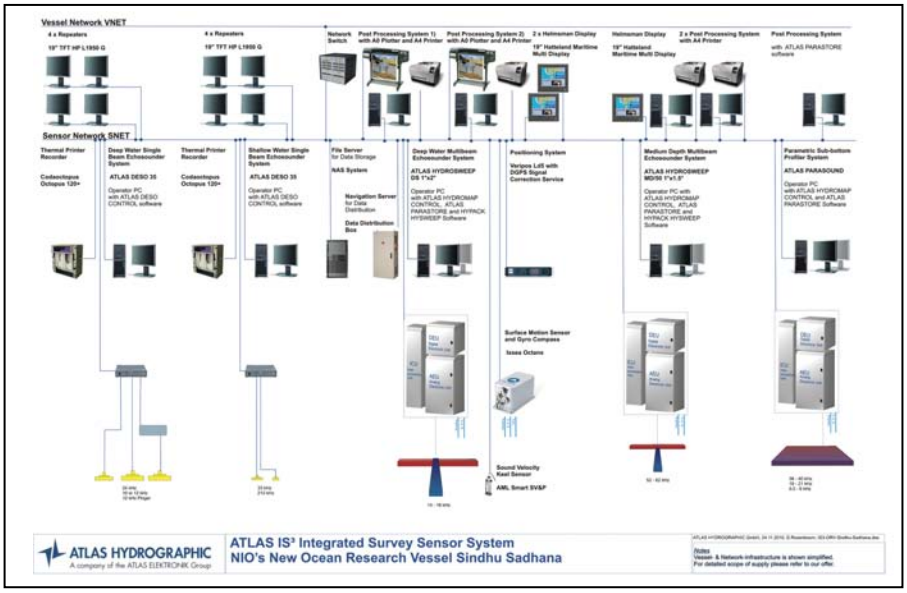

Figure 2 System Overview of the ATLAS IS³ for NIO

- Peripheral sensors for sound velocity, positioning, heading and ship motion
- Network infrastructure with data distribution, central data storage system, in-house and on-board post processing facilities, helmsman displays and repeaters

Within this system configuration the ATLAS DESO single beam echosounders will provide precise depth information in all water depths. Efficient multibeam surveys in shallow and deep water will be realized by the ATLAS HYDROSWEEP third generation echosounders. The high-end research sonars can be used not only for bathymetry, but also for water column profiling and seabed classification using sidescan and backscatter information.

Through continuous improvement in recent years, today's ATLAS HYDROSWEEP multibeam echosounders are characterised by high performance signal processing with a high number of beams, frequency modulated (chirped) pulses and the innovative multiping technology. As a consequence of these enhancements NIO will benefit from high-resolution, data density as well as increased coverage also at higher ship speed. These system functionalities will be supplemented by deep sediment profiling of the ATLAS PARASOUND sub-bottom profiler.

The complete system will be integrated as a puzzle piece to sensors and scientific instrumentation on board of the vessel supplied by other sources.

In order to make the operators capable to handle the ATLAS IS³ a six weeks training takes place at the "ATLAS test lake" in Bremen at this time. A group of NIO scientists will be trained in terms of software application, maintenance and operation.

Delivery of the ATLAS scope of supply will be completed in this year. The new multi-disciplinary oceanographic research vessel is expected to join NIO by 2012 and will have capabilities to undertake basin scale observations then. Moreover, it will enable Indian oceanographers to take up studies not only in the seas around India, but also in any part of the Indian Ocean.

Figure 3 Test facilities at the "ATLAS Lake" nearby river Weser in Bremen

ATLAS HYDROGRAPHIC and its products are well-established in India. This is reflected by hundreds of sold ATLAS DESO echosounders and six PARASOUND systems in the South Asian country. With this reference ATLAS HYDROGRAPHIC is closing a gap introducing the first ATLAS HYDROSWEEP third generation multibeam echosounders into the Indian market.

For more information about NIO and the new vessel, visit www.nio.org/.

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People & Company News

AMEC, an international engineering and project management company, named **Andy Sallis** to the position of president, AMEC Oil & Gas Americas, responsible for Houston-based project operations, including supervision of joint ventures AMEC Black & McDonald in Canada and Paragon Angola in West Africa. Previously, Sallis served as senior vice president, business capture and delivery, for AMEC Paragon, the oil and gas business unit of AMEC Natural Resources Americas. Most recently, he led the team that secured a contract for the delivery of a marine well containment system for the Gulf of Mexico, the Houston-based company's largest contract to date. Sallis has been with AMEC for 23 years, responsible for multiple project and corporate roles in the United Kingdom, South Africa, Angola, China and the United States. His project management work has included offshore and onshore oil and gas facilities.

Sallis

Diamond Offshore Drilling, Inc. appointed **Clifford M. Sobel** to the company's board of directors. Sobel served as U.S. Ambassador to the Netherlands from 2001 until 2005 and U.S. Ambassador to Brazil from 2006 until 2009. He is presently the managing partner of Valor Capital Group LLC, an investment group investing in Brazil. Previously he served as chairman of Net2Phone, an Internet provider listed on the NASDAQ. Sobel is a member of the millennium promise board, a non-governmental organization supporting the UN Millennium Development Goals, and also serves on the advisory boards to the American Military Commander of Europe and NATO, as well as the Command for American Forces for Central and South America.

Knight Oil Tools named **Joe Lee** director of the Jar product line. In his new position, Lee will oversee new Jar manufacturing operations in addition to the maintenance and servicing of used equipment at the Knight Oil Tools Jar facility in Broussard, La. Lee's other responsibilities will include business development, HSE and quality systems for the Jar product line. Lee holds a bachelor of science degree in civil engineering from Mississippi State University. He is a member of the Society of Petroleum Engineers and International Association of Drilling Contractors. Lee has a long history in the oilfield as well as extensive international operations experience. Prior to joining Knight Oil Tools, Lee served as vice president of operations at Foxxe Energy Services. Lee has also held management positions at Halliburton, Expro Group, Altec Gas Lift and Schlumberger.

Lee

GE Energy said **Dan Heintzelman**, currently chief executive officer of GE Energy Services, was named CEO of GE Oil & Gas. Heintzelman succeeds **Claudi Santiago**, who has served as CEO of GE Oil & Gas for the last 12 years and is retiring from GE in December. **Steve Bolze**, CEO of GE Power & Water, will now lead an expanded portfolio with the addition of Power Generation Services to the Power & Water business. **Dan Janki**, currently GE Energy's chief financial officer, was named CEO of the newly formed business within Energy, GE Energy Management.

Rowan Companies, Inc. said **Thomas P. Burke** was appointed to serve as the company's chief operating officer, and **Melanie M. Trent** was appointed to serve as senior vice president, chief administrative officer and corporate secretary. Burke, who joined the company in Dec. 2009, previously served as the president and chief executive officer of the company's manufacturing subsidiary, LeTourneau Technologies, Inc., which was sold to Joy Global in June 2011. Prior to then, he was employed by Complete Production Services, an oilfield services company, as a division president from 2006 to 2009, and as vice president corporate development from 2004 to 2006. Before joining Complete Production, Burke held various positions at Schlumberger Ltd. and McKinsey & Co. Trent joined the company in 2005 and served most recently as vice president and corporate secretary, assisting in the company's securities, corporate governance and transactional legal work. Rowan also said that **David Russell**, executive vice president of drilling operations, was leaving the company to pursue other interests. Rowan's fleet of 29 jackup rigs is located worldwide, including the Middle East, the North Sea, Trinidad, and the Gulf of Mexico.

Burke

Trent

The board of directors of Schlumberger Ltd. said **Andrew Gould**, chairman and chief executive officer of Schlumberger was to retire as CEO effective Aug. 2011. Gould will continue to serve as chairman of the board until the annual general meeting of the company's stockholders in April 2012. It was the board's intention that its directors will select the current independent lead director, **Tony Isaac**, to be the new non-executive chairman upon Gould's departure. Gould was to be succeeded as CEO by **Paal Kibsgaard**, chief operating officer of Schlumberger. During more than 14 years of employment with the company, Kibsgaard has held operational and management responsibility in the Middle East, Europe and the United States, and has been involved in all aspects of the company's operations. Prior to his appointment as COO, Kibsgaard served as president of the reservoir characterization group after assignments as vice president, engineering, manufacturing and sustaining; and vice president of personnel following a series of earlier international positions.

Gould

Transocean Ltd. said that **R. Thaddeus Vayda** was named vice president, investor relations, effective 20 July 2011. Based in Houston, he reports to Transocean Ltd. president and chief executive officer Steven L. Newman. Vayda rejoins Transocean, where he served in various roles from 1995 to 2000 in marketing, engineering and operations and as director, corporate planning and financial analysis. Tritech continues to invest in its workforce as it prepares for its 21st year in business; the new recruits are in sales, technical and customer support. The sales team has two new appointments, **Nisha Roychoudhury** joins as Internal Sales Co-ordinator from TubeFuse Technologies Ltd, and **Emma Presly** as Sales Administrator; **Sara Cope** replaces Emma as receptionist. Tritech has also appointed **Glen Caldock** as Technical Author. Within the Customer Support Team, Tritech also announced the permanent employment of **Ben Bird**, a graduate engineer who served a placement with the company last summer. Also joining the team is **Marteen Nicoll** as Customer Service Administrator.

American Electric Technologies, Inc. announced the appointment of **Neal Dikeman** to the company's board of directors. AETI is a leading global provider of power delivery solutions for the traditional and renewable energy industries. Dikeman is a founding partner of Jane Capital Partners, a San Francisco-based, corporate advisory and merchant banking firm focused on clean technology and alternative energy investments.

Ocean Eye, Inc. has promoted **Donna S. Moyer** to Vice President of Marketing. Moyer moves in to the position of Vice President of Marketing for Ocean Eye, Inc. She will be responsible for spearheading Ocean Eye's marketing efforts. In the past, Moyer has been instrumental in creating marketing strategies and marketing contract negotiation.

Swire Oilfield Services, a leading global provider of offshore cargo carrying units and associated services has appointed **David Rae** as sales director in line with its significant investment

Rae

Calendar

September 6-8, 2011:
Offshore Europe
Aberdeen, Scotland
www.offshore-europe.co.uk

September 18-23, 2011:
SEG International Exposition
San Antonio, TX
www.seg.org

September 19-22, 2011:
Oceans 2011 MTS?IEEE Kona
Kona, Hawaii
www.oceans11mtsieeekona.org

September 20-22, 2011:
Submarine Networks World 2011
Singapore
www.terrapinn.com/subnets

October 4-6, 2011:
OTC Brazil
Rio de Janiero, Brazil
www.octnet.org

October 11-12. 2011:
MTS Dynamic Positioning
Houston, TX
www.mtsociety.org

October 11-13, 2011:
AWEA Offshore Windpower 2011
Baltimore, MD
www.offshorewindexpo.org

October 18-21, 2011:
Ocean Innovation 2011
Iqaluit, Nunavut
www.oceaninnovation.ca

October 25-27, 2011:
LAGCOE
Lafayette, LA
www.lagcoe.com

November 7-8, 2011:
MREC Technical Conference
Cambridge, MA
www.mrec.umassd.edu

November 8-10, 2011:
Offshore Communications
Houston, TX
www.offshorecoms.com

November 14-16, 2011:
MAST Americas
Washington D.C.
www.mastamericas.com

Nov. 30 - Dec 1, 2011:
Clean Gulf
San Antonio, TX
www.cleangulf.org

Nov. 30 - Dec. 2, 2011:
International Workboat
New Orleans, LA
www.workboatshow.com

December 6-8, 2011:
Wind Turbine Blade Manufacture 2011
Dusseldorf, Germany
www2.amiplastics.com/Events/Event.aspx?code=C420&sec=1786

December 12-15, 2011:
Subsea Survey IRM
Houston, TX
www.subseasurvey.com

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DeepStar Technical Project Engineer
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- Metocean design criteria for rigs, fixed & floating platforms, and pipelines
- Real time metocean data collection & dissemination for marine operations
- New instrumentation and data techniques

Topic 3
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- IRM technology & methodology utilizing: Divers, ROVs & AUVs
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Media Reviews

Worldwide Shipyards 2011

The Worldwide Shipyard 2011 handbook (fourth edition) contains almost 2500 shipyards, with even more detailed information indexed by country, over 850 FULL COLOR pages, updated and improved shipyard contact and facility details, advanced indexes: alphabetically listed shipbuilders and repairers, company service index, alphabetical index of important individuals. Customers who have purchased this handbook will receive 3 months complimentary access to the www.ship2yard.com internet service.

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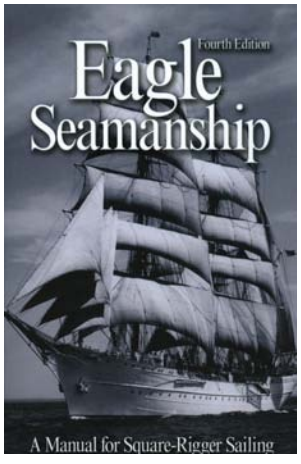
Eagle Seamanship
A Manual for Square-Rigger Sailing

One of the most majestic vessels on the high seas today and the only active square rigger in the U.S. fleet, Eagle draws huge crowds in any port that she calls. This fourth edition of the venerable manual on square rigger sailing is the first revision in more than twenty years.



It brings together the several changes in rigging and procedures that allow the 75-year-old Eagle to continue to sail. As America's emissary to the tall ship fleet, Eagle sails each summer to destinations in Europe, the Caribbean, and North America, with thousands following her journeys online.The manual has long been the reference of choice for Eagle crew members, Coast Guard Academy cadets, and tall ship sailors throughout the world. Its extensive glossary of square rigger nomenclature, diagrams of rigging and sails, explanations of sailing theory, and updated procedures for handling the vessel will be welcomed by many.

ISBN-10: 1591146313, ISBN-13: 978-1591146315, Publication Date: April 15, 2011, Edition: 4, 208 pages/46 illustrations, $25.95.

Ocean News & Technology

2011 EDITORIAL CALENDAR

January/February
Editorial: Inspection & Light Work Class ROVs, Offshore IRM
Distribution: Underwater Intervention
Deadline: January 14th
Product Focus: Diving Equipment & Buoyancy Materials

March
Editorial: Defense & Naval Systems, Oceanography & Meteorology
Distribution: NACE • Future Naval Forces • Ocean Business • Offshore Survey
Deadline: February 18th
Product Focus: Navigation, Mapping & Signal Processing; U/W Batteries

April
Editorial: Offshore Technology, Maritime Security
Distribution: U.S. Hydro • OTC • Maritime Security Expo-EJ Kraus
Deadline: March 11th
Product Focus: Connectors, Cables & Umbilicals

May
Editorial: AUVs & Gliders, U/W Imaging & Processing
Distribution: Oceans '11 IEEE Spain • UDT Europe
Deadline: April 15
Product Focus: Cameras, Lights & Imaging Sonars

June
Editorial: Ocean Renewables, Ocean Observing Systems
Distribution: EnergyOcean11 • Sea Work Int'l • MAST France
Deadline: May 13th
Product Focus: Tracking & Positioning Systems

July
Editorial: Work Class ROVs, Subsea Fiber Optic Networks
Distribution: AUVSI
Deadline: June 17th
Product Focus: Subsea Tools & Manipulators, Seismic Monitoring

August
Editorial: Coastal Engineering, Aquaculture & Marine Resources, Offshore Mooring Systems
Distribution: Offshore Europe • OCEANS'11 MTS/IEEE Kona
Deadline: July 15th
Product Focus: Buoys & Monitoring Instrumentation

September
Editorial: Offshore Wind, Subsea Telecom, Deepwater Pipeline Repair & Maintenance
Distribution: OTC Brasil • AWEA/Offshore Wind • MTS Dynamic Positioning
Deadline: August 19th
Product Focus: Multibeam & Side Scan Sonars

October
Editorial: Offshore Communications, Environmental Assessment & Monitoring, OTEC
Distribution: LAGCOE • MAST Americas • Clean Gulf • Offshore Communications
Deadline: September 16th
Product Focus: Acoustic Modems, Releases & Transponders

November/December
Editorial: Ocean Mapping & Survey, Commercial Diving, Decommissioning, Plug & Abandonment
Distribution: International Workboat • Subsea Survey/IRM • Underwater Intervention
Deadline: October 28th
Product Focus: Workboats & Special Purpose Subsea Vehicles

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

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Tel: 713-934-3100
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 deck equipment and subsea tooling for remote intervention.

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E-mail: sales@seacon-ap.com
Website: www.seacon-ap.com

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E-mail: sales@itc-transducers.com
Website: www.itc-transducers.com.com
K. Ruelas, pres.; Art Cambell, v.p.; Jon Monroe, sales & mktg.; E. Kuntsal, eng. mgr.

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

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

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

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Tel: +1 713 329 8730, Fax: +1 713 329 8299
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Contact: Wolfgang Burnside

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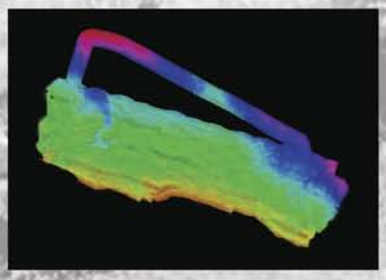

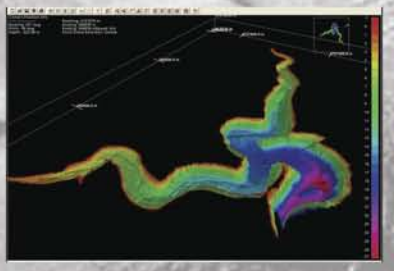

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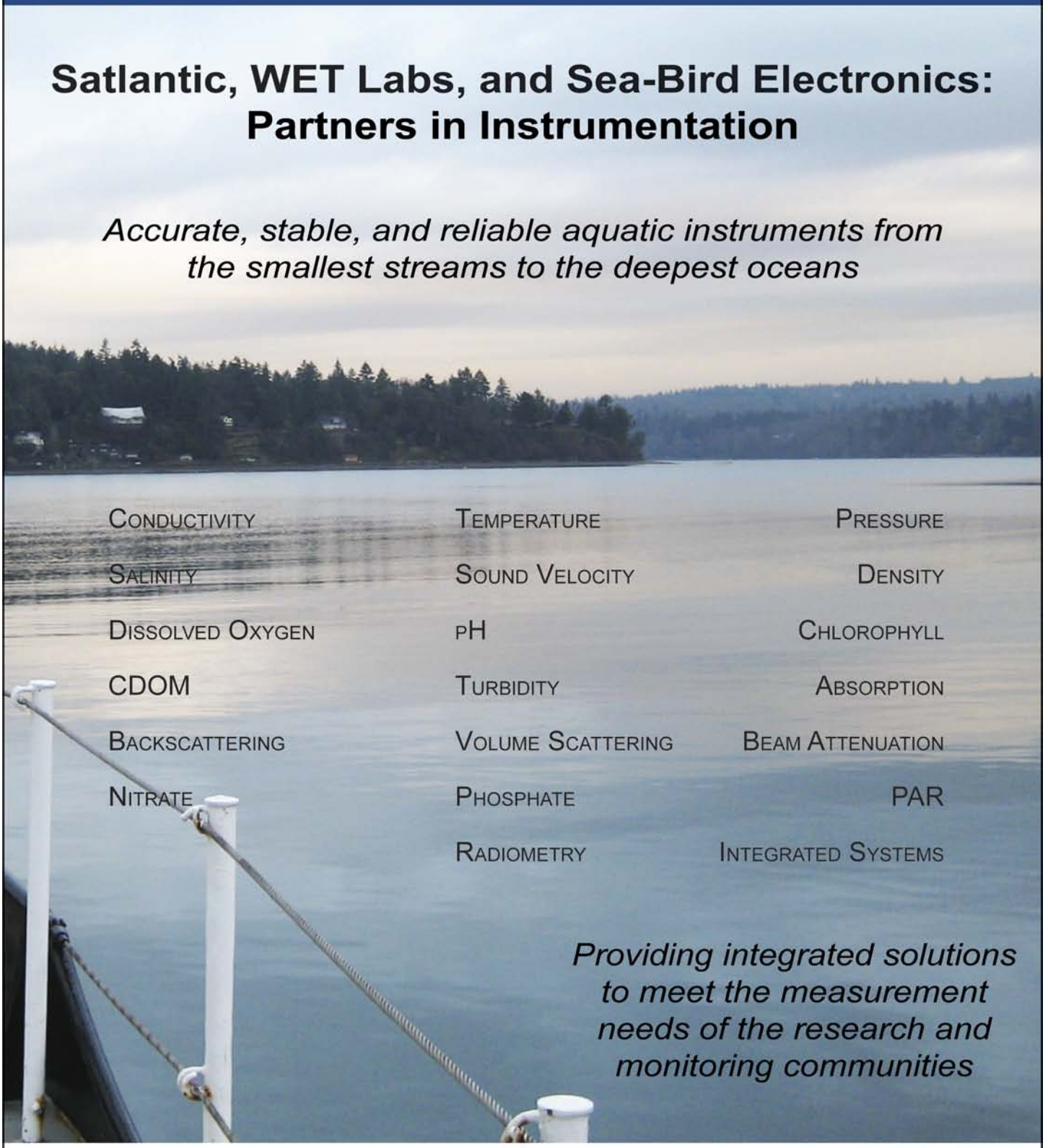

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