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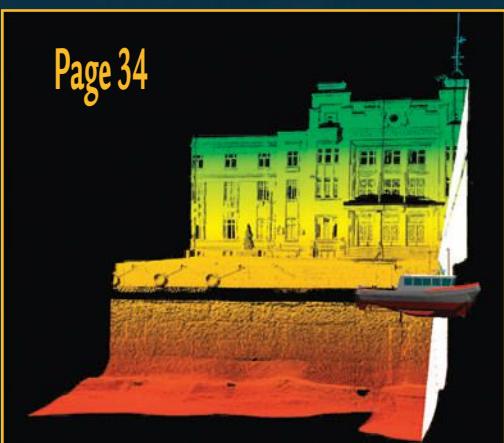
December 2010

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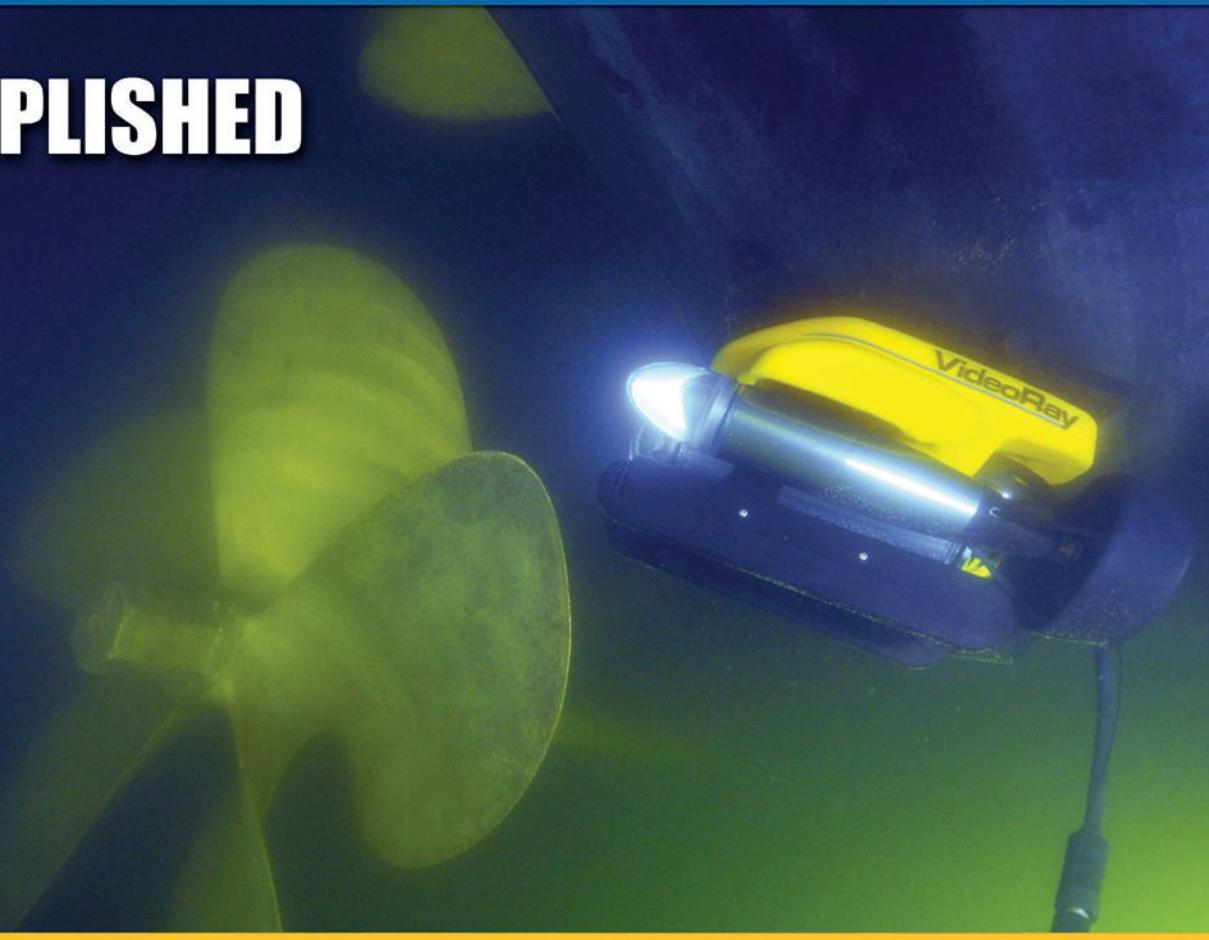


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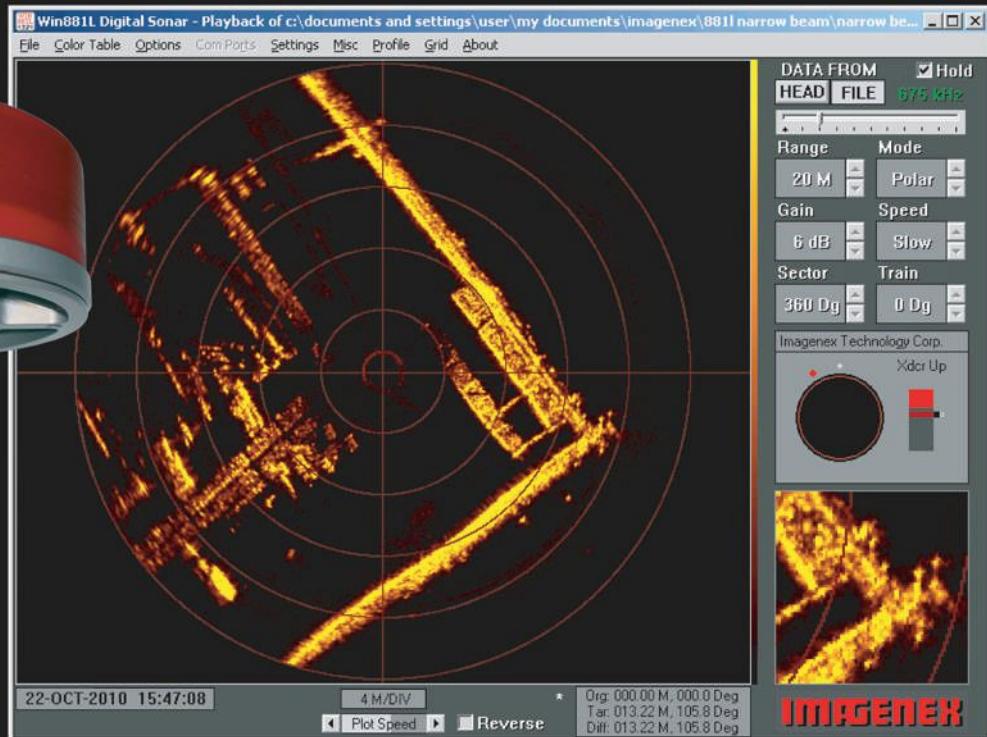


Image from Reed Point Marina, in Vancouver Harbour,
showing bottoms of boats, barges, and the breakwater

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Combining Multibeam Data and Laser Scanning Data

RESON PDS2000 software ready for whatever the future may hold



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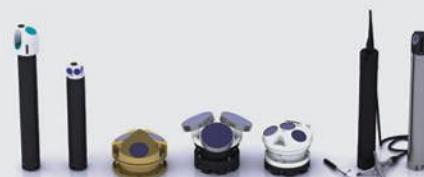
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By Dan White

Ocean News & Technology

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It's the Year 2020 ROV; AUV; or RUV?

Part 2 - The Answer

In the last issue editorial we posed the question, What will deepwater ROVs look like in 10 years? We invited you to attend our conference to find the answer.

Subsea Survey IRM hosted a panel to discuss *The Underwater Vehicle 2020 — a Futuristic Look at IRM Operations in the Ultra-Deepwater Oilfield*.

The panel, led by moderator Bob Christ (SeaTrepid), consisted of some heavy hitters, including Graham Hawkes (Hawkes Remotes), Dan McLeod (Lockheed Martin), Jason Stanley (Schilling Robotics), Mark Collins (SMD), Jacques Schoellkopf (Advanced Subsea), Richard Mills (ISE), Alain Fidani (Cybernetix), and Don Koedam (Perry Slingsby Systems).

The audience consisted of operators, service companies, and technology providers — all wanting to hear what the future holds for underwater vehicle technology. The question that was asked of the panelists was how did they view the underwater vehicle of the future (10 years from now), considering the use of hybrid vehicles and resident vehicles in subsea developments.

The outcome was surprising!

There was a consensus on what a hybrid vehicle might be, i.e., no long, large diameter umbilical/tether, battery-operated or powered from the seafloor (or both), a fiber optic tether for communications and data transfer. Also, a deployment period of 6 months would be the norm.

Graham Hawkes had an interesting perspective on ROV design being that if we were to design the first ROV today, "we would do it differently". He was referring to advanced battery capability and fiber optics that would eliminate the bulky, high-drag umbilical that robs the performance of the ROV in deepwater.

Dan Mcleod, who began his career in ROVs, used the analogy of divers vs. ROVs. In the "old days," ROVs were less expensive than divers for certain tasks and this became accepted to do this work. Today, ROVs vs. AUVs — AUVs are less expensive for certain tasks. Dan also mentioned a DeepStar study that was conducted that identified the "technology gaps" in achieving an AUV capability, which consisted of items like reliability, auto-manipulator capability, energy, obstacle avoidance, and software robustness.

But there were essentially two extremes from panel members on what the future underwater vehicles would look like from — "the same as they do today" to "IRM capable AUVs resident on the seafloor".

From Jason Stanley's view, these "vehicles will be whatever the operators want". With that said, the caveat is that someone has to pay for the R&D and the manufacturers don't have the resources to develop the advanced technology being suggested here. Schilling Robotics is taking an approach different from others in that their close relationship with FMC is allowing them to understand subsea equipment better and allowing FMC to understand ROV technology better so that in working hand-in-hand could possibly develop a better interface and capability to service subsea fields in the future.

However, there are examples of Joint Industry Projects (JIPs) that are underway now, such as Total and Cybernetix (SWIMMER AUV) and Subsea 7, SeeByte, BP, and Chevron (AIV).

ISE, Lockheed Martin, ECA, and Cybernetix are all working on the advanced end of the spectrum, but without a doubt Cybernetix was the most advanced. With the support of Total, Cybernetics will have an operational system in 2 years and a system operational in a subsea field off West Africa within 3 years. Their concept is to have an AUV acts as a "pickup truck" that delivers a workclass ROV to the seabed. The AUV docks and taps into power from the subsea field and then deploys the ROV which is tethered to the AUV. Upon completion of the work, the ROV returns to the AUV and the AUV (and ROV) flies to another docking station in the subsea field to service other parts of the field. In this case, the vehicles and docking stations are all part of the subsea field design and installation.

One comment from the audience was that tools like manipulators have to be serviced after every dive and, therefore, could not be deployed for months at a time.

At the end of the panel session I spoke to Brian Braun from Chevron and asked him if he believed there would someday be a resident hybrid underwater vehicle in a subsea field - he said "yes". His caveat was that considering capex vs. opex, there has to be a solid business case for the amount of money that is realized to offset the development costs.

So the answer is not simple, but it is clear that strides in technology will continue to surface and a new breed of vehicle will emerge maybe sooner than later.



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NOAA reopens U.S. Gulf waters to fishing
 NOAA has reopened to commercial and recreational fishing 6,879 square miles of U.S. Gulf waters about 180 to 200 nautical miles south of the Florida panhandle between the Florida-Alabama state line and Cape San Blas, Florida. This is the ninth reopening in federal waters since July 22. This reopening was announced after consultation with the U.S. Food and Drug Administration and under a reopening protocol agreed to by NOAA, the FDA, and the Gulf states. "Each reopening is a reassuring sign that areas once impacted by oil can again support sustainable fishing activities," said Jane Lubchenco, under secretary of commerce for oceans and atmosphere and NOAA administrator. "Tourists and consumers should know most Gulf waters are open for fishing, and seafood from these waters is safe to eat." The total area reopened is about 3% of federal waters in the Gulf of Mexico.

Wind power to provide a fifth of world's electricity by 2030

Wind could meet 12% of global power demand by 2020 and up to 22% by 2030, according to a study published by the Global Wind Energy Council and Greenpeace International. The 'Global Wind Energy Outlook 2010' (GWEO 2010) finds that wind power could play a key role in satisfying the world's increasing power demand, while achieving major greenhouse gas emissions reductions. The 1,000 GW of wind power capacity projected to be installed by 2020 would save as much as 1.5 billion tonnes of CO₂ every year. These reductions would represent 50% to 75% of the cumulative emissions reductions that industrialized countries committed to in their 2020 "Copenhagen pledges". By 2030, a total of 34 billion tons of CO₂ would be saved by 2,300 GW of wind power capacity.

Salazar proposes Ocean Energy Safety Institute

In response to the Deepwater Horizon oil spill, Secretary of the Interior Ken Salazar has proposed the concept of establishing an "Ocean Energy Safety Institute" designed to facilitate research and development, training, and implementation in the areas of offshore drilling safety. The Institute would be a collaborative initiative involving government — in particular, the Department of Energy and the United States Coast Guard — industry, academia, and scientific experts. Because of the Department's regulatory responsibilities in this area, the Institute would be housed at Interior, but would seek to coordinate and prioritize research dollars from a variety of government and non-government sources to create a center of excellence that would ensure that the United States remains on the cutting-edge of offshore energy safety.

Halliburton Accused of Using Flawed Cement on Gulf Well



Halliburton Co. used flawed cement in BP's Gulf of Mexico well, which could have contributed to the blowout that sparked the worst offshore oil spill in U.S. history, a White House panel said. Moreover, Halliburton and BP knew weeks ahead of the April 20 fatal explosion of the Macondo well that cement being used to seal it was faulty, but "neither acted upon it," a top investigator for the presidential commission investigating the spill said in its first official finding.

Three of four tests Halliburton ran on cement the company subsequently used to seal the Gulf of Mexico well before it ruptured and killed 11 workers showed that the mixture would be unstable, lead investigator Fred Bartlit said in a letter to the panel's commissioners.

Halliburton may not have had — and BP did not have — the results of the one test that showed the cement was stable before the explosion of the Deepwater Horizon oil rig, "meaning that the cement job may have been pumped without any lab results, indicating that the foam cement slurry would be stable," Bartlit wrote.

BP was given the results of testing in March "showing that a very similar foam slurry design to the one actually pumped at the Macondo well would be unstable, but neither acted upon it," Bartlit wrote. "Halliburton (and perhaps BP) should have considered redesigning the foam slurry before pumping it at the Macondo well."

BP and rig owner Transocean "misinterpreted or chose not to conduct" tests developed by the oil industry to identify cementing failures, he wrote. Meanwhile, Halliburton is defending itself and assigning the blame for the accident to BP. In a six-page statement, Halliburton questioned post-accident tests that showed its cement to be unstable and incapable of holding back the oil and gas in the well, saying they were conducted on different formulas than what was eventually used on BP's Macondo well. Halliburton said that a sample of the cement it planned to use on the well, tested shortly before pumping began on April 19, had produced a positive result.

But Halliburton admitted that no stability test was conducted on the actual recipe for the cement used on the well. The company said that BP had ordered a change in Halliburton's customary formula for cement by adding a higher proportion of a chemical that slows the hardening of the mixture. The well eventually released nearly five million barrels of oil into the U.S. Gulf. Since then, BP, Halliburton, Transocean, and other partners in the well have traded accusations of blame as civil and criminal investigations proceed.

The issue of the role of the cement in the blowout may not be fully resolved for some time because the only surviving sample of the actual cement mixture used in the well is in federal custody as evidence in continuing investigations.

Phoenix recovers U.S. Navy E-2C

Phoenix International Holdings, Inc. (Phoenix) successfully recovered a U.S. Navy E-2C Hawkeye from 3,300 meters of seawater (msw) in the North Arabian Sea.

The Hawkeye crashed March 31st during flight operations from the aircraft carrier, USS Dwight D. Eisenhower (CVN 69). The recovery marks the successful conclusion of a two-phase search and recovery operation. Phoenix, under the guidance of the Office of the Supervisor of Salvage and Diving, pinpointed the location of the E-2C during a 3-day search of a 10-mile x 10-mile area in mid-April using the Navy's Towed Pinger Locator (TPL) system. TPL's are passive listening devices capable of hearing the acoustic emissions of the saltwater-activated beacon onboard the aircraft. The search operation was conducted from USNS CATAWBA (T-ATF-168) home ported in Manama, Bahrain.

Tasking for the recovery phase of the project was received in May. Given the expected onset of the bad weather season, the decision was made to expedite the recovery operation by using Phoenix's 6,000 msw depth rated Remotely Operated Vehicle (ROV), Remora, already pre-positioned in Limassol, Cyprus.

Additional required recovery equipment included the Navy's 60 KIP Flyaway Deep Ocean Salvage System (FADOSS), a system specifically designed to lift heavy, bulky items from deep water using a motion compensator to reduce high snap loading of the lift line. EDT ARES, a DP II ship owned by EDT Offshore in Limassol served as the recovery vessel.

U.S. Fish and Wildlife Service celebrates 25 years

The U.S. Fish and Wildlife Service's Coastal Program is celebrating its 25th year of conserving coastal wetlands and habitats for fish and wildlife across the country. This remarkable program received the Restoration Partnership Award at the Restore America's Estuaries Conference, which recognizes an individual or group who has demonstrated their dedication, commitment, and passion for estuary habitat restoration.

There are now 23 Coastal Program offices throughout the United States, including the Great Lakes and the U.S. Commonwealths and Territories, dedicated to protecting, restoring and conserving coastal areas. The Coastal Program has proven that a voluntary approach to coastal habitat conservation works. By providing technical assistance, funding, and other resources to partners including federal, state and local agencies and private landowners, the program has restored 251,000 acres of coastal wetlands and coastal upland habitat, permanently protected nearly 2 million acres of coastal habitat, and restored 1,700 miles of riparian and in-stream habitat. These coastal wetlands provide for improved water quality; increased water storage and supply; reduced flood and storm surge risk; and vital habitat for plants, fish and wildlife.

Despite the numerous gains made in conserving coastal habitat by the Coastal Program and other similar voluntary, incentive-based programs, threats to coastal ecosystems have become even more challenging. Climate change poses numerous and complex threats to coastal wetlands and the fish and wildlife they support throughout the United States, including sea level rise, more invasive species, and increases in ocean temperatures and acidity. In addition, scientists predict increased flooding of populated coastal areas and further decreases in water quality changes that will severely impact not only fish and wildlife species, but humans as well. Given the magnitude of these threats, there is now more than ever a strong need for public-private partnerships to protect and restore coastal wetland habitats.

To learn more, visit www.fws.gov/coastal/contactUs.html.



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Team completes world-first ocean observatory

More than 2-km down in the inky depths of the Pacific Ocean and 300-km off the coast of Vancouver Island, Canada has just made scientific and technological history. The installation of NEPTUNE Canada—the world's largest and most advanced cabled ocean observatory—has been completed.

The installation team returned to Esquimalt earlier this week aboard the research vessel T.G. Thompson after 4 weeks at sea. Most of the voyage was spent at the volcanically active Endeavour Ridge, where the team installed two 6-km cables and 29 instruments on the seafloor and connected them to the main NEPTUNE Canada network.

"High-pressure work in harsh environments sounds like a recipe for disaster, but the excitement carried us through storms, equipment failure, and long shifts. There was a pervasive feeling of being part of a significant achievement," says Dr. Mairi Best, NEPTUNE Canada's associate director (science) and co-leader of the expedition.

NEPTUNE Canada is managed by Ocean Networks Canada for a consortium led by the University of Victoria. Along with its coastal sister, VENUS, it pioneers a new generation of ocean observation systems that, using power and the Internet, provides continuous, long-term monitoring of ocean processes and events as they happen.

The entire observatory — which features an 800-km loop of powered fiber-optic cable and power and communication nodes at five key scientific sites — has taken almost 10 years to plan, develop, and install.

A key member of the installation team was ROPOS, a remotely operated vehicle system managed by the Canadian Scientific Submersible Facility based in Sidney, BC.

Endeavour Ridge proved to be the team's most challenging installation site. Before laying several kilometers of cable through a subsea mountain range pocked with deep chasms, jagged rocks and belching hot vents, ROPOS "flew" slowly along the route, surveying the bottom with high-resolution sonar.

"For the trickiest parts, we crowded around the monitors in the operation room to watch the live video feed," says Dr. Lucie Pautet, NEPTUNE Canada's associate director (engineering) and the other co-chief of the expedition. "It was nerve-wracking and exhilarating at the same time."

Every year for the next 25 years, NEPTUNE Canada will amass more than 60 terabytes of scientific data—equivalent to the text in about 60 million books—on biological, physical, chemical, and geological processes in the Pacific Ocean.

The data will have policy applications in the areas of climate change, hazard mitigation (earthquakes and tsunamis), ocean pollution, port security and shipping, resource development, sovereignty and security, and ocean management.

The development of NEPTUNE Canada has been funded by more than \$100 million from the Government of Canada through CFI, the Natural Sciences and Engineering Research Council and CANARIE, and the Government of British Columbia through the British Columbia Knowledge Development Fund.

To see live data streaming from NEPTUNE, visit www.neptunecanada.ca.

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BMT to design wind farm support vessels

Turbine Transfers Ltd, one of the leading providers of support vessels to the offshore wind farm industry, based in Holyhead, has chosen BMT Nigel Gee Ltd as the designers of its new series of multi-purpose Wind Farm Support Vessels. BMT Nigel Gee Ltd is a subsidiary of BMT Group Ltd, the leading international maritime design, engineering, and risk management consultancy. The first of the series will be a 19-m vessel that will offer a step change in flexibility to the operator for a vessel of its size with aft deck load capacity of six tonnes and a fore deck capacity of three tonnes. Additional operational flexibility is provided with the incorporation of integral crane foundations on both the fore and aft deck to allow the vessel to be quickly reconfigured for various roles in support of wind farm construction and support.

BOEMRE, DOE, and NOAA award nearly \$5 million to advance ocean renewable energy

The Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE), the Department of Energy (DOE), and the Department of Commerce's National Oceanic and Atmospheric Administration (NOAA) announced eight joint research awards totaling nearly \$5 million to support the responsible siting and permitting of offshore wind energy facilities and ocean energy generated from waves, tides, currents, and thermal gradients. This critical research will address key information gaps regarding the potential environmental effects of renewable ocean energy. This collaborative, interagency effort will help lay the foundation for a clean, renewable offshore energy industry that will diversify our nation's energy mix, enhance our energy security, create American manufacturing jobs, and reduce carbon emissions.

Shell and MIT collaborate on energy

Shell and the Massachusetts Institute of Technology (MIT) have signed an agreement to invest \$25 million in the research and development of high value, sustainable technologies designed to drive innovation in energy delivery. As part of its longer-term focus, the collaboration will address future and emerging technologies that demonstrate game-changing potential for the energy industry. The collaboration will focus on a broad array of existing and new oil and gas technologies, including next-generation applications in nanotechnology, biochemistry, electronics, and computer modeling. A specific area of interest is the impact of extreme wave action on deepwater floating structures. Research aims to develop algorithms to predict hydrodynamic loads and the motions of floating installations with the goal of better understanding fracture characteristics of high-strength steel and reducing the weight of offshore installations.

Aquamarine Power Receives OWET Study



Aquamarine Power USA LLC, a subsidiary of the wave energy company Aquamarine Power UK, has been awarded a matching grant by the Oregon Wave Energy Trust (OWET) to look at the potential for using wave energy to produce clean, sustainable electricity along Oregon's coastline.

The \$50,000 grant will pay for a feasibility study regarding the potential for deployment of Aquamarine Power's Oyster wave energy technology off the coast in the service areas of Central Lincoln People's Utility District and/or Tillamook People's Utility District. Specifically, the grant is intended to help deploy Acoustic Doppler Current Profile (ADCP) devices that measure and record the frequency, intensity, and height of waves as they approach the Oregon shoreline. Aquamarine Power will be searching for local vessels to deploy the devices.

Aquamarine Power USA was one of four companies to be awarded a grant by OWET under its OWET Industry Matching Program.

For the past 4 months, Aquamarine Power's Oregon-based team has been reaching out to local communities seeking local stakeholders' views on the most suitable locations for potential sites to install arrays of its Oyster hydro-electric wave energy technology. The outreach process will continue after the ADCPs have been deployed.

Aquamarine Power USA's office is at 830 N. Coast Highway in Newport, Oregon and is headed up by John Fedorko, who joined the company in 2009 from the wind energy industry. Because Aquamarine Power is strongly committed to supporting local communities, Lincoln County resident Theresa Wisner has been brought on as community outreach coordinator. Wisner was hired because of her experience on commercial fishing and research vessels, along with her skills in community outreach and education.

Oyster consists of a simple oscillating wave surge pump, fitted with double-acting water pistons, deployed near-shore in depths between 24 and 48 feet, or 4 to 8 fathoms. Each passing wave activates the pump, which delivers high pressure water via a closed-loop, sub-sea pipeline to the shore. Onshore, the high-pressure water is converted to electrical power using well-proven hydro-electric generators. The most complex part of the system is onshore, and accessible 365 days a year, which means that none of Oyster's electrical generation equipment ever comes in contact with sea water.

For more information, visit www.aquamarinepower.com.

Major wind energy backbone transmission project will enable offshore wind energy growth in Mid-Atlantic region, spur jobs and economic growth

Capturing the enormous potential of offshore wind energy along the Mid-Atlantic coast took a significant step forward recently with the announcement of the Atlantic Wind Connection (AWC) backbone transmission project led by well-established independent transmission company Trans-Elect and sponsored by Good Energies, Google (NASDAQ: GOOG), and Marubeni Corporation (TYO: 8002).

Designed to accelerate offshore wind development, the AWC project will help the industry create thousands of jobs, improve consumer access to clean energy sources, and increase the reliability of the Mid-Atlantic region's existing power grid.

"This new American super grid 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 60,000 MW 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 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.

Without a transmission backbone, offshore wind developers would be forced to bring energy to land via radial lines that can make balancing the region's existing grid more difficult. In addition, a single offshore backbone with a limited number of landfall points will minimize the environmental impacts of building multiple individual radial lines to shore. The AWC project not only reduces the need to build many lower-capacity transmission lines, but relieves grid congestion in one of two National Interest Electric Transmission Corridors that were deemed to have significant transmission network congestion and in need of the speedy creation of transmission capacity.

When complete, the AWC backbone will be able to connect 6,000 MW of offshore wind, enough power to serve approximately 1.9 million households. The sys-

tem is also scalable and can be expanded to accommodate additional offshore wind energy as the industry further develops. The use of High Voltage Direct Current (HVDC) technology allows for easier integration and control of multiple wind farms while avoiding the electrical losses associated with more typical High Voltage Alternating Current (HVAC) lines. With this strong backbone in place, larger and more energy efficient wind farms can con-

nect to offshore power hubs further out to sea. These power hubs will, in turn, be connected via sub-sea cables to the strongest, highest capacity parts of the land-based transmission system.

In addition to enabling the production of thousands of megawatts of clean power, the AWC backbone will help spur the creation of local jobs. Development of wind energy off the Atlantic coast could create between 133,000 and 212,000 U.S. jobs.

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Eneco selects BMT ARGOSS to deliver accurate weather forecasts for its onshore and offshore wind

BMT ARGOSS, a subsidiary of BMT Group Ltd, has secured a contract with Eneco, one of the leading energy companies in the Netherlands, to deliver accurate wind forecasts for the Dutch energy provider's onshore and offshore locations. This service will allow Eneco to better anticipate changing conditions and adjust planning when necessary.

Generators of wind energy usually provide DNOs (Distribution Network Operators) with an estimate of the expected amount of energy they plan to produce over the coming days in order for the DNOs to be able to match consumption with the electricity produced. To help minimize the risk of being penalized for not meeting their obligations, companies such as Eneco need to ensure that their weather forecasts are as accurate and effective as possible by partnering with leading experts.

With atmospheric models that have been extensively validated and calibrated against locally observed data, BMT ARGOSS will provide much finer and more detailed forecasting services to Eneco, which will be delivered four times a day. A reliable estimate for each wind forecast is an integral part of the delivery.

For more information, visit www.bmtargoss.com.

Global ocean energy prospects boosted by established wind and hydro players

The global ocean energy sector is at a turning point, with over 45 wave and tidal prototypes expected to be ocean tested in 2010 and 2011, after only a dozen were installed in 2009, according to a new IHS Emerging Energy Research market study. If these initial projects are successful, the global ocean energy project pipeline is poised to begin scaling. IHS estimates that more than 1.8 GW of ocean projects in 16 countries are currently in the pipeline.

The ocean energy industry's recent development has attracted a slew of established energy companies with renewable growth ambitions, including leading European utilities and global technology suppliers—many with hydro and offshore wind experience. Boosted by government and policy support, the U.K. is currently the world's leading market for ocean energy, with 300 MW of projects in the pipeline seeking to be installed over the next 5 years. The UK government hopes to add 1.3 GW by 2020, driven by its need to meet legally binding 2020 renewable tar-

gets. Ireland, France, Portugal, South Korea, and Australia are also key ocean energy markets and will remain the industry's primary focus for the next decade, according to the study.

Of the various forms of ocean energy, tidal energy is poised to mature first, with the promise of providing predictable, lower-cost electricity and a standard design. Tidal is attracting major original equipment manufacturers (OEMs) into the ocean energy industry's supply side.

"The strong synergies between tidal turbine manufacturing and the hydro power industry have attracted major power sector OEMs," said IHS Senior Renewable Power Analyst Marianne Boust. "Over the past 2 years, all three of the major hydro power turbine vendors — Andritz Hydro, Alstom Hydro, and Voith Hydro — who account for over 80% of the total global hydro turbine supply, have jumped into the tidal sector."

"Large hydro players see tidal as a synergistic growth opportunity, with at least 150 GW of installed capacity potential globally. Traditional hydro players are critical to catalyzing faster development and commercialization of the tidal industry," added Boust. Greater involvement by large OEMs will help the ocean energy industry overcome its technological challenges and drive down costs.

Several key players active in Europe's scaling offshore wind industry are also turning their attention to ocean energy as they scale their renewable portfolios. Major European utilities led by Iberdrola-ScottishPower, Vattenfall, RWE, and SSE have an extensive presence in offshore wind, and each has broadened its offshore activities to include ocean energy. While a few have taken equity stakes in ocean technology promoters, most are now shifting to fund project development joint ventures.

"Continued policy support and the entrance of established energy players competing alongside maturing technology promoters signal the ocean industry's potential to advance along the learning curve and emerge as a scalable renewable energy alternative during the next decade," Boust concluded.

For more information, visit www.ihs.com.

Offshore power line wins backing

Google and a New York financial firm have each agreed to invest heavily in a proposed \$5 billion transmission backbone for future offshore wind farms along the Atlantic seaboard that could ultimately transform the region's electrical map.

The 350-mile underwater spine, which could remove some critical obstacles to wind power development, has stirred excitement among investors, government officials, and environmentalists who have been briefed on it.

Google and Good Energies, an investment firm specializing in renewable energy, have each agreed to take 37.5% of the equity portion of the project. They are likely to bring in additional investors, which would reduce their stakes.

"Conceptually, it looks to me to be one of the most interesting transmission projects that I've ever seen walk through the door," said Jon Wellinghoff, the chairman of the Federal Energy Regulatory Commission, which oversees interstate electricity transmission. "It provides a gathering point for offshore wind for multiple projects up and down the coast."

Industry experts called the plan promising, but warned that as a first-of-a-kind effort, it was bound to face bureaucratic delays and could run into unforeseen challenges, from technology problems to cost overruns. While several undersea electrical cables exist off the Atlantic Coast already, none has ever picked up power from generators along the way.

The system's backbone cable, with a capacity of 6,000 megawatts, equal to the output of five large nuclear reactors, would run in shallow trenches on the seabed in federal waters 15 to 20 miles offshore, from northern New Jersey to Norfolk, Va. The notion would be to harvest energy from turbines in an area where the wind is strong but the hulking towers would barely be visible.

Trans-Elect estimated that construction would cost \$5 billion, plus financing and permit fees. The \$1.8 billion first phase, a 150-mile stretch from northern New Jersey, to Rehoboth Beach, Del., could go into service by early 2016, it said. The rest would not be completed until 2021 at the earliest.

Four connection points — in southern Virginia, Delaware, southern New Jersey and northern New Jersey — would simplify the job of bringing the energy onshore, involving fewer permit hurdles.

Ultimately the system, known as the Atlantic Wind Connection, could make building a wind farm offshore far simpler and cheaper than it looks today.

So far only one offshore wind project, Bluewater Wind off Delaware, has sought permission to build in federal waters. The company is seeking federal loan guarantees to build 293 to 450 megawatts of capacity, but the timing of construction remains uncertain.

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Navy announces climate change website

The Department of the Navy has unveiled a new Energy, Environment and Climate Change website, located at <http://greenfleet.dodlive.mil>. The website provides news and information about Navy programs to achieve energy security, practice environmental stewardship, and understand the potential challenges presented by a changing climate. These programs serve to increase combat capability and ensure mission readiness in the decades to come. Content on the site focuses on the Navy's successes and initiatives.

China develops deepest diving submersible

The Chinese have developed a deep ocean submersible — the *Jiaolong*, named after a mythical sea dragon. It was unveiled publicly after eight years of secretive development. It is designed to go deeper than any other sub in the world, giving China access to 99.8% of the ocean floor. *Jiaolong* can dive to 7,000 meters. Japan's *Shinkai 6500* can dive to 6,500 meters. The U.S. has fallen behind in manned research subs.

BOEMRE studies deepwater sites The Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) announced that a team of scientists led by BOEMRE geophysicist Bill Shedd have embarked on a research cruise that will examine deep-sea coral and chemosynthetic community sites in the Gulf of Mexico. Findings from this research will help scientists discover the possible effects of the large volumes of oil released in the deepwater following the Deepwater Horizon blowout and spill. The cruise, funded by BP through the Natural Resource Damage Assessment (NRDA), departed from Freeport, Texas on October 29, 2010, for the 10 day cruise. Biologists and geoscientists from BOEMRE, Penn State University, Temple University, and Florida State University will conduct the research aboard the R/V GYRE, owned and operated by TDI Brooks, Inc.

Convention on biological diversity

Governments discussed measures to minimize the impacts of human activities on the marine environment at the UN summit on biodiversity - the Convention on Biological Diversity (CBD) held recently in Nagoya, Japan. The conference document described the "urgent need to assess and monitor the impacts and risks of unsustainable human activities on marine and coastal biodiversity". It requested governments to adopt measures to prevent significant adverse effects from unsustainable human activities in marine and coastal areas, including identifying and assessing threats to biodiversity in the high seas. The CBD is one of the most widely supported international treaties, ratified by 193 countries. It addresses the conservation and sustainable use of species and ecosystems and has become the primary vehicle for high level marine conservation policy-making for both EEZs and in "areas beyond national jurisdiction".

Faster Water Flow Means Greater Diversity of Marine Life

One of biggest factors promoting the diversity of coastal ocean life is how fast the water flows, according to new research by ecologists at Brown University. Experiments and observation in Palau, Alaska, and Maine showed that the faster the flow, the greater the number of invertebrate species that live on rocks under the water.

The findings, published the week of Nov. 15 in the journal *Ecology Letters*, could help improve management of delicate and complex coastal ecosystems, said James Palaudy, a former Brown doctoral student and the paper's lead author. Finding the fastest water could point scientists to areas where diversity is likely greatest — and perhaps especially worthy of protection — and to zones where invasive species could establish their first beachheads.

Jon Witman, professor of ecology and environmental biology and Palaudy's co-author on the paper, said the results were clear and consistent at all three regions, including in Maine and Alaska where they experimentally manipulated water flow speed.

The reason why faster flow seems to promote diversity, Witman said, is that it allows for the larvae of rock-dwelling invertebrates, such as barnacles, sea squirts, corals, and sponges, to spread farther. Although the environments are quite different, it's somewhat analogous to how trees and flowers can disperse their seeds farther in a stiff wind.

Palaudy and Witman are not the first to observe a connection between water flow and diversity, but they are the first researchers to prove it with experiments. The research began 5 years ago when the pair started brainstorming about how they might make the important scientific transition from being able to notice the phenomenon to being able to produce and test it.

The pair's goal was to speed up water flow without resorting to expensive and short-lived battery-powered pumps. Instead, the ecologists relied on simple physics that require a volume of water to flow faster when it moves through a narrowed space.

Based on prototypes developed in a giant flume in the basement of the BioMed research building at Brown, they built channels about 7 feet long and about 18 inches high. They lined the walls with plates where organisms could latch on and grow. The test channels narrowed to about half their width in the middle, taking on a bow tie shape. The control channels remained the same width throughout. The control and test channels were placed about 3 to 6 feet below the lowest tide in each of two sites in Maine and Alaskan coastal waters.

In every case, they found that the number of different species on the plates in the test channels was much higher than on the plates in the control channels. The greater diversity was no flash in the pan, either. The pattern was visible from early stages and persisted for more than a year of study. Witman also surveyed natural areas in Palau, and Palaudy and Witman did the same in Alaska, finding similar effects in areas with faster flow.

Witman said his hope is that the work will not just explain greater biodiversity but will help stem the tide of its loss.

Funding for the research came from the National Oceanographic and Atmospheric Administration, the National Science Foundation, and Abt Associates Inc., a Cambridge, Ma., and Washington, D.C.-based consulting firm where Palaudy now works as a senior environmental analyst.

NOAA's Gulf of the Farallones National Marine Sanctuary opens ocean climate center, forms climate collaboration

On Tuesday, Oct. 26, Rep. Lynn Woolsey will join officials from NOAA and other government agencies at a ribbon-cutting ceremony for the new Ocean Climate Center at the Farallones Marine Sanctuary's headquarters on Crissy Field Beach in the Presidio of San Francisco. The partner agencies will also sign a formal agreement to collaborate on ocean climate issues.

The new Ocean Climate Center will address the effects of climate change on the Sanctuary and surrounding marine region. It will be a communication center for the Bay Area and facilitate the exchange of technical, scientific, policy, and education ideas to help residents learn how to reduce their carbon footprint. The Center will also be a model for green operations and facilities. Staff will be available to discuss the green building and climate change activities.

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

Compact data loggers support coral reef health in Micronesia

Twenty-five hundred miles southwest of Hawaii, some five degrees north of the equator, lies the island of Kosrae, the easternmost of the four States of the Federated States of Micronesia. This 42 square mile island is surrounded by a rich fringing coral reef, recognized as one of the most pristine in the Western Pacific. Since 1996, a group of island stakeholders, including representatives of the Government of Kosrae and a private ecotourism operation, have collaborated with Oceanearth, Inc., a California 501(c) 3 non-profit organization to support a long-term monitoring effort tracking the health of the reef system.

During the first 2 years of the project, more than 55 mooring buoys were installed, ringing the island and helping to protect the reef by offering local fishermen an alternative to dropping their anchors on the delicate reef structures. At the same time, 15 of the mooring sites were selected to become permanent environmental monitoring locations.

Since then, on at least an annual basis, scientists and lay volunteer divers have joined together to inventory and assess the extent and health of the coral cover surrounding the island. At the same time, population inventories are taken of fish species targeted for food and the aquarium trade as well as invertebrate species commonly used locally and for export.

In late 2008, the first set of four HOBO® Pendant Temp/Light loggers were installed at various critical sites around the island where evidence of coral bleaching events had been previously observed. These water temperature data loggers were attached to rebar driven into the reef substrate at approximately 30-ft. depths and left in place for up to 9 months, collecting temperature and relative insolation data every 15 minutes. Three of the first set of four data loggers were successfully recovered in mid - 2009 and the data downloaded, providing the first ever look at reef long-term temperature cycles for this or any Federated States of Micronesia state.

The collected data are expected to assist in discriminating temperature effects from other environmental and man-made stressors. In addition, it is hoped that insolation data will be useful in forecasting the occurrence of coral spawning events.



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Retrofit of cabled ocean observatory completed

Lighthouse R & D Enterprises, Inc. mobilized to undertake a complete retrofit of the first Lighthouse Ocean Research Initiative (LORI I) system installed with the cooperation of the Oman Ministry of Fisheries Wealth. This system measures current velocities, oceanic physical properties, and dissolved oxygen of the seawater off the coast of Oman. The LORI I system has been in place since 2005 and is connected to a shore facility via fiber optic cable, allowing full duplex capability.

Existing current meters and sensors were replaced with instruments and sensors reconfigured for optimum performance and best data quality. Additional cathodic protection and new, anti-biofouling measures will improve on the previous configuration of the system by decreasing the need to return to the site for maintenance. "This retrofit capitalizes on our collective research experience and developmental efforts accumulated during the 5 years that we have operated and maintained the LORI I system," said Douglas Potter, project manager with Lighthouse.

The Lighthouse Seismic Tsunami Early Warning System (STEPS) measures seismic activity and overlying water pressure in real time in order to provide an early warning of approaching tsunamis. STEPS was also retrofitted with additional cathodic protection during the LORI I expedition in order to protect the sensitive instruments from corrosion, thus increasing STEPS's longevity.

The crew embarked aboard the DSV Texas on 7 September in Hamriyah, UAE and, after completing the retrofit, disembarked in Hamriyah, UAE on 25 September 2010. Initial data, received real-time in Houston, gives confidence that the retrofit was a success.

Greenpeace urges politicians to follow market's lead in protecting our oceans

Greenpeace launched a report entitled "Oceans Advocates" showing how consumer pressure is driving retailers to adopt responsible seafood sourcing practices, which in recent years has brought about encouraging changes in the seafood industry. The report is another call-to-action for politicians.

"In a surprising reversal, many members of the seafood business community are advancing beyond the business-as-usual attitude of policy-makers when it comes to our oceans," said Nina Thuellen, Greenpeace International oceans campaigner. "Although there is still a lot to be done, many retailers across Europe and North America have already changed their seafood procurement practices, increasingly taking sustainability concerns into account. It is unfortunate that policy-makers are lagging behind both consumers and business in taking action to save our oceans, but it is not too late to rescue our oceans for future generations — action is needed now."

The report, "Oceans Advocates," shows how sustainable seafood is no longer merely an option, but a major step forward for the entire seafood sector. By following this step forward, politicians will not only be helping our oceans recover, but will also help the fishing industry survive long term.

The United Nations Environment Programme released a report detailing how biodiversity, including ocean life, contributes to global bottom lines and environmental protection is key to economic prosperity.



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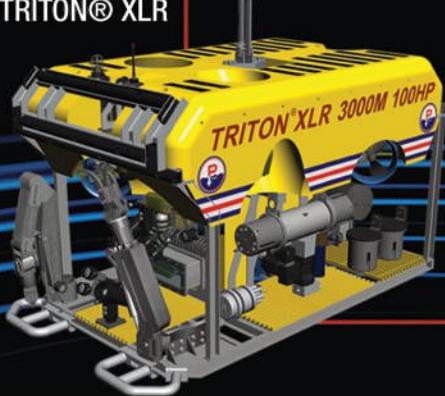
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2010 - Year in Review

HIGHLIGHTS

Census of Marine Life updated

At the end of 2009, the Census of Marine Life updated its record of animals living in water depths between 200 meters and 5,000 meters, bringing the number of known species to 17,650.

Judge rules for victims of Katrina

A judge ruled that the U.S. federal government was to blame for much of the flooding caused by hurricane Katrina in 2005, paving the way for billions in payments.

Loran-C terminated

The U.S. Coast Guard's Director of Prevention Policy announced publication in the Federal Register of plans to cease broadcasting the North American Loran-C signal on Feb. 8.

President sets target gas emissions

The White House announced on November 25 that President Obama was offering a U.S. target for reducing greenhouse gas (GHG) emissions in the range of 17% below 2005 levels by 2020.

U.S. submarine cap delays retirement of Los Angeles-class boats

Under the current 30-year procurement plan, the number of attack subs will fall below the 48 boats in 2022 and will reach only 41 boats by 2028. The Navy plans to meet typical requirements with longer deployments and older boats.

Douglas-Westwood forecasts need for 629 AUVs over the next decade

Douglas-Westwood projected through its "most likely" scenario that 1,144 autonomous underwater vehicles (AUVs) will be required over the next decade, consisting of 394 large, 285 medium and 463 small units. Some 629 AUVs have been produced to date.

Tsunami hits the Solomon Islands

In the shadow of the disastrous earthquake that devastated Haiti, a 13-meter-high tsunami struck the Solomon Islands in early January. The region east of Papua, New Guinea, experienced a series of powerful earthquakes up to magnitude 7.2. Reports indicated that 200 homes were destroyed and over 1,000 people were left homeless.

U.S. Coast Guard Federal partners announce successful drug seizures

The Commandant of the U.S. Coast Guard Adm. Thad Allen announced another successful year for drug seizures at Coast Guard Air Station Clearwater. The seizures and disruptions included 352,862 pounds (175 tons) of cocaine and 71,234 pounds (35 tons) of marijuana in 2009, worth more than \$5 billion.

European offshore wind market grows 54%

A total of 199 wind turbines generating 577-MW were installed at eight new offshore wind farms and connected to the grid in 2009. It represented a 54% growth over the 373-MW completed during 2008. For 2010, the EWEA expects the completion of 10 additional offshore wind farms, adding 1,000-MW.



The HUGIN 1000 Portable AUV System was demonstrated in Korean waters. The operations were carried out by Kongsberg's AUV department in close cooperation with the Agency for Defense Development (ADD) in the Republic of Korea (ROK).

BIRNS, Inc., introduced the ultra-compact Millennium 3F connector providing high bandwidth connectivity in a low-profile package for small ROVs with telemetry capabilities, towed or untowed data acquisition devices or high definition underwater visual applications.



GeoAcoustics Ltd and Hydroid Inc., both Kongsberg Maritime companies, integrated the GeoSwath Plus wide-swath sonar with the Remus 100-man-portable AUV. The AUV was equipped with a full navigation package including a Kefratt T16 Inertial navigation System aided by an RDL Doppler Velocity Log. This configuration allows the man-portable Remus 100 to collect high-resolution, high-accuracy co-registered bathymetry and side scan survey data.



Fugro Survey Pty Ltd in Perth and Hafmynd Ehf, in a joint initiative with Woodside Energy Ltd, successfully trialed a Gavia autonomous underwater vehicle (AUV) down to a subsea depth of 1,000-m.

Schilling Robotics introduced the 125-hp HD™ ROV designed and optimized for the field support and drill support markets. The HD™ ROV, umbilical, and launch and recovery system (LARS) provides a more strategic footprint that takes up less deck space.



A glider operated by Rutgers University students traveled 221 days on the first unmanned transatlantic crossing of a robotic sea-glider. The momentous event was profiled in Popular Science magazine as the drone was recovered in Spain after launching on 27 April 2009 off the coast of New Jersey.



Saab Seaeye introduced a new dual-role, 3,000-meter-rated ROV, the Cougar XTi electric ROV. Operating to 3,000-m depth, the Cougar XTi can perform tasks independently, or in support of a construction class hydraulic ROV. The 800-Hz ROV features a 20-mm umbilical achieved by boosting voltage to 3,000 volts.

AXYS Technologies, Inc. delivered 17 customized oceanographic data buoys to Italy. The data buoys are based on the well-proven WatchKeeper buoy platform and TRIAXYS Directional Wave Sensor. Wave, wind, and other data from the buoys are used by local mariners and port authorities to make vessel traffic management decisions. The Italian government also uses the data for wave and climate research studies.



C-MAX Ltd introduced the CM2 DeepTow. The DeepTow is rated to 2,000-m and is intended for use with long, steel-armored tow cables. It retains the proven sonar transducers, electronics, and image quality of the standard CM2 tow-fish, but in a heavyweight stainless body suited to deployment from larger vessels.



The 15-year-old Woods Hole Oceanographic Institution (WHOI)-operated, Autonomous Benthic Explorer, affectionately nicknamed ABE, was lost at sea March 5 on a research expedition off the coast of Chile. It was launched late night on March 4, and had reached the seafloor to begin its 222nd research dive when, in the early hours of Friday morning, all contact with the surface vessel abruptly ceased. All efforts to re-establish contact failed.



The world's largest solar boat was unveiled on February 25 at a shipyard in Kiel, Germany. Called "PlanetSolar," the 102-ft catamaran is powered exclusively by high-efficiency solar cells manufactured by SunPower Corporation. The craft will begin its round-the-world journey in April 2011. Constructed in 13 months, the boat is powered by about 38,000 deck-mounted solar cells, each with a 22% solar conversion efficiency. The cells cover about 5,382 square feet of the boat's surface.

HIGHLIGHTS

DOE requests funding for ocean energy

President Obama's FY 2011 budget proposal included \$40.5 million in funding for marine and hydrokinetic renewable energy—an increase of \$10.5 million over the \$30 million proposed by the President in FY 2010.

Water vapor a climate change culprit

Studies conducted by NOAA suggested that a rise in water vapor in the atmosphere fueled 30% of the global warming that occurred in the 1990s.

Haiti quake occurred in complex, seismic region

A magnitude 7.0 earthquake that triggered disastrous destruction and high death tolls in Haiti on January 12 occurred in a highly complex tangle of tectonic faults near the intersection of the Caribbean and North American crustal plates.

FY 2011 budget highlights include funding for renewable energy programs

President Obama proposed \$364.8 million in funding for the Minerals Management Service (MMS) in fiscal year 2011. The FY 2011 budget included a program increase of \$3.5 million to continue the development of the MMS Renewable Energy program, which regulates oversight of the access and potential development of the abundant renewable energy sources of the Outer Continental Shelf (OCS). The increase builds on the \$24.0 million in additional funding for OCS renewable energy development provided by the Congress in FY 2010.

Navy's FY2011 budget and 30-year plan

The U.S. Navy asked for \$160.6 billion for 2011. The request included \$46.6 billion in procurement funding. The FY 2010 allocation was \$156 billion. The budget included \$16.1 billion for funding for 11 new ships—nine Navy warships and auxiliaries, an army ship, and a survey ship plus the repair and upgrade of older vessels. The new 30-year shipbuilding plan in the near term ramps up production of ships such as the Littoral Combat Ship (LCS) and the Joint High Speed Vessel (JHSV).

Oil and gas tax breaks gone

The Obama Administration budget released in February proposed to eliminate \$36.5 billion in oil and gas industry tax breaks over the 10-year period to 2020. Overall, the priorities in the FY 2011 budget indicate a shift from support for fossil fuels to renewable and alternative energy sources.

GE confirms move into offshore wind

After the acquisition of ScanWind, GE released some details on its new offshore wind turbine. The systems feature a larger rotor diameter than the current 90.6-meter design and a rating of 4 MW. The variable pitch, direct drive machine uses a permanent magnet generator, eliminating a high-speed gearbox.

HIGHLIGHTS

Global Shark Trade

Up to 10 million Kg of shark fins are exported annually to Hong Kong by nearly 87 countries, cited a report, *The International Trade of Shark Fins: Endangering Shark Populations Worldwide*, released by Oceana. According to studies of the shark fin market, up to 73 million sharks are killed each year. Today, a bowl of shark fin soup can cost \$100, with a single fin being worth more than \$1,300. According to the United Nations Food and Agriculture Organization (FAO), a total of approximately 527,000 metric tons of sharks were caught in 2007, not including illegal fishing, which means it is likely up to four times higher.



Master Marine won the contract for planning and installing 88 turbines and two substations from Scira Offshore Energy Ltd and its partners Statoil and Statkraft of Norway. The Service Jack 2 was used to install wind turbines in the Sheringham Shoal Offshore Wind Farm. With a length of 117 meters and a width of 50 meters. Resembling a barge it differs significantly in having four retractable legs that enable the laden hull to be elevated.

Operation Iraqi Freedom mission ends

Effective September 1, "Operation Iraqi Freedom" ceased to exist and was replaced by "Operation New Dawn", sending a message that Operation Iraqi Freedom has ended and U.S. forces are operating under a new mission.

USCG fleet shows age in Haiti operations

During the response to Haiti's Jan. 12 earthquake, 12 of the 19 cutters deployed suffered severe problems with propulsion, generators, and communications. The poor state of the fleet is due in part to age but also to the operational requirements that have not allowed for scheduled maintenance.

Giant oil spill on Great Barrier reef

A coal-carrying ship traveling at full speed slammed into Australia's pristine Great Barrier Reef Marine Park in April. Tugboats were dispatched to try and stabilize the ship fearing it could break in half. Tons of oil have escaped from the vessel. The ship's owner, Shenzhen Energy, a subsidiary of the Cosco Group, China's largest shipping operator, was fined.

Deepest vents discovered

A British scientific expedition discovered the world's deepest undersea volcanic vents, known as "black smokers", 3.1 miles (5000 meters) deep in the Cayman Trough in the Caribbean. Using the Autosub 6000 developed at the National Oceanography Centre (NOC) in Southampton from the Royal Research Ship James Cook, the scientists found slender spires made of copper and iron ores on the seafloor, erupting water hot enough to melt lead nearly half a mile deeper than anyone has seen before.

Surveillance system for offshore wind farms

Lockheed Martin delivered a long-range air surveillance radar system to the UK that will overcome sensor performance issues commonly caused by the rotating blades of wind turbines. The new radar system provides reliable air defense surveillance capabilities for the UK Ministry of Defense (MoD) and allow the nation to move forward with aggressive plans to install some 924 turbines along England's east coast. The radar provides surveillance over five planned wind farms in the Greater Wash Strategic Area, Sheringham Shoal, Race Bank, Dudgeon, Triton Knoll, and Docking Shoal, which are expected to generate more than 5,500 MW of sustainable power.

A new hyperbaric test chamber for items that require high-pressure, high-temperature (HPHT) testing was introduced for use at Southwest Research Institute (SwRI). The deepwater ocean simulator is capable of attaining pressures of 30,000 psig at a rated temperature of 500 degrees F.



Raytheon Company's AN/ASQ-235 Airborne Mine Neutralization System (AMNS) was introduced as the U.S. Navy's new standard for organic airborne mine neutralization, with the capability to reacquire and eliminate moored and bottom mines previously detected by the AN/AQS-20A Minehunting Sonar – a separate mine countermeasure sonar system that is also produced by Raytheon. With AMNS, navies no longer need to rely on the outdated and arduous method of deploying countermine ships equipped with large and cumbersome remote-operated vehicles to neutralize mines.

On March 12, 2010, Fugro took delivery of a new-build 65 meter long survey vessel, the M/V Fugro Searcher, which it commissioned in 2007. Fugro took the opportunity to look at all aspects of overall survey vessel design in detail and install the latest equipment, making it the most advanced vessel of its type in the world. The vessel operates in the offshore oil and gas industry and the offshore renewable energy sector. It carries out the full range of site and route survey tasks to obtain the high-resolution data involving the seabed and installation of pipelines, platforms, wind turbines, subsea structures, and other seabed furniture.



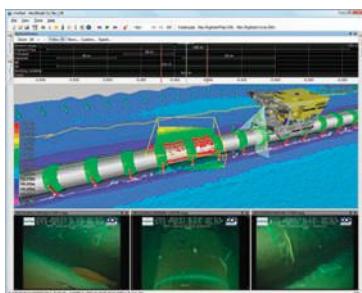


Lockheed Martin developed the Marlin AUV to meet a wide range of customer requirements and will use this field-proven platform to demonstrate IRM capabilities to the Offshore Oil & Gas Industry. The Marlin class of AUVs range in length from 3 ft to over 16 ft depending on the capability required. The vehicle's modular design allows custom configurations to be rapidly generated to satisfy specific customer requirements.

OceanServer Technology (OTI) was awarded a competitive procurement to deliver two lightweight multi-beam sonar equipped AUVs to the U.S. Navy. These AUVs were operationally tested and delivered to the Naval Special Warfare (NSW) Command at the Stennis Space. The AUVs are equipped with side scan sonar, Doppler velocity log (DVL), acoustic Doppler current profiler (ADCP), conductivity, temperature and depth (CTD) sensor, and multi-beam imaging sonar.



EIVA introduced the new NaviModel software for ocean mapping, data analysis, and interpretation. The software provides intuitive 3D visualization of infinite survey data sets by import of multiple data formats and sources using user-defined templates. Digital terrain models (DTM) are displayed in real-time fly-through fashion featuring different color modes and palettes in addition to adjustment of light source.



The DNV presented Arc Controls, Inc. of Mobile, Alabama with Certificate No. T-1355 for the manufacture of Class I & II pressure vessels in October of 2009. Arc Controls is the first manufacturer on the U.S. Gulf Coast to receive this approval and certification from DNV.



Triton Group's SubAtlantic introduced the Mojave ROV. The Mojave is a powerful observation ROV for its size. Operating to a 300-m depth rating as standard with 1,000-m option, it is also available to operate from a tether management system (TMS) making it the ideal vehicle for numerous subsea missions.

HIGHLIGHTS

Explosion engulfs Transocean rig in flames, sinks in Gulf of Mexico

At approximately 10 p.m. (CST) on April 20, gas, oil, and concrete exploded up the well bore onto the deck of Transocean's Deepwater Horizon semisubmersible drilling rig in the U.S. Gulf of Mexico, catching fire. Eleven workers perished in the explosion.

The U.S. Coast Guard called the incident what could be one of the nation's deadliest offshore drilling incidents of the past half-century.



The rig, located more than 50 miles southeast of Venice off Louisiana's coast, was still burning on April 21 morning as the U.S. Coast Guard commenced a search for the missing rig personnel. The Deepwater Horizon was engulfed in flames since the explosion and finally sank at about 10:21 CST.

The U.S. Coast Guard estimated that 126 workers onboard the rig were able to evacuate. Of the 126 people, 115 crewmembers have been accounted for. Of those accounted for, 17 crewmembers were medevaced from the scene, 94 crewmembers were transported to Port Fourchon, Louisiana aboard the Damien Baxton, an offshore supply vessel and four other crewmembers were transferred to another vessel.

The 17 people injured in the blast and were taken to hospitals.

After weeks of attempts, on July 15, the oil leak was stopped.

It is believed that the well was leaking about 62,000 barrels per day—about 4.9 million barrels of oil flowed into the Gulf of Mexico from beginning to the capping of the well.



HIGHLIGHTS

Lockheed Martin gets two OTEC grants from DOE

The U.S. Department of Energy (DOE) selected Lockheed Martin to receive two grants totaling US \$1 million to advance the technology commercialization of Ocean Thermal Energy Conversion (OTEC). The grants supported the company's effort to produce an economically viable, utility-scale, renewable energy source leveraging the temperature difference of the ocean's warm surface water and colder water deeper below. The DOE grants followed an \$8.12 million Department of Defense award to Lockheed Martin in September 2009. In 2008, Lockheed Martin received a \$1.2 million DOE contract to demonstrate how special cold water piping could be fabricated to carry the large volumes of seawater required to produce commercial power.

Ocean Power Technologies wins PowerBuoy development grant

Wave energy hydropower developer Ocean Power Technologies Inc. (OPT) won a \$1.5 million grant from the DOE for the development of the next generation of OPT's PowerBuoy ocean energy hydropower device.

Siemens to supply 130 turbines for Cape Wind

Cape Wind entered into an agreement with Siemens to supply 130 of its 3.6-MW turbines for America's first planned offshore wind farm off the coast of Massachusetts. At the same time, Siemens also announced plans to open a U.S. Offshore Wind office in Boston.

IEA says world oil demand to hit record high

Global oil demand hit a record high this year, the International Energy Agency (IEA) said in mid-April, revising consumption estimates as the world economy recovers from recession. The Paris-based adviser to industrialized economies raised its forecast for world oil demand growth this year to 1.67 million barrels per day, up 100,000 barrels per day. The agency said that world oil demand would reach an average of 86.60 million barrels per day this year, up from 84.93 million in 2009. The previous record high for world oil demand was 86.5 million barrels per day in 2007 before the onset of the global financial crisis and economic slowdown.

First production from U.S. Gulf's Lower Tertiary

The Shell-operated Perdido Hub became the first development in the U.S. Gulf of Mexico to commercially produce oil and gas from the so-called Lower Tertiary trend, an emerging frontier play that could hold billions of barrels of recoverable oil and be a key contributor to U.S. energy supplies in coming years. The \$3 billion Perdido project, more than a decade in the making, came onstream on March 31, producing from three "ultra-deepwater" fields and boasting several industry firsts. The Perdido complex handles production from the Great White, Silvertip, and Tobago fields, which are located about 200 miles south of Freeport, Texas. It is designed to produce 100,000 barrels of oil per day and 200,000 cubic feet of natural gas per day. Tethered in nearly 8,000 ft of water, Perdido is the world's deepest offshore oil and gas drilling and production spar and is 60 miles beyond any existing developments in the U.S. Gulf. The cylindrical-shaped structure is nearly as tall as the Eiffel Tower.



Klein Associates, Inc. division (L-3 Klein) introduced the revolutionary new HydroChart 5000 side scan bathymetric sonar system. The HydroChart 5000 represents the latest technology for the acquisition, display, and processing of highly accurate bathymetry data integrated with high resolution side scan imagery, meeting IHO SP-44 Special Order Standards. The HydroChart 5000 utilizes a phase difference measurement technique and linear FM (Chirp) processing to produce the highest quality data sets for the hydrographic industry. The HydroChart 5000 reduces survey times by half compared to conventional surveys.

Sonardyne International expanded its capabilities with the launch of its first side scan sonar. The new Solstice sonar has been specifically developed by Sonardyne to provide new levels of performance that meet the needs of operators of Autonomous Underwater Vehicles (AUVs). Solstice emerged as the result of 3 years of intensive development work and provides the crucial benefits of low-power consumption and class-leading range and imagery, including co-registered bathymetry. All processing is carried out onboard the vehicle, greatly reducing analysis time when the vehicle is recovered and allowing onboard data interpretation during the survey.



C-Tecnic developed a comprehensive dive station that incorporates a three-diver C-Phone communications unit, and a dual-camera and lamp supply control unit with a HDD recorder with massive memory. This system ensures that video and communications for both the divers and supervisor are clearly recorded and can easily be presented to client or engineers. The rack houses C-Tecnic 19-in. product range including the three separate modules shown in the photograph. A large-format video screen also allows a split screen set-up so viewing from two cameras can be seen simultaneously, such as from the standby diver, crane operator, or ROV.

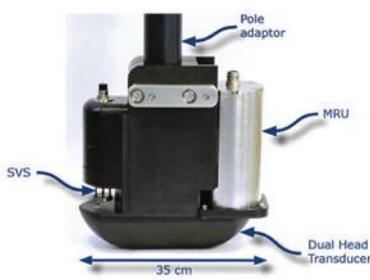


Triton Group delivered the first of its next generation ROVs to the offshore industry in May and won another contract for the Triton XLR in deals totaling £3.8 million. Group company Perry Slingsby Systems (PSS) completed work on the first of the custom-built XLRs to Romanian client Grup Servicii Petroliere (GSP) for immediate deployment in offshore Russia.

During a mission in the Northeast Pacific, Seaglider 144 propelled itself for 292 days, covering 5,528 km (3,435 miles) through the water, more than half the pole to equator distance (or about the distance between Boston and Paris). Operating independently without any intervention from its operators for repair or cleaning, Seaglider 144 averaged a speed of just over .75 km per hour (0.5 mph), stopping for only a few minutes about every 9 hours to send back its data via satellite. During this mission, it got the gasoline equivalent of over 30,000 miles per gallon from its high-energy Lithium batteries.



Hydroid, Inc., a leading manufacturer of Autonomous Underwater Vehicles (AUVs), received multiple delivery orders under an existing U.S. Navy contract to provide three additional MK 18 Mod 1 Swordfish variants of the REMUS 100 to the Naval Oceanography Mine Warfare Command (NOMWC) headquartered at Stennis Space Center, Ms. in partnership with PMS 408 (EOD).



GeoAcoustics Ltd released the GeoSwath Plus Compact for wide-swath bathymetry. It offers efficient simultaneous swath bathymetry and side scan seabed mapping with accuracies shown to exceed the SP-44 ed.5 Special Order IHO standards for hydrographic surveys. Available in three frequency versions, 125, 250, and 500 kHz, the system has depth performance of 200, 100, and 50 m.



MacArtney developed a new electrical multiplexer, the NEXUS MK E, that handles online communication using existing copper cables. The system communicates with power and data along the same conductors on up to 10,000 meters of coax cable or 3,000 meters on twisted pair cable. Each sensor channel can be individually controlled through the software package. It is ideal for oceanography systems, ROV upgrades, towed vehicles, drop camera systems, and towed camera systems.

HIGHLIGHTS

No smoking aboard U.S. subs

Commander, Submarine Forces (COMSUBFOR) effected a policy April 8 banning smoking below decks aboard all U.S. Navy submarines. The smoking ban, announced via naval message, will become effective no later than Dec. 31, 2010.

USCG's Deepwater program cost rises to \$27.4B

The cost for the U.S. Coast Guard's major acquisition program—Deepwater—rose to \$27.4 billion. The program, estimated to cost \$17 billion in 1998, is slated to finish in 2027 and has been plagued with delays and rising costs.

USCG change of command

On May 25, at Fort Lesley J. McNair, Adm. Thad W. Allen was relieved by Adm. Robert J. Papp, Jr. as commandant of the U.S. Coast Guard during a military change of command ceremony.

Cape Wind Approved

U.S. Secretary of the Interior Ken Salazar approved of Cape Wind with a favorable Record of Decision for the project to be constructed on Horseshoe Shoal in Nantucket Sound off the coast of Massachusetts. Secretary Salazar's decision to approve Cape Wind has launched the American offshore wind industry. The approval of the 130-turbine farm gives a significant boost to the nascent offshore wind industry in the United States, which has lagged far behind Europe and China in harnessing the strong and steady power of ocean breezes to provide electricity to homes and businesses.

NEC deploys submarine earthquake observation system

NEC Corporation, a leading network, communications, and information technology company, announced its deployment of the Dense Oceanfloor Network System for Earthquakes and Tsunamis (DONET) for the Japan Agency for Marine-Earth Science and Technology (JAMSTEC). DONET is a high-precision submarine network observation system off the coast of Japan's Kii Peninsula that helps understand and forecast earthquakes that take place in the densely populated Tonankai region. The system is located between 2,000 and 4,000 meters beneath the sea and composed of an optical submarine cable loop featuring branching units with node interfaces, state-of-the-art seismograph, and water pressure meters for detecting tsunamis.

Seamounts remain mostly unexplored

Scientists from NOAA and Texas A&M University-Corpus Christi were astounded to find that seamounts, mountains that rise from the seafloor, rank as some of the most common ocean habitats in the world. Although researchers have thoroughly explored some 200 seamounts and mapped and sampled a hundred others, this study is the first to estimate that more than 45,000 seamounts dot the ocean floor worldwide, a total of roughly 28.8 million square kilometers or an area larger than the continent of South America. The discovery was made possible using satellite altimetry data that measured incredibly slight changes in the sea surface height that, along with statistical analysis models, indicated the presence of these submerged mountains.

HIGHLIGHTS

Communications with AUVs under ice

WFS Technologies and Kongsberg Maritime Subsea completed successful field trials of wireless communication through ice. The trials conducted during February/March 2010 in Horten, Norway demonstrated wireless communication from sea water, through-ice, and into the air using radio frequency (RF) technology. Field trial observations matched theoretical simulations, and WFS predicts it can achieve communications through meters of ice and then up to 1 km in air. Wireless communications with AUVs and sensors under ice is a breakthrough anticipated to deliver substantial cost savings in environmental monitoring, exploration, and production activities.

SubCom achieves 40GB/S long-haul transmission

Tyco Electronics Subsea Communications (SubCom) announced the successful demonstration of 64 x 40 Gb/s transmission over a 6,500-km distance. Conducted over an existing Tata Communications link in the Atlantic Ocean using SubCom's next-generation (G4) SLTE, the data were carried from Highbridge, UK to Wall, N.J., error-free with a significant performance margin across the entire band. The demonstration marks the next step in the ongoing progression of undersea cable data rate and will make enabling such undersea cable systems to carry increased capacity over existing links a reality.

DOI, 10 states form offshore wind energy consortium

The U.S. Department of the Interior (DOI) and the governors of 10 East Coast states signed a Memorandum of Understanding (MOU) on June 8 that formally establishes the Atlantic Offshore Wind Energy Consortium. The new consortium promotes the development of wind resources on the Outer Continental Shelf (OCS) along the East Coast, primarily by coordinating state and federal efforts relating to permitting, environmental studies, technical and financial barriers, and the infrastructure needed to deploy and maintain offshore wind power plants.

Acergy to acquire Subsea 7 in \$3.4B deal

Undersea oil contractor Acergy acquires rival Subsea 7 in an all-share deal for an estimated \$3.4 billion. In a joint statement, the companies said the \$5.4 billion combined entity will create a global leader in seabed-to-surface engineering and construction. The merger is expected to be completed toward the end of this year or early 2011.

MMS renamed BOEMRE

Michael Bromwich led the fundamental restructuring of the former Minerals Management Service (MMS), which was responsible for overseeing oil and gas development on the Outer Continental Shelf. A secretarial order that Salazar signed renames the Minerals Management Service the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) as it undergoes reorganization and reform.

Mine detection system nears OPEVAL

Northrup Grumman Corporation and the U.S. Navy began the first flight of 40 (DT-IIE) to test the Airborne Laser Mine Detection System (ALMDS). The testing is conducted from Panama City, Florida and, when completed, leads into TECEVAL and then OPEVAL next year. ALMDS uses pulsed laser light and streak tube detectors to image in 3D the near surface of the ocean. The system is housed in a pod mounted on the side of an MH-60S helicopter.

SMD was awarded a contract by i Tech (a division of Subsea 7) to supply 20 (with options for up to an additional 10) QX Ultra work class ROVs. The ROVs will be used by Subsea 7 in Brazil, working for Petrobras. The award is SMD's single biggest ROV order to date, and positions the company as the leading supplier of Work Class ROV (WROV) systems in expanding international markets.



SEACON (europe) Ltd announced the release of a new range of underwater electrical dry-mate connectors to enhance the existing 55 Series. The new 66 Series of reverse gender connectors enable power to be applied to the bulkhead connector and still be safe to use. This new range also incorporates shorter locking sleeves to ensure easier mating capability.



LinkQuest added yet another new member in its FlowQuest acoustic current profiler family. The new FlowQuest 600H long-range horizontal acoustic current profiler precisely measures water velocities and water level in horizontally-oriented installations. It can be easily installed on an irrigation channel bank, a bridge abutment, a river bank, or a fixed platform.



Atlantis Resources Corporation (Atlantis) unveiled the largest and most powerful tidal power turbine ever built, the AK1000™, at Invergordon, Scotland. The AK1000™ is installed at a dedicated berth at the European Marine Energy Centre (EMEC), located in Orkney, Scotland. Producing 1MW of predictable power at a water velocity of 2.65 m/s, it has an 18-meter rotor diameter, weighs 1,300 tonnes, and stands 22.5-meters high.



ECA introduced the Roving Bat, a time-saving, cost-efficient, and life-saving system that inspects the hulls of ships, FPSOs, underwater structures and hydraulic dams. It is also used for security applications, to search and dispose of limpet mines and other explosive, suspect devices attached on ship's hulls, harbor walls or piers.





Statoil's innovative, new offshore floating Hywind wind turbine is now moored in the North Sea. The dynamic floating structure weighs 5,300 tons and is 165-meters tall with a total of 65-meters above sea surface. The 13 km of power offtake and communications cabling attached to the structure further adds to its weight. Trelleborg Offshore designed and supplied Hywind 45 off polymer-coated syntactic foam DBMs that supply buoyancy support for a 3-ton, 100-meter section of cable as it exits the turbine spar and descends to the sea bed at 220-meters.

In June, a Bluefin-21 Autonomous Underwater Vehicle (AUV) owned by the Alfred Wegener Institute for Polar and Marine Research (AWI) was sent out on an under-ice mission and retrieved valuable data that could shed light on climate change. The AUV was deployed by AWI and Bluefin crew members from the R/V Polarstern about 79 degrees north. Equipped with an AWI-developed water sampler payload, the vehicle traveled under heavily packed ice collecting 22 samples in discrete time intervals for later analysis.



SeaBotix Inc. of San Diego, California, in cooperation with industry leading companies Tritech International and Marine Simulation LLC, developed the first specially designed, rapid response underwater rescue system—SARbot™. Until now, remote operated technology has been used to recover drowning victims, not rescue them. Improved medical studies have shown that a person experiencing near drowning in water up to 21°C has the potential for rescue.



*Wally II the underwater crawler.
(courtesy Neptune Canada)*

Starting September 12, NEPTUNE Canada began installing the fifth and most challenging portion of its cabled ocean observatory — 2.3 km below the ocean surface at Endeavour Ridge. The team will lay three sets of 6-km long power and fiber optic cables between the node. Wally II, the second generation of the world's first Internet-operated deep-sea crawler, measures processes of seafloor methane hydrates.

HIGHLIGHTS

Oil firms commit \$1B to rapid response

ExxonMobil, Chevron Corp., Conoco Phillips, and Shell Oil agreed to pool \$1 billion to form a new company that would respond to offshore oil spills at up to 10,000 ft underwater. The system would deploy equipment that could arrive at a spill within days and be fully operational within weeks.

China overtakes U.S. as world's largest energy user

Preliminary data from the International Energy Agency (IEA) indicated that China has become the largest energy consumer in the world, having overtaken the United States in the top spot. An IEA chart showed China using roughly 2.25 billion tons of oil last year, while the United States used roughly 2.2 billion tons of oil in 2009. China rose to its top ranking faster than expected because the country was much less affected by the global financial crisis than the United States.

Huge iceberg breaks off Greenland glacier

An ice island four times the size of Manhattan broke off from one of Greenland's two main glaciers, scientists said, resulting in the biggest such event in the Arctic in nearly 50 years. The new iceberg, which broke off on August 5, entered a remote place called the Nares Strait, about 620 miles south of the North Pole between Greenland and Canada. The island of ice has an area of 100 square miles (260 square km) and a thickness up to half the height of the Empire State Building.

New National Marine Renewable Energy Center

DOE announced on August 3 that it awarded \$250,000 to the Center for Ocean Energy Technology at Florida Atlantic University to launch the Southeast National Marine Renewable Energy Center. The newest national center for ocean energy research and development joins centers in the Pacific Northwest and Hawaii that also test ocean energy technologies.

Independents generate half of U.S. Gulf of Mexico oil

An analysis by IHS Global Insight of the economic contribution to the U.S. Gulf States from offshore oil and gas development in the Gulf of Mexico shows that independent oil and gas companies currently account for about half of the nearly 400,000 jobs, \$70 billion in economic values, and \$20 billion in federal, state, and local revenue generated by the industry in 2009.

USCG celebrates 220 years of service

The U.S. Coast Guard celebrated 220 years of service to America this year. From its genesis as the Revenue Marine, the Coast Guard has evolved to become the world's premiere multi-mission maritime service, conducting operations around the globe to execute its 11 missions. The Coast Guard began its service to America in 1790 within the Treasury Department as the Revenue Marine, later renamed the Revenue Cutter Service. The Coast Guard transferred from the Treasury Department to the Department of Transportation in 1967 and to the Department of Homeland Security in 2003.

HIGHLIGHTS

Decommissioning carries big price tag

The cost of decommissioning offshore oil and gas platforms on the UK continental shelf could exceed \$30 billion over the next 30 years, according to new research findings. A report released by Deloitte and Douglas-Westwood revealed that the majority of decommissioning activity and related spending will occur between 2017 and 2027. The study estimated that 260 offshore oil and gas platforms will be decommissioned over the next 30 years. The study forecasted that the anticipated level of decommissioning will provide a major business opportunity for the oil services industry, especially vessel operators and well service companies, and could be a significant boost to regional economies. Meanwhile, the International Energy Agency predicted that UK oil output will shrink by 50,000 barrels per day to 1.42 million barrels per day this year and by 100,000 barrels per day to 1.32 million next year.

Toxic sludge spill

Hungary opened a criminal investigation into an escape of deadly toxic sludge from an industrial plant, having fears it could grow into a regional environmental disaster. Four people were killed, about 120 were injured, and 3 were reported missing after a dam holding waste slurry collapsed at an alumina works in the southwest of the country, sending a wave of poisonous red mud racing through nearby villages and into a tributary of the River Danube. Rescue teams searched for the missing people, cleaning up the caustic grime and pouring tonnes of gypsum into the River Marcal to try to prevent contamination of the Danube, Europe's second-longest river, which flows from Hungary through Croatia, Serbia, Bulgaria, Romania, Ukraine, and Moldova on its way to the Black Sea.

LCS teams submit final proposals

Both industry teams contending to build the next Littoral Combat Ships submitted their "final proposals" September 15 and are now awaiting a decision in the U.S. Navy's premier shipbuilding competition. Lockheed Martin and Austal USA are competing to have their design selected as the basis for at least 51 more LCS ships. Along with the design selection, the Navy also will award contracts for a batch of 10 ships to be ordered between 2010 and 2014.

Fighting pirates

Spain and the Seychelles on September 14 signed two agreements aimed at fighting piracy in the Indian Ocean, where Spanish trawlers have been among the regular targets of Somali kidnappers. Unofficial figures show 2009 was the most prolific year for Somali pirates, with more than 200 attacks — including 68 successful hijackings — and ransoms thought to exceed \$50 million. Spanish trawlers fishing in the Indian Ocean have been among those regularly targeted.

New Jersey Enacts Law to Boost Offshore Wind Industry

In a bid to boost offshore wind energy, New Jersey enacted a law on August 19 that provides a financial incentive for companies to construct turbines in the Atlantic Ocean off the state's coast. The "Offshore Wind Economic Development Act" will offer offshore wind renewable energy certificates to approved projects for the generation of 1,110 megawatts of power. The new law also seeks to attract firms that build wind turbines, their components, or water access facilities by granting up to \$100 million in tax credits as well as financial assistance to qualified applicants. The Garden State used a similar approach to encourage photovoltaic installations and is now producing 57.3 megawatts DC, putting it second behind only the much-sunnier California on the list of states.

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Norway's Beerenberg won two contracts in the Gulf of Mexico for its newly developed Green Turtle conductor cutting technology, which it developed with partner CalDive International. The patented technology is designed to provide a cost-effective method of cutting the conductor that is left protruding from the seabed after the well has been abandoned and the platform on which it was completed has been removed.



SMD has completed an exciting project to deliver what is believed to be the world's most powerful and deepest Fall Pipe ROV to Jan de Nul (JdN) of Belgium. The ROV was installed on JdN's vessel the Simon Stevin. The 191-m long vessel, with a loading capacity of 33,500 te, is able to dump 2,000 te of rock per hour at a depth of 2,000 m. The ROV operates at the lower end of the fall pipe to accurately correct its position so that it can place the rock very precisely.



Hawkes Remotes Inc. (HRI) announced its initial product lineup, a family of three ROVs that incorporates new proprietary fiber-optic tether technology and high energy-density batteries to enable range, depth, and deployment capabilities well beyond those of current-generation ROVs. HRI's ROVs will leverage the company's newly developed SpiderOptic™ technology, which utilizes thin armored fiber-optic tethers that pay out as the vehicles move.



Sea-Bird Electronics launched the next generation of the field-proven MicroCAT. The MicroCAT-IDO adds dissolved oxygen (DO) to the MicroCAT conductivity, temperature, and pressure sensor in a compact and economical package. The DO sensor is based on Sea-Bird's field-proven SBE 43, with the same performance specifications. Adaptive Pump Control calculates optimal pump time for maximum DO accuracy while minimizing power consumption for long endurance deployments. The MicroCAT-IDO is available with RS-232, RS-485, or Inductive Modem interface for depths to 250 meters (plastic housing) or 7,000 meters (titanium housing).

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Feds to work on remaining lease sales

The U.S. Interior Department's Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) said that it will begin work on a Supplemental Environmental Impact Statement (SEIS) for the remaining oil and gas lease sales in the Gulf of Mexico scheduled in the 2007-2012 Outer Continental Shelf (OCS) 5-Year Plan. This is one of many steps being taken to gain public input as BOEMRE assesses the environmental impact following the Deepwater Horizon disaster. "This SEIS is a vehicle for BOEMRE, other government scientists, and the public to gather and consider new information obtained and analyzed as a result of the Deepwater Horizon blowout and spill," BOEMRE Director Michael R. Bromwich said. "This SEIS is an important step in that process. As we move forward, we will continue to perform research and analysis on these important issues. These continued assessments will allow us to make objective, science-based decisions about the activities involved in offshore energy exploration, development and production."

Thai network to link offshore platform

Chevron Thailand Exploration and Production has awarded a 15-year contract to Thailand's CAT Telecom for installation and service of a submarine cable network to connect oil rigs in the Gulf of Thailand as part of its attempt to enhance the operational efficiency of the rigs. The network will link eight rigs in the Gulf of Thailand and will require an investment of Bt2.73 billion. CAT Telecom expects to reap revenue of Bt3 billion in providing the service throughout the period. Chevron will focus more investment in Platong Field in the next 5 to 10 years, with investment of more than US\$3 billion (Bt91 billion).

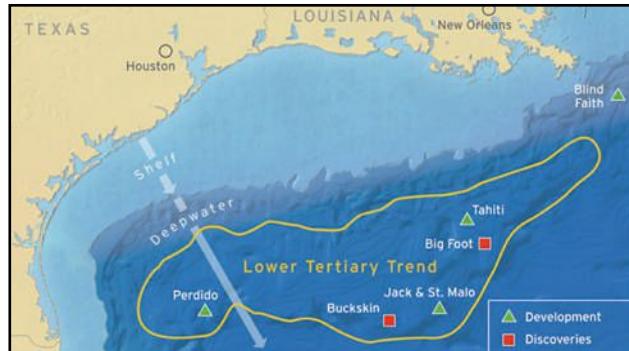
Mediterranean cable announced

Libyan International Telecommunications Company (LITC) and Greece's OTEGLOBE have announced a partnership to collaborate on the development of new and diverse connectivity from North Africa to the global internet hubs. The collaboration includes both the construction of a submarine fiber optic cable across the Mediterranean and onward terrestrial bandwidth over multiple routes on the OTEGLOBE network.

LNG expenditures to reach \$20.2B

Infield Systems Ltd. forecasts that the capital expenditure on floating liquid natural gas (FLNG) and offshore regasification market will total \$20.2 billion in the 2010-16 period, according to its Global Perspectives Offshore LNG Market Update Report to 2016. The majority of this capex is attributable to the more capital intensive FLNG projects. At present, there are no commercially operational offshore liquefaction projects. However, in recent years, a number of proposed FLNG projects have been pursued. These have included Shell's Prelude project (Australia), Woodside's Sunrise project (Australia-Timor Leste), and Petrobras' Tupi pre-salt development offshore Brazil. Operators of these developments are all investigating the potential commercialization of gas reserves through FLNG technologies. There are over 2,000 trillion cubic feet of proven undeveloped gas reserves offshore in the world today.

Chevron Pushes Ahead with Development of Jack and St. Malo



Chevron Corp. has sanctioned development of the Jack and St. Malo fields, its first operated project located in the Lower Tertiary trend in the deepwater U.S. Gulf of Mexico.

"Jack-St. Malo is the latest example of Chevron advancing its industry-leading queue of major capital projects," said George Kirkland, Chevron's vice chairman. "The Lower Tertiary is recognized as a huge resource with the potential for long life projects of up to 30 to 40 years and the opportunity to enhance recoveries through technology."

The Jack and St. Malo fields are located within 25 miles of each other about 280 miles south of New Orleans, La., in water depths of 7,000 ft. The initial development of the project will require an investment of roughly \$7.5 billion. It will comprise three subsea centers tied back-to-a-hub production facility with a capacity of 170,000 barrels of oil and 42.5 million cubic ft of natural gas per day. Startup is anticipated in 2014.

Gary Luquette, president of Chevron North America Exploration and Production Co., said the Jack-St. Malo project builds off the company's success in the U.S. Gulf and will enable Chevron to help meet future U.S. energy demand while delivering a safe and reliable operation in the development of the Lower Tertiary trend.

"We have an operating interest in the 2009 Buckskin discovery and participate in the Perdido Regional Development, which provide significant learnings we can apply to Jack-St. Malo," Luquette said.

The Jack and St. Malo fields are estimated to contain combined total recoverable resources in excess of 500 million oil-equivalent barrels. Seven exploration and appraisal wells have been successfully and safely drilled at these fields since 2003. Chevron, through its subsidiary Chevron USA Inc., has working interests of 50% in the Jack field, 51% in the St. Malo field, and 50.67% in the host facility.

Chevron is one of the top leaseholders in the Gulf of Mexico, averaging net daily production of 149,000 barrels of crude oil, 484 million cubic feet of natural gas and 14,000 barrels of natural gas liquids during 2009.

U.S. drilling activity on upswing

After slumping in 2009, U.S. oil and natural gas drilling is on the upswing in 2010. An estimated 11,297 oil wells, natural gas wells, and dry holes were completed in the third quarter of 2010, a 45% jump from last year's third quarter, according to the American Petroleum Institute's (API) recently released 2010 Quarterly Well Completion Report: Third Quarter.

"Third-quarter exploratory well completions climbed 31% compared with 2009's third quarter, with natural gas exploratory wells up a whopping 68%," noted Hazem Arafa, director of API's statistics department. "I think this really demonstrates the oil and natural gas industry's continued commitment to finding new energy sources to meet growing U.S. and world demand as well as the importance of new supply areas, many of which were only opened recently thanks to the industry's ability to apply innovative techniques to existing technologies."

API estimates showed a resurgence in oil well completion activity in the third quarter, with completions rising to an estimated 5,451 oil wells, a 60% jump from year-ago levels. For most of this decade, natural gas had been the primary target for domestic drilling. But with the continued growth of oil well completions and a drop in natural gas completion activity this year amid historically low prices, this is no longer the case.

An estimated 4,434 natural gas wells were completed in the third quarter of 2010, a 28% increase from 2009's third quarter. For the first three quarters of the year, estimated natural gas well completions dipped 3% from a year ago to 12,677, while oil well completions rose 21% to an estimated 13,865.

API, which represents more than 400 oil and natural gas companies, also reported total estimated footage of 69,156,000 ft drilled in the third quarter of 2010, a 43% increase from third quarter 2009. Oil well footage surged 81% for the quarter, to 32,815,000, while natural gas footage gained 17% to 29,255,000.

UK awards 144 offshore licenses in 26th round

Britain's Department of Energy and Climate Change (DECC) has awarded 144 licenses under the UK's 26th licensing round, 48 fewer than under the 25th round.

However, a further prospective 45 licenses are pending the results of more detailed environmental impact assessments. The number of blocks associated with the new awards is 268, compared

with 303 for the 25th round, with a further 99 blocks contingent on the license reviews.

"While in the long-term, we want to decarbonize our energy system, we have moved swiftly to offer these licenses as we must realize the optimum value from the UK's energy resources and ensure secure energy supplies," Energy Minister Charles Hendry said. "We remain absolutely vigilant and determined to ensure that exploration in our waters is done safely and with minimal impact to the environment."

Malcolm Webb, chief executive of industry association Oil & Gas UK, said: "The scale of interest demonstrated in this recent licensing round confirms that there continues to be considerable appetite for developing the UK's...oil and gas resources."

Interior hires DNV to perform autopsy on failed BOP

Norwegian firm Det Norske Veritas (DNV) has been contracted by the Joint Investigation Team (JIT) of the departments of the Interior and Homeland Security for the forensic examination of the blowout preventer (BOP) and lower marine riser package that was fitted to the Macondo well in the Gulf of Mexico, the site of the Deepwater Horizon disaster and oil spill.

DNV is the same firm that earlier gave a thumbs-up to safety procedures on board the Deepwater Horizon, which sank in the April 20 accident killing 11 workers. DNV will be paid \$1.3 million to conduct the autopsy of the 60-ft high, 380-ton blowout preventer, which was last sitting on a dock at the NASA Michoud assembly plant in Louisiana.

Chain-of-custody and evidence preservation protocols to ensure the proper handling of all evidentiary material have been in effect since the BOP was first retrieved in August. The final forensic testing protocol will be developed by DNV in consultation with various commercial, academic, and government organizations and will be approved by the JIT prior to the start of testing. DNV is using its forensic investigation expertise from the Columbus, Ohio office and its subsea equipment (BOP) expertise from the Houston, Texas office in the project.

In 2007, DNV inspected and recertified the Deepwater Horizon's safety procedures. In 2009, Transocean hired DNV to do a study of the reliability of subsea blowout preventers. That same year, DNV named a Transocean vice president, N. Pharr Smith, to be chair-

man of DNV's rig owners' committee, which provides "input" to DNV's rule-making process.

Exxon tops Platts ranking

U.S.-based ExxonMobil Corp., for the sixth consecutive year, reigned supreme at the top of Platts' Top 250 Global Energy Company Rankings for 2010. Despite being fifth in terms of asset value, Exxon came in second in terms of both revenues and profits.

Despite an unprecedented drop in natural gas demand and the slump in oil prices, resulting in a more than one-third decline in 2009 profits, the integrated oil and gas (IOG) companies continued to dominate the top 10 spots.

UK major BP came in second, improving its position from fourth in the prior year's rankings due to a strong performance in 2009 relative to its peers and ahead of any impact from its disastrous oil spill in the U.S. Gulf of Mexico in April 2010. BP's revenues in 2009 dropped by a third, but its profits fell by only a little more than one-fifth.

Chevron Corp. and Royal Dutch Shell each saw their profits decline more than 50%, which resulted in a drop in the rankings to ninth and tenth place from second and third, respectively.

France's Total SA remained at fifth place, while German electric utility E.ON AG, the only non-IOG company in the top 10 ranking but a sizeable gas producer, soared to sixth place from 45th place thanks to an extraordinary 600% jump in profits.

"Our 2010 rankings provide a relative picture of which regions and energy sectors proved most resilient to the cataclysmic financial events of the past couple years," said Larry Neal, president of Platts. "While the major oil and gas companies held their own, companies in the emerging markets surged forward both in the overall rankings and on our list of the fastest growing."

Certified connector ensures Hydril's BOP will function

Blowout preventers (BOPs) can make the difference between safety and disaster at offshore drilling sites. Installed to protect lives and the environment, there can be no room for error. MacArtney's new American Petroleum Institute (API)-approved connector helps ensure Hydril's new blowout preventer system will function if needed.

Critical to safety and protection of the environment, BOPs are advanced valves that react to sudden pressure at an

oil well, shutting down the well and averting blowouts. They are essential for preventing loss of life at drilling sites and for stopping leaks that are potentially catastrophic for personnel, the environment, and financially.

Automatic BOP systems constantly monitor the well and are designed to be fail-safe devices. Not only must they be periodically inspected and tested, the American Petroleum Institute (API) sets standards that are clear about the types

of risks against which such equipment must be protected. New designs are rigorously tested and certified, and each element must meet stringent requirements before being API certified.

The size of the preventers and the depth at which they are deployed makes them impractical to bring to the surface often for testing. And as drilling sites are in increasingly deeper waters, BOPs have become more advanced. They must withstand the increased pressures at

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depth, and they must also be reliable enough to permit increased intervals between tests or servicing. Systems and equipment on the BOP can be submerged for up to 1 year between servicing and must, therefore, be resilient to the harsh underwater environment.

When Hydril was designing its new BOP Control System, it needed a complete infrastructure package that met the strict standards for testing and reliability stipulated by the API. The connector system within the complete unit needed to be able to withstand submersion for extended periods and accommodate several failure modes stipulated in the API Pressure Controls guidelines.

These stipulations included the requirement for the umbilical or termination assembly to function even when fully flooded with seawater and continue to operate for an extended period without conductor failure. A comprehensive design, build, test, and deploy program was implemented to fulfil the requirements of outfitting Hydril with three rig packages and just as many spares and test units. The brief was to fulfil API standards 16D for testing when assembled and the harder to attain 17E for functionality when flooded.

Ensuring that connectors for the infrastructure system would function even if the cable was flooded required the combination of several design features. A boot was fitted behind the connector to ensure that any water entering the cable cannot penetrate to the connector and that the connector will continue to work for its intended lifespan even with water flooding in the cable right up to the boot.

For 17E standard certification, the cable is as important as the connector. The cable was selected for its ability to withstand wear underwater. The conductors inside the cable are also protected to

prevent water ingress from shorting the connections.

Critical to the design was ensuring that the connector could be tested for integrity once assembled. MacArtney designed and integrated double test ports on the API connector itself to allow pressure testing of both sections after mating and before the connection is lowered into the water.

For more information on the API range of connectors, contact System Sales Manager Steen Frejo on sf@macartney.com or visit the website at www.macartney.com.

Bisso Marine installs new offshore platform

Bisso Marine, a premier provider of energy and maritime support services, safely performed a technically challenging tandem block lift of an offshore production topside.



Bisso Marine used the D/B LILI BISSO to set a 315-ton topside deck during the installation of a new offshore structure in the Gulf of Mexico. Bisso Marine's D/B BOAZ provided support on the project, which also involved the installation of a lean-to well protector on the existing caisson.

"Performing a tandem block lift offshore always presents challenges, but our expert offshore team and multipurpose derrick barges performed the job safely and on budget for the customer," said Ron McInnis, vice president of construction and heavy lift operations for Bisso Marine.

Since 1890, Bisso Marine has provided quality services to the marine and energy industries, offering marine construction, pipe laying, salvage, heavy lift, and diving services. With offices and strategic alliances located across the Gulf Coast, South America, Europe, and Asia, the Bisso Marine fleet is uniquely positioned to provide a full range of maritime services and emergency response across the globe.

For more information, please visit www.bissomarine.com.

Spiral Magnetic Flux Leakage (SMFL) inspection tool

Whereas traditional axial MFL technology detects volumetric pipeline anomalies, general corrosion and wide circumferential flaws, the new SMFL tool makes it possible to detect long, narrow defects in a pipe body and in long seam welds. Transverse field inspection (TFI) tools are designed to detect general corrosion as well as long and narrow metal loss features.

The high-resolution SMFL tool offers a number of benefits. For example, while TFI technology relies upon two magnetizers, the SMFL tool requires only one. As a result, the SMFL tool can be paired with MFL technology without having to extend the length of the tool to accommodate it. The ability to pair tools means that multiple datasets are generated in a single run. With a sampling frequency of up to 750 samples per second, the SMFL tool has an operating pressure range of 300 to 2,000 psi (21 to 137.8 bar) and an in-line temperature range of 14 to 131°F (-10° to 55°C.) It has a minimum bend radius of 1.5D and can travel at up to 8.3 ft/second, making it an extremely adaptable and efficient inspection system.

The addition of the SMFL tool further extends TDW's comprehensive pipeline inspection services, which features the recently launched 48-in Gas Magnetic Flux Leakage (GMFL) inspection tool.



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Duncan Winsbury,
Derbyshire Fire & Rescue

Read this case on
www.lynn.com/derbyshire



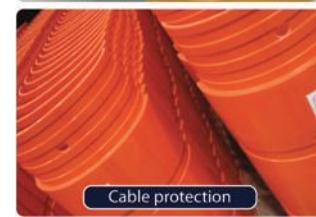
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Combining Multibeam Data & Laser Scanning Data

RESON PDS2000 software ready for whatever the future may hold

By Karen Kingham, KNM Media (UK)

An application that is becoming increasingly more recognized in the Hydrographic Community is that of Port Survey, combining both Multibeam Systems Data and Laser Scanning Data. The combination of these two data sets allows the user to merge information from above and below the waterline in one survey, resulting in a complete picture of a breakwater, dock, or other objects within the port.

RESON, a company synonymous with providing top quality branded underwater acoustic systems, transducers, hydrophones, and software to the International Defense, Security, Maritime, Dredging, and Offshore markets, is exploiting the benefits of their PDS2000 software, which can take the data from their SeaBat range of Sonars, and, when combined with laser scanning data, can provide a wealth and depth of data.

Laser scanners are an accepted tool within the survey segment of the market, especially now that lasers have ranges of more than 250-m and can generate large amounts of data. A dataset collected during a one hour survey can easily contain more than 25 Million data points; in fact, in a recent survey using RESON PDS2000 Software in conjunction with SeaBat Multibeam Sonar System and the Applanix Landmark Laser Scanner (which has a range of 1,500m) over 40 million data points were recorded.

Log Data File Set: Multibeam statistics report		
Number of swaths:	97780	
Number of points:	45835773	
Points with no quality:	3823788	8.340%
Points with good brightness:	284247	0.620%
Points with good co-linearity:	306750	0.640%
Points with good brightness and co-linearity:	41362112	90.230%
No Bottom detection:	20727343	64.850%
Bottom detection mode amplitude:	10869879	23.710%
Bottom detection mode phase:	115149	0.250%
Bottom detection mode phase and amplitude:	5123402	11.170%
Points rejected by angle filter:	12039055	2.600%
Points rejected by beam filter:	0	0.000%
Points rejected by quality filter:	4417746	9.630%
Points rejected by range filter:	48709	0.100%
Points rejected by depth filter:	0	0.000%
Points rejected by nadir filter:	0	0.000%
Points rejected by slope filter:	0	0.000%
Points rejected by intersect filter:	0	0.620%
Points rejected by statistics filter:	0	0.000%
Points rejected by flying filter:	0	0.000%
Points rejected by IHO Error filter:	0	0.000%
Points rejected by custom filter:	0	0.000%
Points rejected by CUBE filter:	0	0.000%
Points manual rejected in editing:	7629533	10.404%

Dataset taken from PDS2000 Multibeam with Laser Scanner

The RESON PDS2000 will interface with most laser scanner brands. Calibration of laser scanner data is different from the traditional multibeam data set. The RESON PDS2000 contains an enhanced calibration tool that can also calibrate laser scanners and the PDS2000 data processing module is able to cope easily with the large data quantities that laser scanners produce.

One company that has utilized both the RESON SeaBat 7125 together with the PDS2000 Software with extraordinary results is Shark, srl, a Romanian Diving, ROV and Survey Company. They themselves say that they were a small survey company in coastal engineering

and port development and realized that to take their company to the next step to "Offshore Survey" would entail investment in a RESON SEABAT 7125 and PDS2000.



Inertial Measurement Unit and 3D Laser Unit on top of survey mast

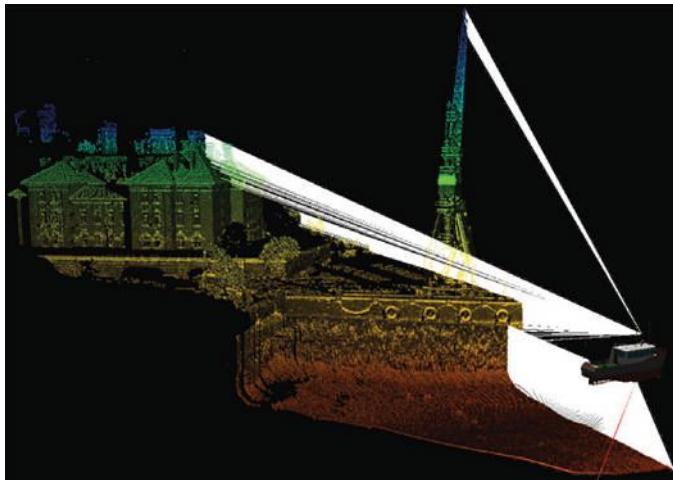
Alexandru Chiriac – survey manager at Shark, said, "The system itself is a high-end technical piece of equipment, but there are many similar systems today. The key to the future development of our company was the commercial, hardware, and software support. We chose RESON because they know how to assist their clients both financially and with their technical requirements."

He continued, "In only one year, we transformed a multibeam system in a Mobile Mapping system into an all in one software solution. The integration of a 7125-C onto a work class ROV was simple due to the high level of RESON engineering support. Today, our products are not simple bathymetric models, but are complex point clouds, which means that no matter whether it is DSM, DTM, 3D mesh, reverse engineering, feature extraction, shallow, deepwater or even land, that we can now offer our clients every possible solution."

During an integrated multibeam laser scanner project in the Port of Constanta, Romania, Shark srl used their Riegl Laser scanner, a RESON SeaBat 7125 multibeam sonar and an Applanix Wavemaster system to provide attitude and positioning information and discovered that the PDS2000 was the perfect tool for Shark Survey to acquire and process the data from all these sensors.

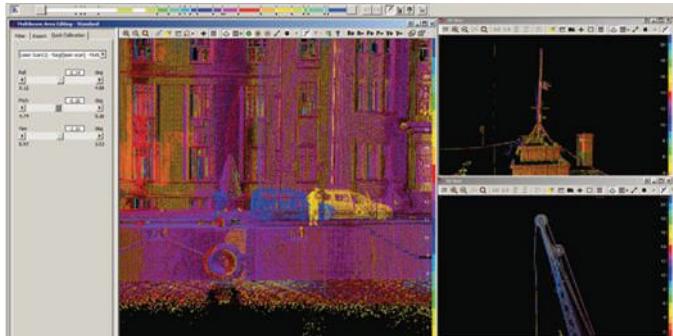
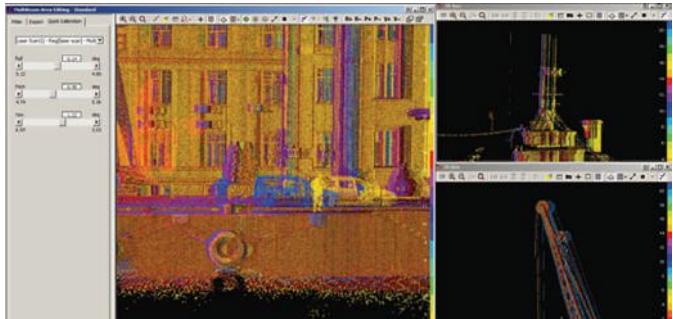
During data acquisition PDS2000 displays in real-time, the laser data together with the Multibeam data in one 3D view. To control data quality for these large datasets, the real-time 3D visualization is a very strong QC tool. Other views are also available as per choice of the surveyor.

The PDS2000 handles the laser scanner-multibeam data well on a standard PC, but a more powerful PC with a powerful graphics card and fast hard disk makes data handling a lot faster.



Constanta Port Berth 12 Port Administration building, platform quay and seabed integrated survey

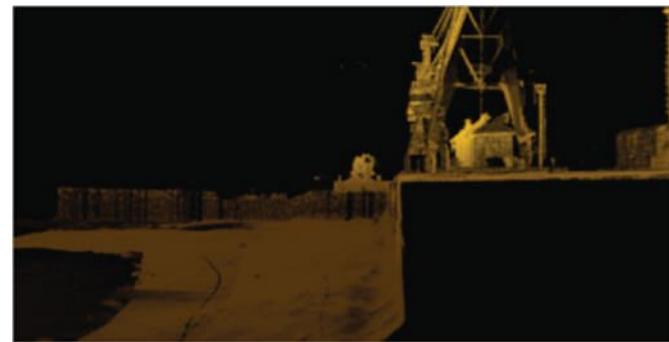
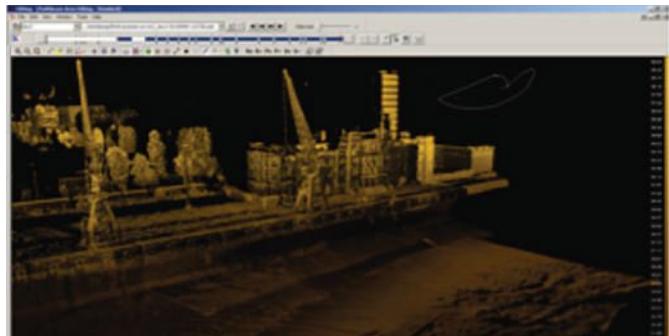
Just like with a multibeam, a laser scanner requires calibration. The operator can choose to carry out the calibration prior to data collection and/or during data processing. Calibration prior to data collection results in a better real-data visualization/quality. In PDS2000, the laser scanner data-calibration is part of the 3D processing module. Roll/pitch and yaw can be corrected to the right values on the fly. This is done by matching the point clouds of the different files (survey lines) with each other.



The images above show an example of a non-calibrated image. The masts on the building are a good point of focus as are the top of the cranes. On the main building the 3 bushes must be one as well. The correction is a combination of pitch and yaw.

While moving the slider bars, the user will instantly see the movements and be able to find the best possible settings.

Data cleaning of the laser cloud is identical to multibeam data cleaning. The user can delete laser data. The user has the

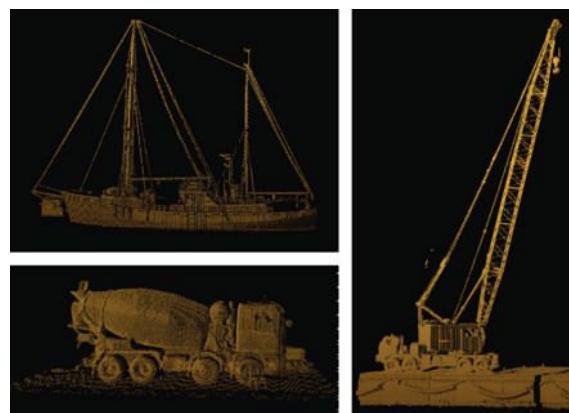


Both images (above) show that when an accurate attitude and positioning systems is used the multibeam and laser data match nicely

choice to show laser data combined with the multibeam data or separated from each other. The two images above show the multibeam and laser data combined.

Data display is not limited to a number of points. Cloud laser data may also be displayed in combination with a DTM or raster model.

PDS2000 3D box view provides the user with a very nice tool to grab data out of the data set for editing or just imaging and object measurement.



PDS2000 3D box view

RESON A/S is the holding company of the RESON Group, with corporate headquarters in Denmark. RESON is a global company and a world leader in the manufacture of sonar systems with registered trademarks, such as SeaBat and PDS2000, both leading brands within the industry.

More information can be obtained at www.reson.com.

Birth place of the U.S. Navy in question

The old sign near its border that proclaims the upstate New York town of Whitehall to be the birthplace of the U.S. Navy is a bit worn out, town clerk Elaine Jones admits. Residents of several other Northeast towns might describe it another way: Not true. Five communities claim to be the Navy's birthplace, from a wealthy former fishing hub north of Boston to Whitehall, a town about 200 miles from the nearest ocean. On the Navy's official birthday Oct. 12 — its 235th — the Archivist of the United States, David Ferriero, may try to settle the question at a meeting in Boston at the museum of the USS Constitution, the country's oldest commissioned Naval warship. Ferriero will bring documents from the National Archives that detail the claims of the parade of communities asserting Navy paternity, which also include Marblehead and Beverly, Ma.; Philadelphia and Providence, Ri.

Ships collide

A Canadian Navy frigate collided at sea with a U.S. Navy ship off the coast of Florida during a routine refueling and resupply mission, the Canadian military said Nov. 19. The 439-ft (134-meter) HMCS Fredericton collided with the slightly larger U.S. replenishment oiler Kanawha about 6:30 p.m. Eastern time on Nov. 18, Maj. Paul Doucette said. There were no injuries, but both ships returned to port for repairs.

Navy asks Congress for dual LCS awards

Rival teams from Lockheed Martin and Austal USA have been waiting all year to see which of their designs would be chosen for the U.S. Navy's Littoral Combat Ship (LCS) competition. Now, if the Navy gets permission from the lame-duck Congress, the winner could be both. At stake had been an award to the winner for 10 LCS hulls. But the Navy, convinced that the competition has driven down the cost for the ships, is asking Congress for permission to award each team contracts for 10 ships, for a total of 20 new LCS hulls. Under the proposal, the Navy would split its buy equally each year between Lockheed and Austal USA. Two ships would be awarded under the 2010 budget and two in 2011, with four ships year each from 2012 through 2015. One key issue that will be put off appears to be the choice of combat system. Each team created its own system, with virtually no commonality between the two types. Under the proposal, each team would continue to build ships with their original combat systems.

British submarine damaged by tug

Britain's newest nuclear submarine, which became stranded on a sandbank off the coast of Scotland in October, has now been damaged in a collision with a tug that came to rescue it, the Navy said. The £1 billion (\$1.6 billion) HMS Astute was towed free on Oct. 22 after its rudder got stuck while undertaking sea trials near the Isle of Skye. It was freed by tugs 10 hours later, but collided with one of the rescue vessels thought to be the Anglian Prince.

Navy Conducts Alternative Fuel Demonstration



The U.S. Navy conducted a full-power demonstration of a Riverine Command Boat (experimental) powered by an alternative fuel blend of 50% algae-based and 50% NATO F-76 fuel at Naval Base Norfolk, Virginia.

"Our primary mission for Navy energy reform is to increase warfighting capability, both strategically and tactically," said Rear Adm. Philip Cullom, director of the Chief of Naval Operations Energy and Environmental Readiness Division (OPNAV N45), which leads the Navy's Task Force Energy.

"From a strategic perspective, we are reducing reliance on fossil fuels from unstable locations," Cullom added. "Tactically, efficient use of energy resources extends our combat range and use of non-petroleum fuels assures multiple supplies are available."

The testing and demonstration of alternative fuels for ships is led by Naval Sea Systems Command's Advanced Fuels Program Office. The office, working in coordination with the Task Force Energy Maritime Working Group, supports the Secretary of the Navy's efforts to reduce total energy consumption on naval ships.

Solazyme said its technology will help the Department of Defense reduce its carbon footprint, combat global climate change, and lead in the development of clean and renewable energy sources, adding that reducing the country's dependence on foreign oil is a national security imperative and Solazyme's technology focuses on producing an abundant, domestic, and renewable source for oil and fuels. Solazyme's Soladiesel diesel fuels meet ASTM, EU, and certain military specifications, Solazyme said.

Founded in 2003 and headquartered in San Francisco, Solazyme's technology allows algae to produce oil and biomaterials in standard fermentation facilities quickly, efficiently, and at large scale.

These natural oils and biomaterials are tailored not only for fuel production but also as replacements for fossil-derived petroleum and a variety of natural plant oils and compounds, making them useful in a wide range of products from oleochemicals to cosmetics to foods.

Solazyme's investors among others include Braemar Energy Ventures, Harris & Harris Group, Lightspeed Venture Partners, Roda Group, and Vantage Point Venture Partners.

French Navy elects to install SENIN integrated navigation systems on board its latest Horizon-class frigates

SODENA, a member of the IXBLUE group, has been awarded a contract by the French Navy to supply and install two SENIN integrated navigation systems aboard the Horizon-class frigates "Chevalier Paul" and "Forbin".

Since 2003, SODENA has supplied SENIN systems for use onboard a range of French surface craft and submarines. At the same time, the company has pursued a program of continuous development centered on aligning the systems as closely as possible with French naval mission requirements as well as maximizing reliability, flexibility, and ease of use.

For more information, visit www.ixsea.com.

BriarTek completes 500th MOBI installation for U.S. Navy

BriarTek, Inc., announced that it has completed installation of its ORCA Man Overboard Indicator (MOBI) system aboard the U.S.S. Wayne E. Meyer (DDG-108). The event marks the company's 500th installation across the U.S. Navy fleet, and adds to ORCA's protection of Navy sailors worldwide. With more than 100,000 ORCA transmitters in use across a fleet of all classes, ORCA is the sole-source provider of man overboard indicators for the U.S. Navy and is installed aboard every aircraft carrier in the fleet. To date, the system has been responsible for the rescue of 29 Navy sailors worldwide.

For more information, visit <http://briartek.com/products-services>.

Coast Guard Authorization Bill signed into law

A new law that improves maritime safety, improves living conditions for Coast Guard members, assists the ongoing replacement of the service's aging fleet, and bolsters maritime and port security was signed into law Friday by President Obama.

"The Coast Guard Authorization Act of 2010 provides us with authority to enhance the safety of U.S. ports and waterways, acquisition assistance to acquire state-of-the-art ships and aircraft to patrol America's waters, and tools to promote individual readiness, including improvements to our family housing and child development centers," said Adm. Bob Papp, commandant, U.S. Coast Guard.

Japan concerned about Chinese naval activities

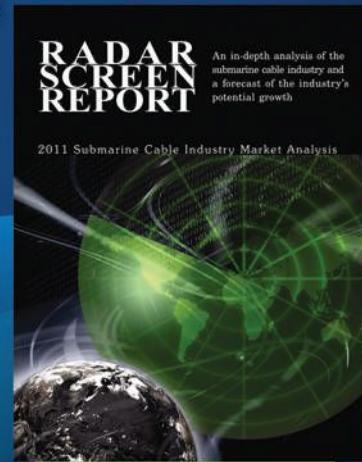
Tokyo will send about 100 soldiers to a remote Japanese island in the East China Sea, a report said, amid growing anxiety over China's naval activities. The ground troops will be deployed on Yonaguni island, Japan's westernmost point, to carry out coastal patrols and surveillance of Chinese naval vessels, Jiji news agency quoted defense officials as saying.

Increased Chinese naval activity has sparked a defense rethink in which Japan has mulled sending more forces to its scattered southern islands and away from Cold War-era bases in the north near Russia.

China's increased assertiveness, particularly in the South China Sea, has also caused jitters among other neighboring nations as well as the United States, which is also at odds with China over trade and currency issues.

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Cougar Performs Work in Caspian

With the Caspian seabed a hazardous jungle of unrecorded old pipes and cables from the Soviet era, a Cougar XT ROV from Saab Seaeye is to become a vital investigative tool now that new pipelines are being laid.

After a favorable experience operating the vehicle elsewhere, highly skilled engineers of the State Oil Company of Azerbaijan, SOCAR, decided to deploy the Cougar XT in the Caspian Sea for their underwater applications.

The ROV will be used for diving and pipeline inspection of the SOCAR current projects and for future seabed inspection as new pipes are laid.

In addition to pipeline inspection and seabed survey, it will be used for a variety of tasks, including the inspection and survey of vessels and platform legs.

SOCAR has taken a high-spec version of the 2,000-m rated Cougar XT with an upgraded video package, including two Kongsberg high-definition mono low-light cameras, two Kongsberg color zoom cameras, pan and tilt platform, and LED lighting.

A suite of Tritech equipment, including a Super SeaKing Sonar with a dual frequency profiling sonar head, a side scan sonar, and altimeter, is also fitted along with a Tritech bathy system.

The Cougar XT comes with two five-function heavy duty manipulators, a grabber jaw, camera boom adaptors for the manipulators with Seaeye color camera fitted, a water jetting system, cleaning brush assembly, 4-in. hydraulic rotary disc cutter, 38-mm anvil cutter, Cygnus ultrasonic thickness gauge, and CP probes.

Three removable skids are supplied: a tooling skid, wheeled skid, and an AX ring skid with AX ring removal tool and additional buoyancy.

The ROV will be launched from a Saab Seaeye stainless steel tether management system fitted with a camera and upgraded MUXs.

Deploying the Cougar will be a crane style launch and recovery system, supplied with a bullet/swivel assembly and lock latch assembly, together with an A60 zone II rated ROV control cabin.

SOCAR say they are attracted to the Cougar concept because it is technologically advanced with a proven and trusted track record. It also significantly extends the operational expectations of an electric work ROV into a wide range of light work tasks at a low cost, is easy to handle, needs fewer crew, can be mobilized quickly and has a reduced demand for deck space.

Saab Seaeye is the largest electric ROV manufacturer in the world, with a range used across the oil and gas industry, defense, marine science, underwater tourism, and hydro-engineering. Its parent, Saab Underwater Systems, is itself a world leader in sensor systems, precision engagement systems, and remotely operated and autonomous underwater vehicles.

For more information, visit www.seaeye.com.



Phoenix MICRO-rov, xBot III, investigates Deepwater Horizon

Phoenix International Holdings, Inc. (Phoenix) successfully performed a detailed video inspection of the Deepwater Horizon control room lying in 5,000 ft of water in the Gulf of Mexico using its micro-ROV, xBot III. The inspection was part of an investigation led by the U.S. Coast Guard and conducted by the Navy's Office of the Supervisor of Salvage and Diving (SUPSALV).

Phoenix is SUPSALV's prime contractor for underwater search and recovery and, for this effort, mobilized and operated one of the Navy's deepwater ROVs, Deep Drone. The Navy also contracted for use of xBot, a Phoenix-owned asset used for commercial operations. xBot and its cage were integrated onto Deep Drone prior to mobilization to the job site.

The Phoenix-designed micro-ROV is a battery powered, fiber optically controlled vehicle that relies on extensive use of company designed, pressure tolerant electronic and energy systems. The result is a very small, highly maneuverable, stable, underwater vehicle for penetration and inspection of highly restricted spaces and other hazardous environments in water depths to 20,000 ft. xBot contains an onboard supply of expendable fiber optic

umbilical, and unlike cable powered ROVs, does not need to retrace its route in order to use the same location for ingress and egress.

Deep Drone collected extensive external video documentation on the present condition of the sunken rig, while xBot was used to penetrate confined spaces and conduct internal inspections as directed by the investigation team. xBot's unique design features allowed the collection of information within the jumbled wreckage otherwise unobtainable if more traditional underwater systems had been used. Multiple excursions were expeditiously conducted, with all project goals met ahead of schedule.

Upon completely satisfying the investigators' video requirements, xBot returned to its cage onboard Deep Drone where its umbilical was cut free using Deep Drone's manipulators. Deep Drone then returned to the surface and a new fiber optic umbilical spool was quickly installed on xBot in preparation for its next excursion. xBot's flawless performance throughout the project attests to its reliability, operability, and suitability for such challenging tasks, and its modular design permitted very short turn-around times between missions.

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

Underwater Intervention

New Hybrid ROV under development

Sperre, Norway, is developing a new ROV concept (H-ROV) that is expected to make remotely controlled underwater operations more efficient. The concept distinguishes from ordinary ROVs is that its thrusters can swivel round their own axes to provide optimal driving power in the direction of travel as well as compensate efficiently for current and cable drag. This offers an improvement in performance of anything from 30% to 50% compared to all conventional ROVs currently in production.

This means that the H-ROV will be particularly suitable for subsea dynamic positioning and autotraction operations. The buoyancy element with its thruster(s) will also be capable of rotating independently of the H-ROV's main chassis and the thrusters platform, allowing the H-ROV to simply redefine "forward" and "aft", and thus enabling more equipment to be mounted and employed on operational tasks as well as providing a 360° view.

The H-ROV can be fitted with a tooling skid that can also be rotated via the forward edge that has been defined for it. This means that the H-ROV can carry four times as many interface tools and sensors as a conventional ROV. A simple comparison might be with a manual lathe vs. a CNC machining centre.

The H-ROV will meet future needs for extra sensors and tools and will be more cost-effective at great depths since it will not be necessary to bring it to the surface for reconfiguration. It will be operating as a tool for the offshore industry, research, marine biology and archaeology, and environmental studies, etc.

Combination provides new tool for oil spill analysis

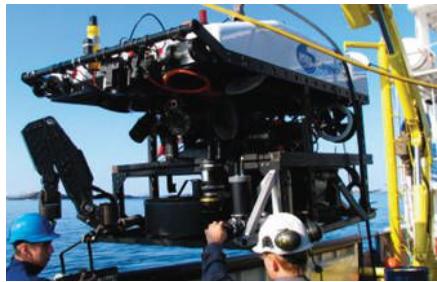
In response to the rapidly growing demand for highly portable and adaptable methods for measuring water quality and oil pollution — particularly in conjunction with the impact of oil spills on marine habitats — VideoRay and Turner Designs announced the integration of the industry-standard Turner Designs C3 Submersible Fluorometer with the world's most popular observation remotely operated vehicle.

The Turner Designs C3 is specified by the U.S. Coast Guard in the SMART protocol for detecting the presence of oil. The C3 Submersible Fluorometer is designed to incorporate up to three optical sensors, temperature, and depth. Sensors can be selected to detect crude oil, refined fuels, CDOM, in vivo chlorophyll a, blue-green algae, rhodamine WT dye, fluorescein dye, and optical brighteners. Turbidity sensors are also available.

The VideoRay is a popular ROV system for underwater scientific research and is used by Gulf Coast researchers at the University of Southern Mississippi, University of West Florida, Louisiana State University, Florida State University, and others. Its small size, powerful thrusters, advanced camera and recording capabilities and wide range of sonars, positioning systems, and attachments and sensors make it ideal for research use.

Turner Designs provides innovative fluorescence-based solutions for basic research, water quality analysis, pollution control analysis, and industrial applications.

Having a unique focus on fluorescence instrumentation for over 35 years and customers throughout the world, Turner Designs is known for rugged, reliable, and stable submersible, field, handheld, laboratory, and online fluorometers and turbidimeters varying in functionality, size, and price.



With more than 1,700 ROVs in service around the world, VideoRay has clearly become a global leader in observation ROV technology.

For more information, visit www.videoray.com.



IMCA conducts global ROV statistics

Fewer ROV personnel at work in 2009 than in 2008; more inspection work using ROVs in 2009 than in 2008; the majority of ROV operations take place in the International Marine Contractors Association (IMCA) Europe and Africa region — these are just some of the findings of the worldwide ROV personnel and vehicles survey undertaken by the association.

"We collected global figures roughly 6 months apart on a single date in February and August in 2008 and 2009," explains Jane Bugler, IMCA's Technical Director. "The figures represent personnel and vehicles of IMCA members submitting statistics, but we believe that the information is broadly representative of a significant proportion of the ROV industry."

"Of course, the figures represent a snapshot and do not take account of any major contract completed shortly before the days of the count or any that may have started shortly after. However, they provide — as we have already seen by comparing personnel figures over 2 years — a useful benchmark."

February 2008 saw a total of 3,350 personnel involved (3,269 ROV superintendents, supervisors, and pilot techs of all grades, and 81 other offshore ROV support personnel). In August 2008, the total figure was 3,846 (3,748 + 98); then in February 2009, the total was once again 3,350 (3,291 and 59), while in August 2009, the total figure was 3,544 (3,476 + 68).

In February 2009, there were 596 ROVs involved in worldwide operations, while in August 2009 there were 587 — by far the greatest number were Class III ROVs (439 in the February, and 453 in the August).

Before undertaking these latest surveys, IMCA used to collect ROV personnel statistics purely for the North Sea area (Denmark, the Netherlands, Norway, and the UK) and this is the first worldwide survey.

SMD opens Houston facility

SMD has announced that in order to better support customers in the Americas, they have made the commitment to open a facility in Houston, Texas. Customers will be able to get help, spares, training, and support for their existing equipment. Clients will have access to thrusters, hydraulic power packs, control systems, and other sub-assemblies, enabling them to upgrade or develop their own subsea equipment.

The past 4 years has seen a remarkable growth path for SMD. In that time they have delivered 70 work class ROV systems and a range of very high-powered trenching vehicles up to 3200-hp. Customers include Subsea 7, Hallin Marine, MBARI and Subcom (formerly Tyco Telecommunications).

SMD's hugely popular Quantum construction-class and Quasar work-class ROVs have a new addition in 2010. The ultra-compact Atom is an hydraulic ROV specifically targeted at new entrants to the underwater intervention market or established contractors looking to extend the capabilities of their existing fleet. The Atom still has the same power and manipulator suite expected of a work class vehicle, but its physical size, practical construction, and operational flexibility means that it has one of the lowest lifetime cost of ownership.

For more information, visit www.smd-us.com.

PGS Deploys First GeoStreamer® with eBird®

Kongsberg Seatex, Kongsberg Maritime's specialist in position reference systems and attitude determination, has through the introduction of the eBird® redefined lateral steering within the seismic industry for streamer control. eBird® was launched just last year and will now be deployed in full scale on a PGS vessel.

PGS has signed a contract with Kongsberg Seatex AS for use of eBird® on a Ramform vessel equipped with its latest 3D GeoStreamer® technology. GeoStreamer® is PGS' proprietary and the seismic industry's first multi-component towed streamer system, providing improved data quality, broader bandwidth, reduced noise, increased weather window, and greater operational efficiency.

"PGS has over the past years carried out extensive functional and reliability testing of the Kongsberg eBird system to verify it meets our stringent product qualification standards and operational requirements. eBird has fulfilled our expectations and we are now outfitting our first Ramform vessel with a full eBird installation in line with our strategy to standardize on eBird as the primary system for controlling our GeoStreamer 3D and 4D spreads," says Nils Lunde, Head of Marine Engineering at Petroleum Geo-Services (PGS).

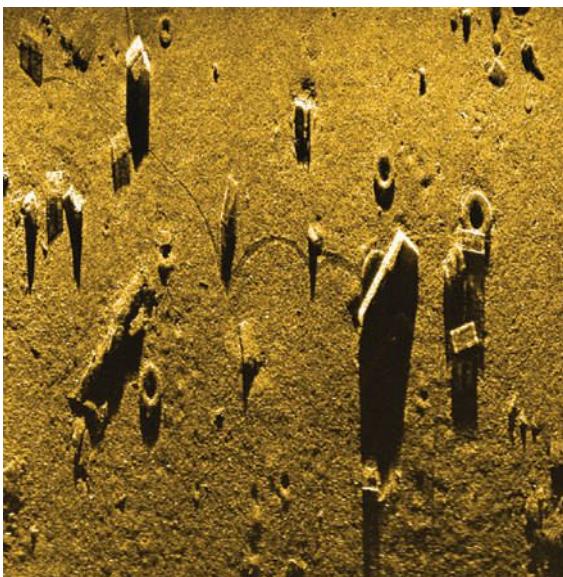
eBird® is a novel bird solution for lateral, vertical, and roll streamer control in marine seismic acquisition that enables fault tolerant and efficient multi streamer steering by employing a wide range of innovative and patented technological solutions. The eBird® technology is developed in close cooperation with PGS, which has also validated the use of eBird® in seismic data acquisition production.

eBird® complements the wide range of solutions provided to the seismic industry by Kongsberg Seatex including Seatrack™ and RADiUS® tail-buoy and gun-float tracking, Seapath® advanced positioning and precise heading solutions, MRU and VMM attitude determination systems, HMS 100 helideck monitoring, and AIS 200 Automatic Identification System. Further, Kongsberg Maritime provides a range of solutions for advanced vessel navigation and control together with AUVs and acoustic systems.



Bowtech Completes Contract for Cameras

Some time back, L-3 Klein was invited by the United States Department of Homeland Security to perform an in-depth, comparative demonstration of its L-3 Klein System 3900 Search and Recovery System. The comparative assessment was performed by the U.S. Space and Naval Warfare Systems Center (SPAWARSCEN) which was tasked with evaluating the capabilities, limitations, and usability of the system.



L-3 Klein was not informed as to which other systems were going to be evaluated and assessed. The results of that assessment have recently been made available.

In the final summary report, the L-3 Klein System 3900 scored the highest in overall performance and value. The L-3 Klein was rated as the top performer, and when it comes to imaging L-3 Klein's motto is "*The Difference is in the Image*" as can be seen from the System 3900 image.

L-3 Klein will continue to focus, design, build, test and release state-of-the-art products that are required for the underwater industry.

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

Bowtech Completes Contract for Cameras

Bowtech Products announced they have recently completed a contract to supply cameras and cable assemblies to the European Commission Directorate General for Energy.



Fifteen low-light and high-resolution monochrome underwater cameras and cable assemblies were provided to EURATOM (European Atomic Energy Community) who are responsible for monitoring most Nuclear Power Stations in Europe. The cameras will be essential in the monitoring of safety and security of spent nuclear fuel within storage facilities.

Bowtech's engineering team custom-designed and built the cameras to meet the stringent project design parameters, which included challenging size constraints and considerations to meet the harsh environment in which the cameras will be deployed. EURATOM project leader declared, "I've admired your company from day one because the whole project was handled with great interest from everybody. Your perseverance in handling the technical difficulties and bringing it to a good end for both parties is rare these days."

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

BIRNS, Inc. team achieves new J-STD-001 Class 3 and WHMA-A-620-A Class 3 certifications

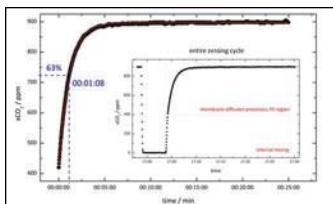
BIRNS, Inc., an ISO 9001:2008-certified global leader in the design and manufacturing of high-performance connectors, penetrators, custom cable assemblies, and lights for deep ocean, marine, military, and nuclear power markets, is proud to announce the two newest levels of advanced certification of its team of expert electrical technicians, assembly, and inspection personnel. The entire team recently achieved new J-STD-001 Class 3 and WHMA-A-620-A Class 3 certification to add to the company's impressive list of rigorous industry qualifications.

CONTROS Rolls Out Improved HydroC™ CO₂ Sensor

CONTROS Systems & Solutions GmbH, Kiel, Germany, has recently introduced an upgraded version of the optical-based underwater CO₂ sensor, "HydroC™", following extensive proving trials and scientific validation. The CONTROS HydroC™ sensor was evaluated for its easy handling and very positive quality characteristics in the ACT performance statements, which were announced by the organizers 2 weeks ago (<http://www.act-us.info>).

The latest version of the CONTROS HydroC™ sensor includes the external SBE-5T pump with a special designed flow head. Using this pump, the CO₂ sensors response time has been significantly decreased to approximately 1 minute (see Figure), which makes it the fastest on the market. To achieve this effect, several flow heads were designed with the aid of 3D CAD programs, where also flow simulations were done; afterwards, the designs were put to test in order to get the actual performance of each design. These features make the HydroC™ the smallest, lightest and fastest deepsea CO₂ sensor system available on the market.

For more information, visit www.contros.eu.



ORE ships long-life acoustic releases



ORE Offshore (an affiliate of EdgeTech) recently announced completing another shipment of 100 long-life acoustic releases. The expedient delivery comes within just 3 months of the most recently announced large shipment. The new Push Off Release Transponder Medium Frequency Extended Life (PORT MFE) system continues to gain popularity due to the 5-year battery life and unique corrosion-resistant and biofoul-resistant push-off release mechanism. Along with the shipment of the PORT MFE systems, multiple surface command units, model AMD200RMF, were sent to the customer as well.

For more information, visit www.ore.com



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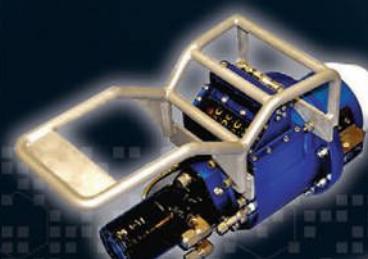


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BioSonics unveils autonomous submersible echosounders

BioSonics Inc., provider of innovative sonar solutions, has taken a quantum leap forward with its latest release, the DT-X SUB, a self-contained, programmable echosounder for scientific data collection. The system consists of a scientific echosounder with data storage and power systems integrated and packaged in a compact, waterproof housing. The BioSonics DT-X SUB is lightweight, has no external cabling, and is intended for monitoring and assessing all types of aquatic organisms from zooplankton to marine mammals. Company President Tim Acker explained his excitement about the new system: "This technology has the capacity to revolutionize hydroacoustics and greatly expand our understanding of the under-sea world. It will enable data collection in environments never before possible."

Development of the DT-X SUB was driven by increasing demand for information about aquatic animals' temporal behavior and distribution over time. Continuous, long-term underwater observation requires the use of autonomous, energy-efficient monitoring devices. The DT-X SUB offers solid-state RAID stor-

age and fully programmable duty cycle and echosounder configuration, enabling the user to collect and store hydroacoustic data during the day and night and during each tidal cycle for extended periods.

Power system functionality monitors available power levels and performs a controlled shut down when power runs low. The system can then automatically reboot only when power levels are restored.

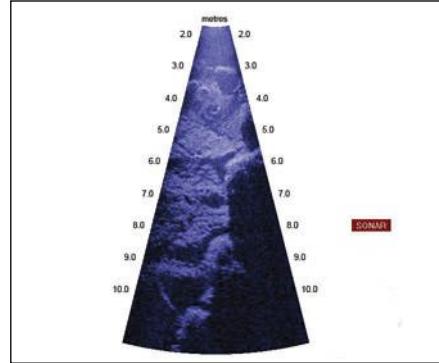
The system circuitry and features evolved from BioSonics' experience building customized echosounders for AUVs and underwater observatories where space and payload requirements are minimal. The new DT-X SUB offers a compact, lightweight design packaged in a 25-cm diameter housing that is 55 cm in length.

Submersible to 1,100 m, the DT-X SUB is ideal for ROV, AUV, or seafloor observatory deployments.

For more information, visit www.biosonicsinc.com.

Acoustic imaging reveals new detail of lost town

Off the coast of the Dunwich in Suffolk lies half a medieval town long since abandoned to the encroaching sea.



Despite many diver and sonar surveys, the extent and detail of the well-known site are still unknown as poor visibility frustrates its study.

In June 2010, acoustic imaging technology was introduced to the archaeological survey of the site, revealing until now unknown detail of the underwater remains.

The site of the sunken town of Dunwich has been the subject of debate for several centuries, and the question of how much of the ancient capital of East Anglia remains just off the coast has been the subject of countless diving and archaeology projects. Since the 1300s, historic buildings have been lost to the relentless encroachment of the North Sea but attempts to gain any detailed view of what lies beneath the water, the silt, and the sand off the coast have been frustrated by the poor visibility near the seabed.



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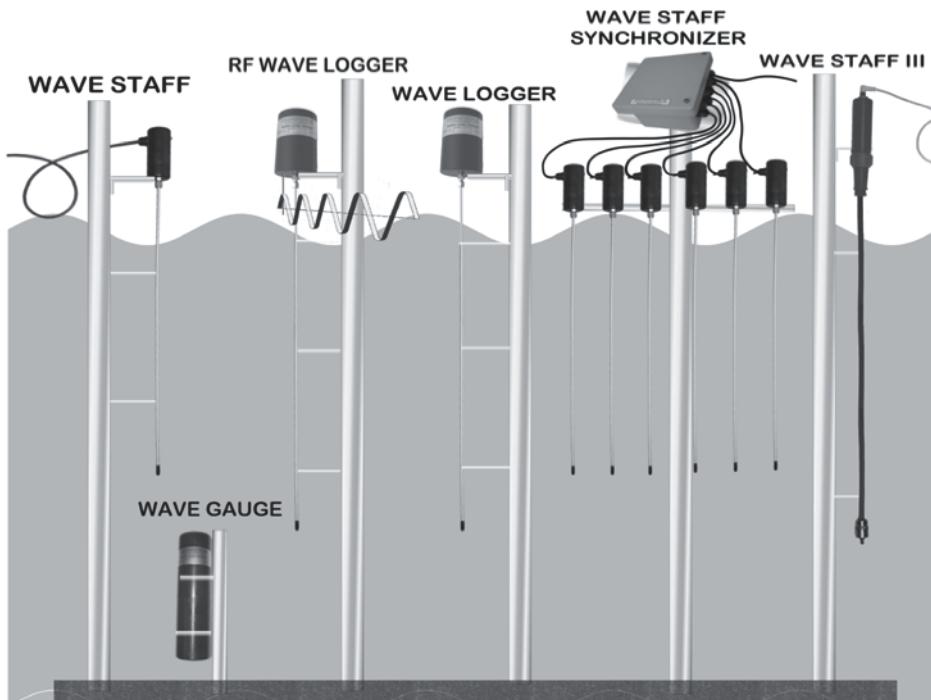
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In June 2010, a team working with the BBC and MacArtney Underwater Technology employed new technology to examine the Dunwich site. Marine Archaeology Professor, David Sear, based at the University of Southampton's School of Geography, teamed up with divers including Andy Rose from the diving instructor company, Learn Scuba, based in Lowestoft, and enlisted the help of sonar imaging expert, Mike Sawkins from the MacArtney Underwater Technology Group. They deployed a special sonar camera, the diver-held (DH) DIDSON.

Each diver clipped onto a shot line that had been previously positioned over the ruins using GPS navigation and side scan sonar data. The divers could then undertake circular sweeps of the sea bed around the shot line, gradually increasing their radius of survey. A set of data was taken hanging over the ruins at a distance of between 8 to 15 meters and the second set for close up visualization at 1 to 5 meters within the ruins.

The combination of high frequencies, acoustic lenses, and very narrow beams increased the image detail and gave archaeologists greater detail of the site than ever before available.

The DIDSON diver-held system enabled us to see for the first time the worked and rubble masonry on the seabed from the ruins of St. Katherines Chapel and St. Nicholas Church lost to the sea in c.1550 and 1480, respectively. This ability starts to open up the options for marine archaeology in nearshore shallow turbid waters around coasts," explained Professor Sear from the University of Southampton's School of Geography

This field trial, which was the first ever use of the DIDSON imaging system for non-wreck marine archaeology, could change the way archaeologists examine offshore sites where visibility is low, especially where the coastline is silted by rivers or eroded away by the sea.

For more information, visit www.macartney.com.

Scientists finds uses for pingers

Researchers at Pukyong National University in Korea are working with scientists from the country's Hydrographic and Oceanographic Administration (KHOA) to study the affects of ocean currents. One of the instruments they employ is the Acoustic Doppler Current Profiler. The ADCP is used to measure current

flow in oceans, estuaries, rivers, and streams. Attaching a pinger to the ADCP ensures it can be recovered should it break free from the mooring. The pingers frequently used by these scientists are JW Fishers SFP-1

single frequency pinger and MFP-1 multifrequency pinger. The single frequency transmits only one frequency, which is set at the factory. The MFP-1 can transmit any one of 60 different frequencies, which can be set in the field. This allows many pingers to be set at different frequencies and placed in close proximity to each other.

The PR-1 receiver will locate any pinger frequency between 3KHz and 97KHz.

For more information on Fishers equipment go to www.jwfishers.com.



KHOA's Ms. Kang with MFP-1 pinger in extended housing

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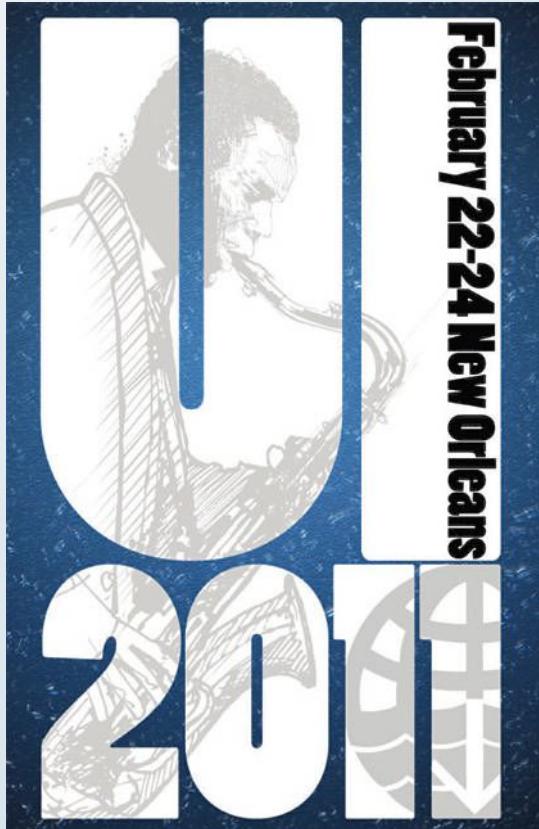


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Corporate Showcase

Channel Technologies Group

Channel Technologies Group (CTG) provides world class quality piezoelectric ceramics, transducers, and full acoustic systems. In addition to offering several developed products, CTG's core strength is its ability to provide custom solutions that satisfy customer's specifications.

Formed on September 1, 2009, CTG is the new, streamlined combination of three sister companies: Channel Industries, International Transducer Corporation (ITC), and Sonatech.

The combination into one company was made to better serve the piezoceramic, transducer, and underwater acoustic marketplace. By merging the already vertically aligned companies into distinct divisions of CTG, the three united divisions have optimized the company's core offerings and continue to provide first rate products with improved customer service at more competitive prices. "As a result, Channel Technologies Group now spends more time and energy developing premier solutions for a broader base of our customers," said CTG President, Kevin Ruelas.

Channel Industries Division – Piezoelectric Ceramics



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

Since 1959, piezoceramics produced by the Channel Industries Division of CTG have been at the heart of thousands of underwater acoustic applications and systems. Channel Industries manufactures lead zirconate titanate and barium titanate compositions. Producing standard piezoelectric ceramic shapes, as well as customized dimensions, Channel's extensive knowledge of piezoelectric physics and years of experience have earned them the reputation for producing some of the highest quality ceramics in the world. Many engineers involved with the development of new and novel applications depend on the consistent performance of Channel ceramics and their high level of technical support.

Channel Industries products are used in numerous applications, from hydrophones, towed arrays, modems, and

side-scan sonar to custom military, medical, and commercial applications. Servicing the best known companies in America and abroad, Channel's engineering and manufacturing capabilities provide the technology necessary to meet new applications as they arise.

ITC Division – Transducers



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

The ITC division of CTG is a leading manufacturer of acoustic transducers for ship and submarine sonar, oceanographic survey, seismic exploration, marine life research, medical devices, and industrial proximity sensing. Founded in 1966 by Theodore Madison, ITC provides design, development, and manufacturing of acoustic and ultrasonic transducers for a wide range of applications.

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

Sonatech Division – Systems



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

Since beginning operations in 1973, the Sonatech Division of CTG has been a leader in the design and development of underwater navigation and sonar equipment for the United States Navy and various other U.S. and foreign government

research, and military customers. Within the first two years of its founding, Sonatech's rapidly attained reputation as a designer and manufacturer of reliable ocean instrumentation led to its selection as the principal provider of deep ocean precision acoustic positioning systems for the Strategic Systems Project Office (SSPO). Over the course of the following quarter century, Sonatech has continued to develop innovative, high-reliability equipment and systems, meeting a wide range of specific customer requirements.

Initially a supplier of long-baseline navigation equipment, with excursions into acoustic wellhead re-entry navigation, digital depth sounders, surface impact location, and data telemetry systems, Sonatech has since expanded its expertise into sonar systems, developing a variety of forward-looking, side-looking, obstacle-avoidance, and homing/docking sonars of medium and high resolution, some utilizing synthetic aperture technology. The Sonatech Division is ISO 9001:2008 certified.

Facilities, Quality, and Experience

CTG operates an engineering and manufacturing center in Santa Barbara, California. The 75,000-square-foot facility contains design, development, manufacturing, and test capabilities for a wide range of technical disciplines. It is staffed by professional, technical, and manufacturing personnel with a broad range of experience in piezoelectric physics, transducer design and development, underwater acoustics and oceanography. Custom engineering, software development, unique manufacturing methodologies, and the highest standards in quality control have ensured their success for over 50 years.

By utilizing the continuous improvement of procedures, processes, and materials, CTG continues to provide the highest level of technical performance, customer service, and product support on every component and system.

For more information:

Channel Technologies Group

www.channeltechgroup.com

Email: rcopperman@channeltech.com

Channel Industries

www.channelindustries.com;

Email: ciisales@channeltech.com

ITC

www.itc-transducers.com;

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Corporate Showcase

SeaBotix, Inc.

SeaBotix Inc. was founded almost 10 years ago in San Diego, California. Since the beginning, SeaBotix has continued to manufacture world-leading MiniROV systems. Starting off the company's success story was the introduction of the first professional grade MiniROV system called Little Benthic Vehicle or LBV for short. Designed and built through the guidance of the company's founder and industry icon Donald Rodocker. As a result of being at the industry's forefront, SeaBotix has experienced a steady growth and for the past two years ranked in the Deloitte Fast 500.



In addition to the foundation set by the introduction of the LBV, the company has continued to produce revolutionary new products, including the only true MiniROV/Crawler hybrid system called the Little Benthic Crawler or LBC. This unique product has become the number one choice among militaries around the world due to its high level of capability and versatility.

2010 saw the introduction of yet another world's first when SeaBotix developed in cooperation with the UK Fire & Rescue a rapid response rescue system. The SARbot™ was introduced in the middle of the year as a response to cold water near drownings and the ability to save lives. No other



ROV system has ever been designed specifically for rescue, they have only been used for recovery. SeaBotix undertook the project to provide a life-saving solution that can be easily deployed in demanding conditions. The result is a highly capable, rapid response body rescue system with patent pending limb grasping jaws, multi-beam sonar, and integrated control system. With the release of the SARbot™ in the UK, the concept is gaining global interest as more understand the new possibilities in safely rescuing people that may have otherwise died. A very exciting concept.

Plus, this year has seen the introduction of the new Vectored Little Benthic Vehicle or vLBV. The vLBV is the first small vectored ROV that is bridging the gap between work class ROV capability and small ROV portability. There is a huge demand for an ROV of this capability that has been filled previously by larger, more expensive systems.

2011 is set to be a record breaking year for SeaBotix with many years of continued growth to follow. Exciting times with exciting new products that provide real solutions.

Contact Details:
SeaBotix Inc.
2877 Historic Decatur Road,
Suite 100
San Diego, CA 92106
USA
Tel: +1 619 450-4000
Fax: +1 619 450-4001
E-mail: Info@SeaBotix.com
Website: www.SeaBotix.com

SEABOTIX



PART:

Little Benthic Vehicles

VIEW:

CAPABILITY WITHOUT COMPROMISE

SeaBotix Inc. offers the widest range of compact capable ROVs in the world. No other system offers the high level of performance, versatility and intuitiveness. Proven by more than 750 operators worldwide in a diverse range of applications.

TECHNOLOGY:



Intuitive Control System

Award winning integrated control system and navigation console.



High Resolution Imagery

SD or HD video imagery for uncompromising real time feedback.



Powerful Thrusters

Brushless DC thrusters for optimum thrust and performance.



Ultra Low Drag Tether

Small diameter Kevlar reinforced tether for minimal impact.

NOTES:

World leading MiniROV manufacturer setting the benchmark.

QR CODE:



LOCATION:

www.SeaBotix.com • Tel: +1 619.450.4000 • Email: Info@SeaBotix.com

Corporate Showcase

AK Industries

AK Industries is a small and agile high-tech manufacturer of underwater electrical connectors and a wide range of custom products for underwater applications.

Vertically Integrated Manufacturing

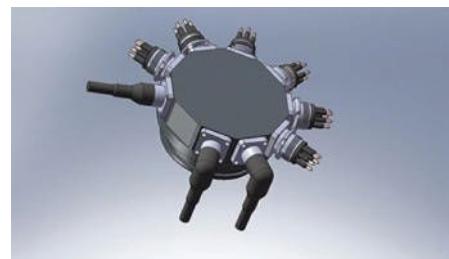
AK Industries has an ultra modern machine shop with the latest in vertical

machining, horizontal turning, and Swiss type turning. Therefore, it is capable of making all of its own connector shells, electrical contacts, and tooling. Additionally, it has a very capable fabrication shop where it custom builds its own molding presses and special fixturing.

The advertisement features the AK Industries logo on the left, followed by the text "HydroVolt Underwater Electrical Connectors". Below this, a paragraph describes new PBOF (pressure balanced oil filled) connectors with unique features like a full metal shell and color-coded leads. A large image of a multi-pin connector is shown, along with the website address www.ak-ind.com. At the bottom, contact information for AK Industries is provided: 3115 E. Las Hermanas St., Rancho Dominguez, CA 90221, Phone: 310-762-1600 | Fax: 310-762-1616.

HydroVolt

The flagship product is HydroVolt, an extremely rugged and reliable low-cost connector line. HydroVolt connectors have many unique features. The list of features includes color-coded leads on bulkheads, internal waterblocking, pressure wall on bulkheads, and bending strain relief on the plugs. All electrical contacts are gold plated to ASTM B488-01 type 2 class 0.50 or 1.25.



Custom Products

AK Industries makes a wide range of custom products including pressure bottle end caps, flange mount connectors, penetrators, and J-boxes. Also, purpose-built connectors can be manufactured for unique applications.



Quality Control

AK Industries has a complete quality control laboratory with virtually every type of electrical test equipment. They have an 18,000 psi "Benthos Bullet" that is made from an Iowa class battleship 16" shell. They also have one of the largest 10,000 psi pressure test tanks in the industry. The internal dimensions are 11.5" diameter and 26" long. Access to both ends of the tank is possible.

Potential customers are encouraged to inquire about standard or custom manufactured products.

Contact Information

AK Industries
3115 E. Las Hermanas St.
Rancho Dominguez, CA 90221
310-762-1600
www.ak-ind.com
info@ak-ind.com

Corporate Showcase

Subconn

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

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



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

SubConn Inc. has recently introduced a fully qualified Ethernet data series connectors. These systems offer 1 Gbps data transfer at distances up to 100 meters in shallow or full ocean depth applications. The series is available as Ethernet data only or Ethernet data and power configurations.

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

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



Underwater Wet Mateable Electrical Connectors



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- Micro
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- Metal Shell
- Power
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- Penetrators
- Ethernet Connector



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Corporate Showcase

Birns, Inc.

BIRNS, Inc. has been shaping the innovation of marine technology since 1954—and is now an ISO 9001:2008-certified global leader in the design and manufacturing of high performance lights, connectors, penetrators, and custom cable assemblies for demanding subsea, marine and military applications.

A Legacy of Illumination

2010 marks the 50th anniversary of BIRNS' ongoing partnership with the U.S. Navy—from groundbreaking innovations like the BIRNS Snooper™, a 3km-rated 3200K light, to the revolutionary



Commercial diver surfaces in Santa Barbara, CA, with new BIRNS Snooperette-LED lamp.

BlackBIRNTM, the first self-contained underwater Magnetic Particle Inspection (MPI) system allowing individual divers to detect leaks and weld defects in underwater steel structures. BIRNS continues to lead the industry today with a diverse range of lights, including its new LED BIRNS "L" series—chamber, helmet, and ROV work lights—all with 50,000 hour lamp lives and brilliant illumination.

Milestones in High Performance Connectivity

As a connector user as well as a connector manufacturer, BIRNS has a unique perspective on the changing needs of its customers. In the 1980s, BIRNS began creating advanced, innovative connector products—that now undergo open-faced saltwater hydrostatic pressure testing and achieve the lowest optical losses (>2 dB at depths of 6 Km) in the industry. BIRNS recently introduced standard options for the most cutting edge technology—like the new standard hybrid BIRNS Millennium™ 3T series, capable of handling both high (<3.6kV) and low (<600) voltage conductors, up to 31 electrical wires and up to 10 optical fibers.

Another incredible milestone was achieved in 2010—BIRNS now provides the

industry's highest volume of cost-effective, in-house hydrostatic and helium pressure testing, so BIRNS penetrators are the only ones on the market that can be ordered with inclusive pricing and lead times for stringent ABS/DNV certification.



Hawaii Undersea Research Laboratory's (HURL) research submersible Pisces V, equipped with more than 20 BIRNS penetrators, is launched off Oahu for a test and training dive at 2,000m.

BIRNS is proud of its long, successful heritage and looks ahead eagerly to the next half century of providing powerful elegant solutions for severe marine environments.

**Shaping the industry since 1954
with trusted solutions for the planet's
most demanding environments.**



CHAMBER LIGHT-LED



SNOOPERETTE-LED



AQUILA-LED



3T STD. EO HYBRID



3F MINI-OPTICAL

PRESSURE-BALANCED OIL FILLED

ISO 9001:2008-certified designer and manufacturer of high performance lights, connectors, penetrators and custom cable assemblies.



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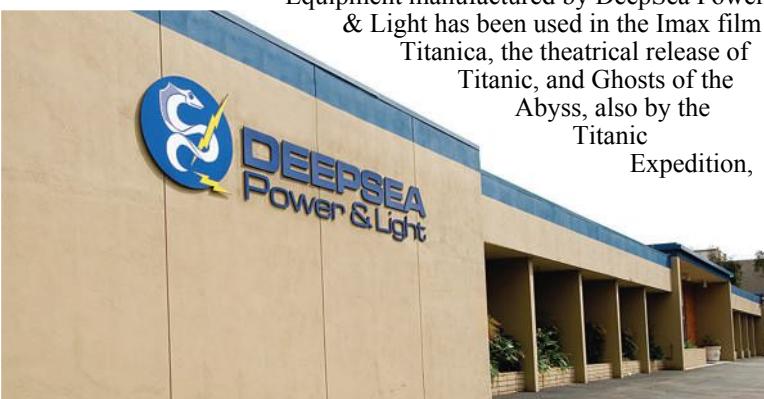
BIRNS
High Performance ...
Under Pressure

Corporate Showcase

Deep Sea Power & Light

DeepSea Power & Light is one of the leading innovators and manufacturers of high-quality, durable underwater LED and traditional lights, video cameras, flotation spheres, pressure compensated batteries, lasers, pressure relief valves, and other components for diver, ROV, AUV, manned submersible, and other applications that must perform in the harsh marine environment anywhere at anytime. Many of its products operate to deeper than 6 km, and some to full ocean trench depth. DeepSea provides pressure testing services and optical testing services for many worldwide customers in the seven chambers it owns and operates on site.

Equipment manufactured by DeepSea Power & Light has been used in the Imax film *Titanica*, the theatrical release of *Titanic*, and *Ghosts of the Abyss*, also by the *Titanic* Expedition,



Bismark Expedition, National Geographic Society, Woods Hole Oceanographic Institution, Lockheed, Oceaneering, Scripps Institution of Oceanography, and on the deep diving submersibles Alvin, Sea Cliff, Jason, Turtle, Nautilus, Mirs I & II, Kaiko, and the Shinkai 6500.

Since 1983, DeepSea Power & Light has designed its products with the customer in mind, providing value and performance. All its products are thoroughly tested before leaving the factory, including a pressure test to rated depth.

DeepSea Power & Light is headquartered in 36,000 square feet of high tech manufacturing space. Included in the plant are environmental and pressure testing facilities, an optics laboratory with a 1m integrating sphere, a complete machine shop, an engineering ceramics facility, SolidWorks drafting stations, mechanical and electronics labs, cable assembly shop, controlled stock and shipping areas, and highly functional production space.

DeepSea Power & Light's experienced technical sales staff can provide guidance to any underwater imaging or project design.

Contact

Pedram Pebdani, Director of Oceanographic Sales
pedram_pebdani@deepsea.com
(858) 576-1261 with your question, or visit our website at www.deepsea.com.

The advertisement features a large, detailed image of the SeaLite Sphere, a compact, cylindrical underwater light. The sphere is black with gold-colored accents and branding. The word "SeaLite" is printed vertically along its side, and "Sphere" is at the bottom. A small circular logo with a stylized fish is also visible. In the background, there is a mathematical formula for the volume of a sphere, $V = \frac{4}{3}\pi r^3$, and a smaller image of the sphere with the text "[actual size]" above it. The overall background is dark blue with some abstract white shapes. At the bottom, there is a yellow banner with the text "SeaLite® Sphere" in large blue letters. Below the banner, the website "www.deepsea.com" and the phone number "800-ITS DSPL (800-487-3775)" are listed. To the right of the banner, the slogan "THINK SMALL. PERFORM BIG." is written in large, bold, yellow capital letters.

Corporate Showcase

ECA Hytec

Since 1981, the Montpellier division of ECA SA has specialized in the design and production of robotic and CCTV systems (under the trademark ECA HYTEC™) for intervention in the "hostile environment," namely underwater, down to 6,000-m.

Beyond the wide range of underwater TV cameras, ECA HYTEC produces several ROVs:



• The (6,000-m depth rated) ROBIN, operated by IFREMER (the French Oceanographic Institute) from the



manned submarine NAUTILE, that inspected the Titanic wreck as from 1987.

• The 300-m depth rated H300MkII is a very successful class II observation ROV with substantial payload capability, 10 of which have recently been delivered to the Malaysian Coast Guards.



• The work class H1000 ROV (1,000-m) equips the French Navy.

• The Roving Bat ROV is an hybrid that can reach its target in free-flying mode, completely tilt up or roll to one side and then stick to any particular vertical or inclined surface, then move along this surface in crawling mode to run a close inspection, even by rough sea. A typical application is the hull inspection of FPSO units or vessels.

For more information, visit www.ecahytec.com.

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HYBRID VEHICLE Classical ROV + Crawler
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- Inspection of walls of pools and tanks.

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Marine National Monuments: Marine Stewardship for the 21st Century

Partnerships across the Pacific: Collaborative Ocean Research

Marine Geology and Geophysics: The Science of New Pacific Islands

Coral Reefs: Nearshore to Deep Ocean

Maritime Security: Preparedness, Response and Recovery for the Marine Environment

Invitation to Exhibit

Send inquiries to
Sue Kingston
s.kingston@ieee.org



MTS

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IEEE

People & Company News

Comtech EF Data Corporation announced it completed the acquisition of **Stampede® Technologies, Inc.**, developer of the FX Series WAN optimization and application acceleration platforms. The acquisition enables Comtech EF Data to further expand its Wide Area Network (WAN) optimization product offerings for commercial applications.

The Association of Diving Contractors International will induct **Thomas Angel** into the Commercial Diving Hall of Fame at this annual Underwater Intervention Conference, February 2011. Those awards are intended to recognize and honor individuals whose dedication and accomplishments have significantly contributed to commercial diving. Angel has over 50 years of experience in various fields including underwater pipeline construction, salvage, repair, diving, ROV (remote operated vehicles), and business management.

Foster Marketing Communications recently celebrated its 30th anniversary with events in Houston and Lafayette, La. Foster Marketing was founded in 1980 and quickly developed its niche as a leading oil and gas marketing communications firm, providing business-to-business marketing solutions to clients around the world.

InterMoor, an Acteon company, has named **Jacob Heikes** and **Dusan Curic** project managers, announced InterMoor President Tom Fulton. Based out of InterMoor's Houston office, Heikes and Curic will be responsible for project management, procedure development and offshore supervision for both subsea and mooring projects.

Wave energy developer Aquamarine Power continues to strengthen its team with the appointment of **Dr. Patrick (Paddy) O'Kane** as the company's new Chief Technical Officer. He brings with him extensive experience in the renewable energy industry. Dr. O'Kane joins Aquamarine Power from SSE Renewables, the UK's leading renewable energy generator.

Global marine rental company, **Ashtead Technology**, has announced the appointment of agency, **Scope**



Heikes



Curic

Engineering (WA) Pty Ltd, to represent them in Australia, New Zealand, and Papua New Guinea. Scope is a well-established Perth-based fabrication and engineering solutions provider, ideally placed to represent Ashtead Technology's Offshore Division in Australia.

Leading deep-sea shipwreck hunter, **David L. Mearns**, has been awarded an honorary Medal of the Order of Australia (OAM) for service to Australia by locating the WWII shipwrecks of HMAS Sydney II and AHS Centaur. Mearns was also recently awarded a prestigious Maritime Fellowship Award by the UK-based Maritime Foundation for an outstanding lifetime contribution in a particular maritime field.

Saab Seaeye, manufacturer of electric remotely operated vehicles (ROVs), is to take responsibility for the Saab group's underwater vehicle division that currently forms part of Saab Underwater Systems in Motala, Sweden. International sales and marketing functions and equipment manufacture will move from Sweden to be integrated into Saab Seaeye's centre of operations at Fareham, UK.

SURF Subsea, Inc. (SURF), announced **Jim McClaugherty** has joined the team as Vice President of Business Development. He will have the responsibility of leading the company's Sales and Marketing efforts. Jim has 40 years of experience in the Offshore Industry. He started his career as a commercial diver in the Gulf of Mexico where, over a 10-year period, he held various positions, including tender, Diver, and Dive Supervisor.

Teledyne TSS customers can now benefit from a new facility that enables their TSS 440 pipe and cable trackers to be precisely calibrated for specific targets. Samples of pipe or cable provided by the customer can now be analysed in the new facility so that an error matrix can be created for the user's own TSS 440. The new Teledyne TSS facility is conveniently located beside the company's factory in Watford, UK.

To continue to establish Sea-Fire Marine as a leading brand in marine fire suppression, the company has brought on **Richard Duckworth** as its new business development manager. He will work to increase Sea-Fire's market share in Europe, the Middle East and Africa (EMEA). With over 20 years experience in the marine industry, Duckworth most recently served as the managing director of Blue Marble Solutions, which designed, developed and manufactured Sea-Fire products.

Calendar

December 1-3, 2010:
International Workboat Show
New Orleans, LA
www.workboat.com

December 8-10, 2010:
Deep Gulf
Galveston, TX
www.deepgulfconference.com

January 16-19, 2011:
PTC
Honolulu, HI
www.ptc.org/ptc/

February 7-9, 2011:
Arctic Technology Conference
Houston, TX
www.artictechnologyconference.org

February 9-10, 2011:
Subsea UK
Aberdeen, UK
www.subseauk.org

February 22-24, 2011:
Underwater Intervention 2011
New Orleans, LA
www.underwaterintervention.com

March 13-17, 2011:
NACE
Houston, TX
<http://nenents.nace.org>

March 23-25, 2011:
10th Offshore Mediterranean Conference
Revenna, Italy
www.omc.it/2011/

April 5-7, 2011:
Ocean Business
Southampton, UK
www.oceanbusiness.com

April 25-29, 2011:
U.S. Hydro 2011
Tampa, FL
www.hydrographicsociety.org/event/asp

May 2-5, 2011:
OTC
Houston, TX
www.otcnet.org/2011

May 4-5, 2011:
Maritime Security Expo USA
Baltimore, MD
<http://maritimalsecurityexpo.com>

June 6-9, 2011:
Oceans '11 IEEE
Santander Conf Ctr, Spain
www.oceans11ieeesantander.org/

June 14-16, 2011:
EnergyOcean 2011
Portland, Maine
www.energyocean.com

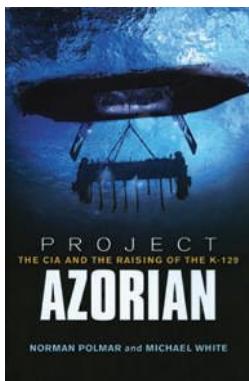
October 4-6, 2011:
OTC Brazil
Rio de Janeiro, Brazil
www.otcnet.org

Media Reviews

Project Azorian

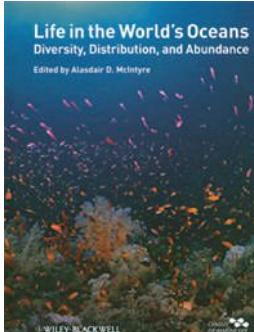
Project Azorian, The CIA and the Raising of the K-120 by Norman Polmar and Michael White is now available. Despite incredible political, military, and intelligence risks, and after 6 years of secret preparations, the CIA attempted to salvage the sunken Soviet ballistic missile submarine from the depth of the North Pacific Ocean in early 1974. The effort was carried out under the cover of an undersea mining effort sponsored by billionaire Howard Hughes. The authors claim that Azorian was incorrectly identified as Project Jennifer by the press. Following the sinking of the K-129 in March of 1968, U.S. intelligence agencies were able to determine the precise location of the submarine and develop a means of raising the submarine from a depth of more than 16,000 feet. The effort to raise the K-129, which contained nuclear armed torpedoes and missiles as well as cryptographic equipment, was conducted with the Soviet naval ships a few hundred yards from the lift ship, the Hughes Glomar Explorer. To fully document the story, the authors conducted extensive interviews with the men who were onboard the Glomar Explorer and the USS Halibut, the submarine that found the wreckage. The book is based, in part by the research for Michael White's ground-breaking documentary film—Azorian: The Raising of the K-129—released in 2009.

ISBN 978-1-59114-690-2, Naval Institute Press, publication date 15 November, 2010, 276 pages, \$29.95.



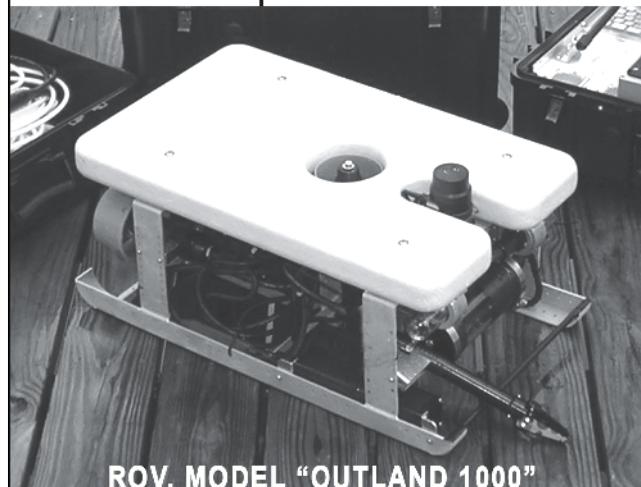
Life in the World's Oceans

Life in the World's Oceans, Diversity, Distribution, and Abundance, comprising the synthesis and analysis of the results of the Census, Life in the World's Oceans: Diversity, Abundance, and Distribution, edited by the late Alasdair McIntyre, brings together the work of over 2000 scientists from 89 nations around the globe. The book is broadly divided into four sections, covering oceans past, oceans present, oceans future, and a final section covering the utilization of the data that were gathered, and the coordination and communication of the results. The book represents the scope of the Census of Marine Life, a 10-year international effort undertaken in to assess the diversity (how many different kinds), distribution (where they live), and abundance (how many) of marine life—a task never before attempted on this scale. The Census stimulated the discipline of marine science by tackling these issues globally, and engaging some 2,700 scientists from around the globe, who participated in 540 expeditions and countless hours of land-based research. The scientific results were reported on October 4, 2010. Published on Census of Marine Life (<http://www.coml.org>).
ISBN 978-1-4501-9297-2, Wiley Press, 361 pages, \$199.99.



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SAMPLE LISTING

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Website: www.tydet.com
Contact: Aaron Water

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ACOUSTIC POSITIONING



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Applied Acoustic Engineering Ltd

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E-mail: gavinwilloughby@appliedacoustics.com
Website: www.appliedacoustics.com
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Manufacturer of fully integrated USBL acoustic tracking systems, both portable and vessel based, high quality multi-system compatible beacons for acoustic positioning and release, and seismic sub-bottom profiling systems for coastal, offshore or geo-hazard surveys.

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BUOYANCY PRODUCTS

Flotation Technologies, Inc.

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E-mail: fmaguire@fotec.com
Website: www.fotec.com
Contact: Fred Maguire

For more than 25 years Flotation Technologies has been a world leader in the design, engineering, and manufacture of deep water buoyancy systems, specializing in high-strength Flotec™ syntactic foam and polyurethane elastomer products. Flotation Technologies has been manufacturing syntactic foam longer than any other company in the business today—this depth of experience allows us to provide distinct solutions in an ever-changing marketplace. As an ISO 9001:2000 company, Flotation Technologies is committed to providing only the highest quality products and services.

Our products include Distributed Buoyancy, Inflex™ Bend Limiters, FLOTECT™ Impact Protection, Flex-Lok™ Buoyant Bend Restrictors, Cable Floats, Hardbal™ Umbilical Floats, ROV/AUV Buoyancy, ADCP Buoys & TRBMs, Modular Buoy Systems, Instrument Collars, and Hydro-Float™ Mooring Buoys.

CABLES



Elmeridge Cables Limited

2/3 Saltdean Park Road, Saltdean Brighton, East Sussex BN2 8SN UK
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E-mail: sales@elmeridge.com
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Contact: Darren Holmes

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Falmat, Inc., Custom Cable Technologies

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Toll Free: (800) 848 4257
Tel: (760) 471 5400, Fax: (760) 471 4970
E-mail: sales@falmat.com
Website: www.falmat.com
Contact: Shawn Amirehsani

"Falmat designs and manufactures cables for commercial and military projects where performance and reliability are required, specifically in harsh environments. Innovative cable solutions for dynamic and static applications. Ruggedized Deep-Water Ethernet cables, proven XtremeGreen video cables, XtremeLight fiber optic cables, single and multilayered steel armored cables and braided hairied faying are high performance products representing our versatile manufacturing capabilities for the oceanographic industry. Falmat is a Certified ISO9001 and AS9100 Company. Visit our web site at www.falmat.com or contact our sales office for a prompt quotation"



Hydrocable Systems Ltd.

Hydro House, Claymore Avenue, Aberdeen Science & Energy Park, Bridge of Don, Aberdeen, AB23 8GW, UK
Tel: +44(0)1224 825050, Fax: +44(0)1224 825142
E-mail: sales@hydrogroup.plc.uk
US E-mail: sales@hazardouslocation.com
Website: www.hydrogroup.plc.uk
Contact: Michael Swan Tel: +1 562 492 1394

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CABLE & PIPELINE TRACKING

INNOVATUM Ltd.

Unit 11 & 12, Woodside Business Park, Ingham, BURY St. EDMUNDS, IP31 1NR, Suffolk, England, UK
Tel: +44(0)1284 729 123, Fax: +44(0)1284 729 133
E-mail: sales@innovatum.co.uk
Website: www.innovatum.co.uk
Contact: Terry Slater and Rob Nunn

SMARTRAK: High accuracy magnetic cable and pipeline tracking systems from the beach to 3000m water depth. **SMARTSEARCH:** for highly detailed magnetic mapping survey; magnetic debris search; pipe-route clearance; munitions/UOX survey; wreck location. For all ROV; towed sled; AUV and small vessels.

TELEDYNE TSS

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Teledyne TSS Ltd.

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E-mail: tssales@teledyne.com
Website: http://www.teledyne-tss.com
Contact: Carolyn Jones
USA Office: 10801 Hammerly Blvd, Suite 128, Houston, TX 77043, Contact: Euan Mackay
Tel: (713) 461 3030, Fax: (713) 461 3099

Underwater detection systems for determining the location, relative position and burial status of offshore pipelines, umbilicals and subsea telecommunications & power cables.

CABLE PROTECTION



PMI Industries, Inc.

5300 St. Clair Avenue, Cleveland, OH 44103
Tel: (216) 881 4914, Fax: (216) 881 4920
E-mail: sales@pmiind.com
Website: www.pmiind.com

Underwater engineering service company specializing in highly reliable custom cable systems & hardware for the marine environment. **EVÉRGRIP™** Termination: provides a full-strength field installable termination for use on electro-mechanical, optical cables and wire rope. **EVERFLEX™** Bending Strain Relief: used & applied at terminations where off-axis tension may occur. The unique split hardware design of the **DYNA-HANGER™** Suspension System offers mid-span bend protection & superior high strength holding that can be applied at any point along the cable. Our dynamic cable testing facility simulates at-sea mechanical environmental conditions.

CONNECTORS



AK Industries

3115 East Las Hermanas Street
Rancho Dominguez, CA 90221
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E-mail: sales@ak-ind.com
Website: www.ak-ind.com
Contact: Allan Kidd

AK Industries is an agile high tech manufacturer of rugged low cost underwater electrical connectors. The HydroVolt line of connectors is the most rugged and reliable low cost connector available. AK Industries is also ideally suited to provide unique solutions engineered to customer requirements.



BIRNS, Inc.

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E-mail: service@birns.com
Website: www.birns.com
Contact: Eric Birns

BIRNS, Inc. is an ISO 9001:2008-certified global leader in the design and manufacturing of high performance connectors, custom cable assemblies and lighting systems. Delivering exceptional electrical, coaxial, optical, electro-coax and standard electro-optical hybrid connectors—BIRNS also provides the industry's highest volume of cost-effective hydrostatic and helium pressure testing, with penetrators available with inclusive pricing and lead time for ABS/DNV certification. Leveraging more than half a century of expertise, BIRNS has renowned lines of LED and tungsten-halogen marine, chamber and commercial diving lights, and MPI-NDT equipment.

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CONNECTORS

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BIRNS Aquamate

BIRNS Aquamate LLC

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E-mail: sales@birnsaquamate.com
Website: www.birnsaquamate.com
Contact: Eli Bar-Hai, Operations Director

Part of the BIRNS Group, Birns Aquamate LLC design and manufacture underwater electrical connectors, cable assemblies, and cable terminations. The company produces a wide range of standard industry connectors such as the 5500 Series, SC, MC, LP, FAWL/FAWM, Rubber Molded, etc. fully compatible with other manufacturers. Birns also specializes in fast turn-around for custom design of special connector solutions. Stocking dealers in the UK (Scorpion Oceanics) South Africa (Marine Solutions) Holland (Nautikaris and Seascape) and Brazil (MAKO).



Hydro Bond Engineering Ltd.

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Vice President, Global Marketing & Sales
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Cell: +1 407 342 7791
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ODI (Ocean Design, Inc.) is the world leader in subsea electrical and fiber optic interconnect systems. ODI's high reliability connectors, cable assemblies and junction boxes are used worldwide for offshore oil and gas, defense, oceanographic and research applications. ODI's wet-mateable connectors include signal and high-power electrical, fiber optic, and hybrid electro-optical products.

SEACON® Brantner & Associates, Inc.

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E-mail: seacon@seacon-usa.com
Website: www.seacon-usa.com

The SEACON® Group are the leading manufacturers of underwater connectors, submersible switches, wet and dry mateable connectors, fiber optic and connector/cable assemblies, offering over 35,000 product designs. With locations in California, Rhode Island, Texas, Mexico and the UK, SEACON® is able to provide quick solutions with either existing or custom-designed connector products.



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Website: www.subconn.com
Contact: Mike Stewart

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IXSEA manufactures high-accuracy, acoustic positioning systems for the offshore, oceanographic and defense markets. GAPS, the pre-calibrated USBL system, combines USBL, INS and GPS technologies. It is the most accurate USBL in its category and works in deep and extremely shallow environments. POSIDONIA USBL acoustic positioning system is ideal for high-accuracy/ ultra long-range positioning of subsea vehicles.



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E-mail: atl@atline.com
Website: www.atlinc.com
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For over 40 years, ATL has specialized in the design and manufacture of custom bladder-type fluid containment systems, including bladder tanks, inflatables, pillows and bellows, for the surface and subsea industry. ATL's flexible fluid containers boast unparalleled chemical tolerance, abrasion resistance, and remarkable durability and can be used with methanol, diesel fuel, gases, ethylene glycol, hydraulic fluids and chemical cleaning cocktails. Expedited deliveries are also available.

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Geometrics, a member of OYO Corporation, manufactures, sells, and services portable geophysical instruments for land, marine, and air investigations of the subsurface. Geometrics' product line includes proton precession and cesium magnetometers, high-resolution seismographs, and electrical conductivity imaging and resistivity systems. Geometrics' instruments are used around the world for natural resource exploration, geotechnical and environmental assessments, ordnance detection, locating archeological and treasure sites, teaching and research.



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MARINE ENVIRONMENTAL CONSULTING SVCS.

CSA International, Inc.

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IXSEA Inc.

Tel: +33 1 30 08 98 88, Fax: +33 1 30 08 88 01
E-mail: info@ixsea.com
Website: www.ixsea.com

IXSEA manufactures high-accuracy, acoustic positioning systems for the offshore, oceanographic and defense markets. GAPS, the pre-calibrated USBL system, combines USBL, INS and GPS technologies. It is the most accurate USBL in its category and works in deep and extremely shallow environments. POSIDONIA USBL acoustic positioning system is ideal for high-accuracy/ ultra long-range positioning of subsea vehicles.



KONGSBERG

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Kongsberg Seatek is a leading international marine electronics manufacturer specializing in the development and production of precision positioning and motion sensing systems. Our commitment is to provide quality products and solutions for safe navigation and operations at sea in the commercial offshore, maritime, hydrographics and defence industries.



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IXSEA manufactures high-accuracy, acoustic positioning systems for the offshore, oceanographic and defense markets. GAPS, the pre-calibrated USBL system, combines USBL, INS and GPS technologies. It is the most accurate USBL in its category and works in deep and extremely shallow environments.

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OCEANOGRAPHIC INSTRUMENTS



NKE Instrumentation

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Sea-Bird Electronics, Inc.

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Tel: 425-643-9866, Fax: 425-643-9954
E-mail: seabird@seabird.com
Website: http://www.seabird.com
Contact: Calvin Lwin, Applications Engineering Manager

Sea-Bird is the leader in accurate, stable ocean instruments for measuring conductivity, temperature, pressure (salinity); oxygen; and related variables. Our CTD profilers, water samplers, moored CT recorders, wave/fide recorders, and DO sensors are used by research institutes, ocean observing programs, government agencies, and navies globally. Investments in engineering, metrology, calibration, software, and analysis make our products the best choice.

STAR:ODDI

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A manufacturer of miniature data loggers with sensors as temperature, depth/pressure, salinity, compass, magnetometer, acoustic receiver, tilt in 3-D, pitch and roll. The small loggers are used for various researches, including oceanography, fisheries research, fishing gear studies, equipment behavioral monitoring and fish tagging. Data is presented in graphs and tables in the application software along with time and date of each measurement.

PIEZOELECTRIC CERAMICS

Channel Industries

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Piezoelectric ceramics - Channel Industries, A Division of Channel Technologies Group (CTG) is a custom manufacturer of piezoelectric ceramics in lead-zirconate and barium titanate compositions. Since 1959 Channel Industries ceramics have been at the heart of thousands of underwater acoustic applications and systems. Hydrophones, towed arrays, modems, side-scan sonar, etc. Military and commercial applications worldwide for over 50 years.

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ROVs

Atlantas Marine Ltd.

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Website: www.atlantasmarine.com
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Atlantas Marine are the award-winning supplier of the Videoray range of portable ROVs, together with sonars from Tritech and Blue View Technologies, and also the larger ROV range manufactured by Deep Ocean Engineering. We provide consultancy, support and training for most underwater inspection tasks. In addition we provide a range of navigation and safety equipment to the commercial shipping market, which includes electronic navigation systems (ECDIS), voyage data recorders, long range tracking systems (LRIT) and portable pilot navigation systems (PPU's).



PERRY SLINGSBY SYSTEMS, INC.

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Perry Slingsby Systems

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Tel: 713-329-8230, Fax: 713-329-8299
E-mail: pss@perrymail.com
Website: www.perryslingsbysystems.com

Perry Slingsby Systems is the leading supplier of deepwater work class ROV, tooling solutions, burial systems and control system based products to the oil, gas and telecommunication industries. Providing the most advanced, robust and dependable ROVs and subsea products in the world, with facilities in the US and in the UK, sales offices and agents around the world.



SeaBotix Inc.

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

SeaBotix Inc. manufactures underwater remotely-operated vehicles including the Little Benthic Vehicle (LBV) and Little Benthic Crawler (LBC). Both systems perform a multitude of tasks including maritime security, sensor deployment, object recovery, hazardous environment intervention, and hull inspection. Every LBV includes a standard 24-Month Limited Warranty and supported by a global distribution network.



Sub-Atlantic Ltd.

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Sub-Atlantic is the leading manufacturer of World Class electric powered Remotely Operated Vehicles, ranging from portable units to light work class systems. Sub-Atlantic is also principal OEM supplier of Thrusters, Hydraulic Power Units, Valve Packs, Compensators and Pan & Tilt Systems to many of the world's other ROV manufacturers. Offices in the UK and USA and a worldwide network of agents (see website for details).



Submersible Systems Inc.

333 Progresso Road
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Patterson, LA 70392
Tel: 985 395 0996, Fax: 985 395 0995
Website: www.ssirovs.com
Contact: Wolfgang Burnside

Utilizing the knowledge gained with over a hundred combined years of actual offshore ROV operations, SSI has designed and constructed the TRV005 ROV System. A totally new concept, this larger, rugged, Inspection ROV comes with standard features that many would consider optional, plus a 1 year warranty on subsea components, 5 years on console and true 24/7 support. SSI also refurbishes older ROV Systems, from simple upgrades to the extreme.



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E-mail: brian.luzzi@videoray.com
Website: www.videoray.com
Contact: Brian Luzzi

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

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SONAR SYSTEMS

Imagenex Technology Corp.

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

IXSEA Inc.

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[Marine Sonic Technology, Ltd.](#)

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M. Shaw, v.p., sonar & transducer sys;
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Sound Engineering Solutions – Sonatech, A Division of Channel Technologies Group (CTG) develops innovative solutions for underwater acoustic applications. Existing technologies span a wide variety of acoustic systems, including sonar systems, navigation systems, and custom acoustic solutions. Our solutions are based on a 30-year career of developing high-performance, high-reliability undersea systems that are continually improved through research and development.

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

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Editorial: Underwater Vehicles; Diving Technology

Distribution: • Underwater Intervention

Deadline: Jan. 15

March

Editorial: Ocean Exploration; Offshore Construction

Distribution: • Oceanology International

- NACE

Deadline: Feb. 12

April

Editorial: Exploration & Production; Defense & Naval Systems

Distribution: • Maritime Homeland Security Summit

- Future Naval Plans & Requirements
- OTC
- SubOptic 2010

Deadline: March 12

May

Editorial: Environmental Restoration; Ocean Instrumentation

Distribution: • Oceans IEE OES (Australia)

- UDT Europe (Germany)

Deadline: April 16

June

Editorial: Renewable Ocean Energy; Ocean Observing

Distribution: • EnergyOcean

- MAST Americas

Deadline: May 14

July/August

Editorial: Subsea Technology; Underwater Imaging

Distribution: • AUVSI

- SPE-ATCE

Deadline: July 16

September

Editorial: Oceanography; Maritime Security

Distribution: • Oceans 2010 Seattle

- AWEA/Offshore Wind 2010
- Clean Gulf

Deadline: Aug. 20

October/ November

Editorial: Offshore Communications; Survey/Mapping

Distribution: • Offshore Communications

- Mast
- Subsea Survey IRM
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Deadline: Oct. 8

December

Editorial: Ocean Vessels; Year in Review

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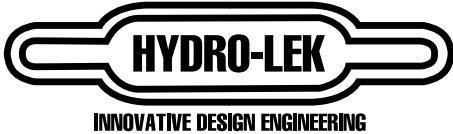
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