Admiral Roughead Named "Seamaster" The View from St. John's New Salvage/FiFi Rules

MARINE TECHNOLOGY REPORTER

January/February 2011
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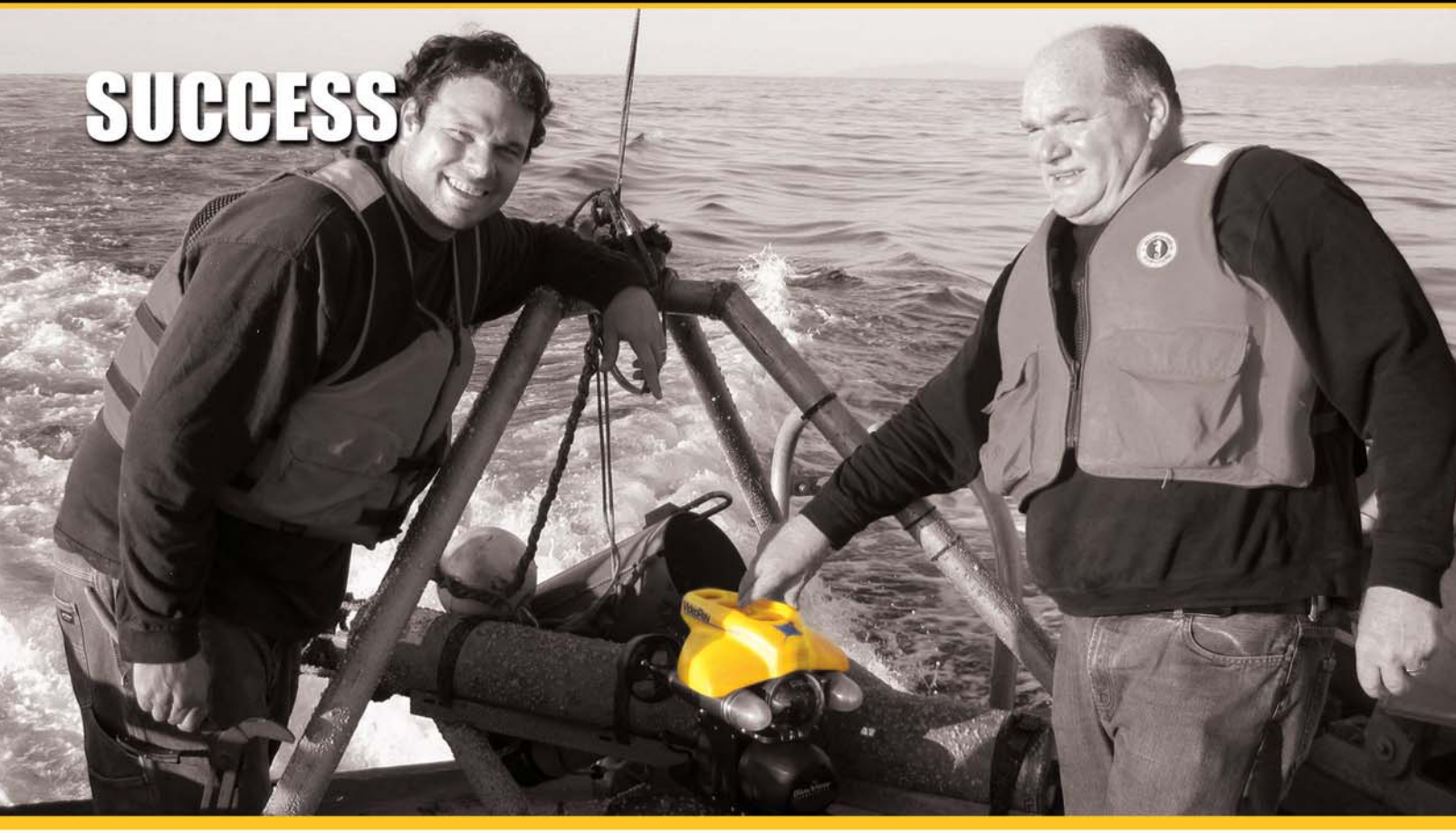

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Pictured : Joe Haxel (left) and Oregon State University's lost Hydrophone recovered from a depth of 175 feet by Dennis Lancaster of Water Work Resources, LLC (right) and Craig Thorngren (not pictured) of Submerged Recovery & Inspection Services along with all it's data using a VideoRay Pro 4 ROV with imaging sonar to attach a recovery line in September 2010.

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In the Background
Traditional Jangada open sailboat on a Petrobras sponsored race, investing in culture. For more on how the oil giant is investing in its massive Pre-Salt fields, turn to page 36

(Photo: Petrobras)

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See Story on page 36

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The turn of the year has brought with it a renewed sense of hope and vigor to the subsea industry, though there are still plentiful reminders of the fiscal pain wrought by a global economic downturn. The economic crisis — as painful as it was and remains for large sectors of our economy — was a process that forced upon corporate entities, government agencies and institutions of higher learning alike the virtues of becoming 'lean and mean.' While I admit it is a safe assumption that no time soon will we see a drastic expansion of budgets for subsea exploration, it is a similarly safe statement to point out that opportunities in this market abound, as the world collectively seeks to contiually improve and make more safe and efficient the way in which it works underwater. Last year's oil well blowout and disaster nearly one mile deep in the Gulf of Mexico exposed, in stark terms, the current capabilities and limitations of these technologies, but at the same time brought to the forefront the intrinsic value of the work you do every day.

I just returned from a swing through the Middle East which combined work for me in both the subsea and maritime sectors. While this region was hammered particularly hard over the last few years, many projects are coming back with a vengeance, with billions pouring into new energy projects, both traditional oil & gas as well as renewable, and a long list of port and facility projects that all rely on the various talents of the subsea industry to bring them quickly and efficiently from start to finish. Look for a special series on these Middle East business opportunities starting in the next edition.

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MCT: First Tidal Energy Farm by '13

UK tidal energy company, Marine Current Turbines, is targeting 2013 to install Scotland's first tidal energy farm. The company, which designed and deployed the world's first commercial scale offshore tidal stream energy system in Northern Ireland's Strangford Lough, is investigating the feasibility of a tidal farm in Kyle Rhea, a strait of water between the Isle of Skye and the Scottish mainland.

Fugro Geos Offshore Wind Projects

Collection metocean data plays a vital role at different phases of offshore wind farm projects ranging from early feasibility studies to engineering design and construction phases, as demonstrated by two recent contracts won by Fugro GEOS, for UK Round 2 and 3 projects. Seagreen Wind Energy has recently awarded Fugro GEOS a contract for an oceanographic survey of the zone designated for the Firth of Forth Round 3 Offshore Wind Farm. Richard Liptrot, Fugro GEOS Project Manager, said "The survey will include deployment of wave and current meters at locations throughout the zone over winter 2010/11."

Seamaster Award

Admiral Roughead to be Honored

United States Navy Chief of Naval Operations Admiral Gary Roughead has been named "Seamaster of the Year" by *Marine Technology Reporter.*

"Admiral Roughead is driving a transformation of the way in which the U.S. Navy conducts its business, and he has signaled his dedication to the rapid advancement of subsea vehicle technology," said Greg Trauthwein, Editor and Associate Publisher of *Marine Technology Reporter*. Admiral Roughead will accept the Seamaster Award at a special reception in his honor at the Fourth Annual OceanTech Expo (www.oceantechexpo.com), scheduled to be held May 17-19, 2011 in at the Newport Yachting Center in Newport, Rhode Island. In addition, Admiral Roughead will share his views on the future Navy needs regarding unmanned underwater systems via an exclusive, in-depth interview with Marine Technology Reporter – the world's largest circulation b2b publication serving the global subsea market – scheduled to be published in conjunction with the Seamaster Award.

(Source: U.S. Navy)

www.seadiscovery.com
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MSI Helps Endangered Species

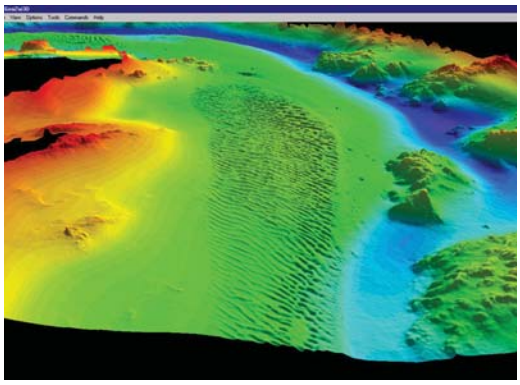
Materials Systems Inc. (MSI) is supplying piezocomposite sonar sensors for use in the upgraded Manatee Protection System at Florida's Canaveral navigation lock. The system is designed to help safeguard Florida's endangered manatees from serious injury or death.

The manatees travel through the canal lock gates in search of food. Watercraft collisions are the leading human related cause of manatee deaths, but lock gate accidents are second. Approximately 200 manatees have been crushed by Florida lock gates since 1974 because the turbid water often prevents gate operators from seeing the manatees. In 2000, the Army Corp of Engineers funded development of a manatee protection system. Scientists and engineers at Florida's Harbor Branch Oceanographic Institution (HBOI) developed a system using a "ladder of sound beams" between two lock gates — one outfitted with sound emitters and the other with sound receivers — to detect the presence of manatees during gate closure. Because of the large number of beams, the system is able to distinguish between manatees and small fish.

When a manatee is detected, the system stops the gate from closing and keeps it open until the manatee passes through safely. Numerous manatees have been saved by this system which is now installed on several locks throughout Florida.

Seatronics Invests in Upgrades

With a global presence and a huge portfolio of subsea equipment for subsea construction support, important for Seatronics is a complete range of products. In November 2010, Seatronics placed an order for 13 upgrades of their SeaBat 7125 ROV versions to the new SeaBat 7125 ROV2 version. Included in the order is also an upgrade of 16 SeaBat 8125 systems that will be upgraded to the SeaBat 8125 Hybrid version. Besides the investment in high-end shallow and mid water range systems, Seatronics also focus on the low-end shallow water market and can after having purchased the RESON HydroBat Composite, also meet the requirements from this customer segment. The upgrade to the SeaBat 7125 ROV2 multibeam system, will improve efficiency and usability for Seatronics customers. Especially the software package has been given full attention and the new SeaBat 7125 ROV2 comes with a new Pipeline Mode which gives an increased number of hits on a pipeline and ensures exact data that improves the data



post processing time considerably. An additional included feature is the possibility to have variable swath widths from 45 to 140 degrees. Customers with the need for high data density or increased along track density will benefit from Seatronics new investment. The new software version also allows for beam uncertainty quantification, which significantly will enhance the processing and reporting speed. Upgrading to SeaBat 8125 Hybrid includes a number of equidistant beams up to 512 and variable swath.

www.reson.com

Technip Wins Major GOM Subsea Deal

Technip was awarded a contract by Chevron North America Exploration and Production for the development of the Jack & St-Malo fields, located in the Walker Ridge area of the Gulf of Mexico at a water depth of approximately 7,000 ft. (2,100m). The contract covers the engineering, fabrication and subsea installation of more than 53 miles (85 km) of 10.75-in. outer diameter of flowlines, steel catenary risers, pipeline end terminations, manifolds, pump stations and tie-in skids.

40G Upgrade to Trans-Pacific Cable

Tyco Electronics Subsea Communications (SubCom) was contracted to provide the first 40G upgrade in a system more than 9,500km in length. The use of SubCom's next-generation G4 SLTE enables the increase of cross sectional capacity by 100% to 1.92Tbps per fiber pair, a new record for trans-Pacific distance.

www.SubCom.com

'Safe Use of Electricity Underwater'

Preventing the dangerous hazards which may arise from the use of electricity under water are dealt with in 'Code of Practice for the Safe Use of Electricity Under Water', a publication from the International Marine Contractors Association (IMCA).

The Code covers all types of electrical equipment used by a diver — employed for his benefit, either under his control, or under the control of the diving support team.

"The Code deals with vital issues such as the prevention of electric shock, and other concerns, including the degradation of electrical insulating material by heat, which can result in the emission of toxic or explosive products, and hot surfaces or electric arcs from faulty equipment, or switching devices, that can ignite some gas mixtures and pollute the diver's breathing gas supplies," said IMCA's Chief Executive, Hugh Williams.

"This is an extremely important document; first published in 1985, and which has now been updated and reissued. It has been prepared by a workgroup made up of IMCA members and technical experts, including three of the workgroup involved in the development of the original code who were able to provide advice on background issues."

Email: imca@imca-int.com

Media overstates size of

The Oceanic "Garbage" Patch

There is a lot of plastic trash floating in the Pacific Ocean, but claims that the "Great Garbage Patch" between California and Japan is twice the size of Texas are grossly exaggerated, according to an analysis by an Oregon State University scientist. Further claims that the oceans are filled with more plastic than plankton, and that the patch has been growing tenfold each decade since the 1950s are equally misleading, pointed out Angelicque "Angel" White, an assistant professor of oceanography at Oregon State.

"There is no doubt that the amount of plastic in the world's oceans is troubling, but this kind of exaggeration undermines the credibility of scientists," White said. "We have data that allow us to make reasonable estimates; we don't need the hyperbole. Given the observed concentration of plastic in the North Pacific, it is simply inaccurate to state that plastic outweighs plankton, or that we have observed an exponential increase in plastic."

White has pored over published literature and participated in one of the few expeditions solely aimed at understanding the abundance of plastic debris and the associated impact of plastic on microbial communities. That expedition was part of research funded by the National Science Foundation through C-MORE, the Center for Microbial Oceanography: Research and Education. The studies have shown is that if you look at the actual area of the plastic itself, rather than the entire North Pacific subtropical gyre, the hypothetically "cohesive" plastic patch is actually less than 1 percent of the geographic size of Texas.

"The amount of plastic out there isn't trivial," White said. "But using the highest concentrations ever reported by scientists produces a patch that is a small fraction of the state of Texas, not twice the size."

Another way to look at it, White said, is to compare the amount of plastic found to the amount of water in which it was found. "If we were to filter the surface area of the ocean equivalent to a football field in waters having the highest concentration (of plastic) ever recorded," she said, "the amount of plastic recovered would not even extend to the 1-inch line."

Recent research by scientists at the Woods Hole Oceanographic Institution found that the amount of plastic, at least in the Atlantic Ocean, hasn't increased since the mid-1980s – despite greater production and consumption of materials made from plastic, she pointed out.

"Are we doing a better job of preventing plastics from getting into the ocean?" White said. "Is more plastic sinking out of the surface waters? Or is it being more efficiently broken down? We just don't know. But the data on hand simply do not suggest that 'plastic patches' have increased in size. This is certainly an unexpected conclusion, but it may in part reflect the high spatial and temporal variability of plastic concentrations in the ocean and the limited number of samples that have been collected." The hyperbole about plastic patches saturating the media rankles White, who says such exaggeration can drive a wedge between the public and the scientific community. One recent claim that the garbage patch is as deep as the Golden Gate Bridge is tall is completely unfounded, she said.

"Most plastics either sink or float," White pointed out. "Plastic isn't likely to be evenly distributed through the top 100 feet of the water column."

White says there is growing interest in removing plastic from the ocean, but such efforts will be costly, inefficient, and may have unforeseen consequences. It would be difficult, for example, to "corral" and remove plastic particles from ocean waters without inadvertently removing phyto-

Larger plastic pieces can harbor microbes, both beneficial and harmful, scientists have discovered.

(Photo courtesy of C-MORE project & Oregon State University)

plankton, zooplankton, and small surface-dwelling aquatic creatures. The relationship between microbes and plastic is what drew White and her C-MORE colleagues to their analysis in the first place. During a recent expedition, they discovered that photosynthetic microbes were thriving on many plastic particles, in essence confirming that plastic is prime real estate for certain microbes.

White also noted that while plastic may be beneficial to some organisms, it can also be toxic. Specifically, it is well-known that plastic debris can adsorb toxins such as PCB.

"On one hand, these plastics may help remove toxins from the water," she said. "On the other hand, these same toxin-laden particles may be ingested by fish and seabirds. Plastic clearly does not belong in the ocean." Among other findings, which White believes should be part of the public dialogue on ocean trash:

- Calculations show that the amount of energy it would take to remove plastics from the ocean is roughly 250 times the mass of the plastic itself;
- Plastic also covers the ocean floor, particularly offshore of large population centers. A recent survey from the state of California found that 3 percent of the southern California Bight's ocean floor was covered with plastic – roughly half the amount of ocean floor covered by lost fishing gear in the same location. But little, overall, is known about how much plastic has accumulated at the bottom of the ocean, and how far offshore this debris field extends;
- It is a common misperception that you can see or quantify plastic from space. There are no tropical plastic islands out there and, in fact, most of the plastic isn't even visible from the deck of a boat;
- There are areas of the ocean largely unpolluted by plastic. A recent trawl White conducted in a remote section of water between Easter Island and Chile pulled in no plastic at all.

(Source: Angel White, Mark Floyd and the Oregon State University College of Oceanic and Atmospheric Sciences)

Specialized Radar for

Ice and Oil-Spill Detection

By Andrew Safer

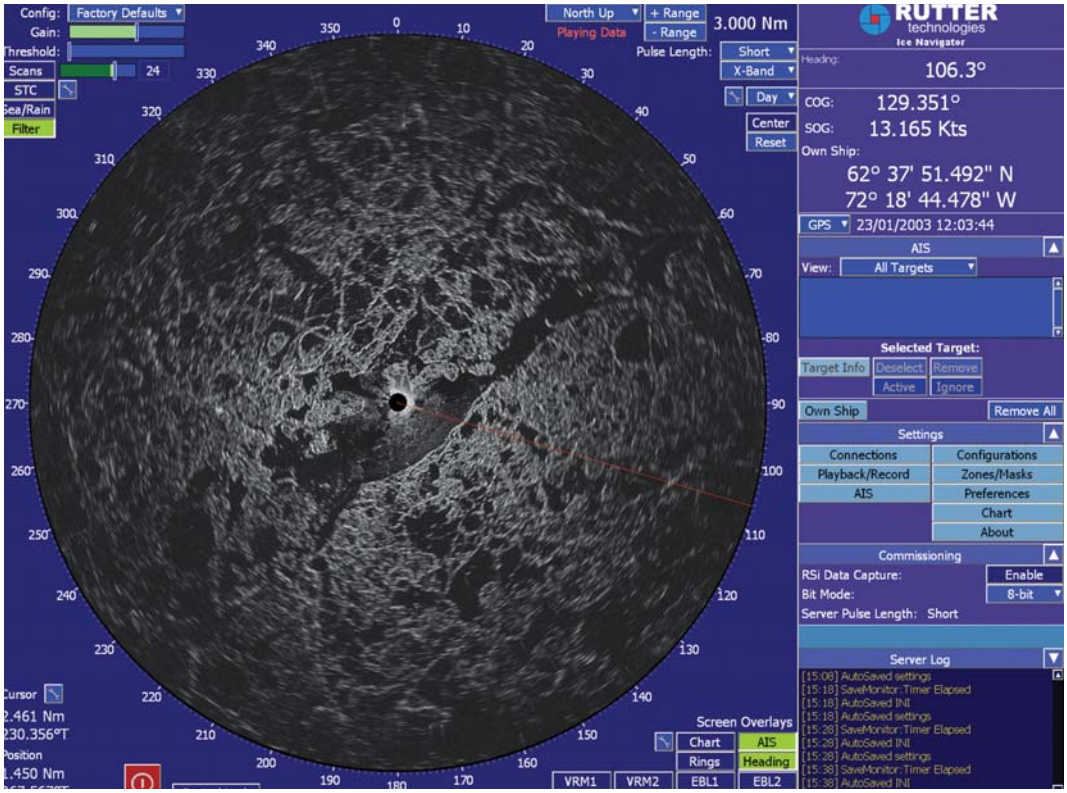
"Canada is one of the world's leading maritime nations, with the world's longest coastline and bordering three of the world's oceans," Jane Rutherford, Global Practice Lead, Ocean Technologies, Department of Foreign Affairs and International Trade (Canada), was quoted as saying in the last issue of Marine Technology Reporter. "We know the sea. Our innovative marine technology products and services are based on our experiences in one of the most challenging marine environments in the world."

A case in point is a core radar processing technology originally developed to detect sea ice and icebergs, which is also being used for oil spill detection.

Manufactured and marketed by Rutter Inc. of St. John's, the Sigma S6 Ice Navigator (Sigma S6 system) has been utilized for more than 10 years to detect small chunks of ice offshore on the Grand Banks, Newfoundland for the oil industry. Standard ship's radar is designed for collision avoidance and is used to detect other ships and land and is not designed to detect sea ice and icebergs. The Sigma S6 system connects to the ship's radar, processes the full dynamic range of the raw radar signal, and the advanced signal processing generates a high-resolution image with 256 video intensity levels, producing finer ice definition.

Captain John Broderick is the Commanding Officer of the Canadian Coast Guard's CCGS Henry Larsen, a 320-ft-long, 6500-gt Arctic-class icebreaker that operates in the Canadian Arctic and sub-Arctic regions. Navigating in these waters can be demanding and dangerous for all ships, he explains, even those with Icebreaker classification. Arctic ice regimes including thick first-year ice, old or multi-year ice, ice islands and glacial features such as icebergs and bergy bits (glacier ice less than five meters above the surface) can be hazardous to vessels. Safe navigation requires the ability to detect and differentiate between these features, as well as to determine floe size—often challenges for normal navigational radar systems.

Since 2006, the Sigma S6 system has been used onboard the CCGS Henry Larsen. For the past four years Captain



Rutter's Sigma S6 Ice Navigator: Image shows pack ice in the vicinity of the vessel (center).

Pictured is the CCGS Henry Larsen.

Broderick has been conducting an R&D project focused on improving the safety and efficiency of ice navigation by enhanced detection. In the first phase, the Sigma S6 system was fitted to a standard X Band navigational radar. In the second phase, it was combined with a dedicated high-speed radar. In the third phase, planned for the 2011 Arctic season, it will be used with enhanced scanning with dual polarization.

"Although considered a trial radar, very early on we found ourselves relying on the capabilities of the Sigma S6 system regularly to navigate around and through multi-year ice regimes." Typically, the Henry Larsen is escorting vessels such as tankers that have standard radar. "We've got somebody behind us with lesser capability, and we're looking for the easiest route," Captain Broderick explains. "We're looking for the weak points (in the ice) and the leads (fields of floating ice). With the Sigma S6 system, there is a clearer definition of floe edges. The enhanced visual of the ice regime gives clear floe definition and outlines the water leads and weak points within the ice pack. While operating in old ice regimes, this definition was particularly useful in avoiding large floes in restricted visibility. With practice and continuous use, our navigators could differentiate between floe size and often the ice type. It is important to know before entering an ice field, if the ice floe is a consolidated mass more than a mile wide, or

just a collection of small floes that are easier to navigate through." The second phase of the R&D project focused on detecting bergy bits and growlers (less than 1 meter above the surface). During his annual trip from Newfoundland to the west coast of Greenland in 2008, Captain Broderick was able to detect the smaller icebergs in low visibility. At distances up to two miles, he estimates a 20 to 25 percent improvement with the Sigma S6 system compared to standard radar—both in terms of detection and its ability to hold the target over time. The Sigma S6 system has been installed on more than a 100 ships and offshore platforms operating in the Russian, Canadian, and Norwegian Arctic and sub-Arctic regions, Baltic Sea, Alaska, Antarctica, and offshore Newfoundland and Labrador.

The Norwegian Coastal Administration has been using the Sigma S6 system for ice operations since 2007, and in 2008 they discovered that it can also be used to detect a small oil slick. The Norwegian Clean Seas Association (NOFO) proceeded to test Rutter's Oil Spill Detection system over a three-year period. In August 2010 NOFO certified that the system meets these standards for NOFO oil recovery vessels: "(1) The vessel must have an oil detection system permanently installed that gives automatic detection, and (2) Must be able to present area and position determination of oil slick, operating history, speed and direction of the slick." NOFO is currently operating two of these systems on oil recovery vessels. The system is also deployed on other oil spill recovery vessels in Norwegian waters as well as a Statoil platform. "To date," said

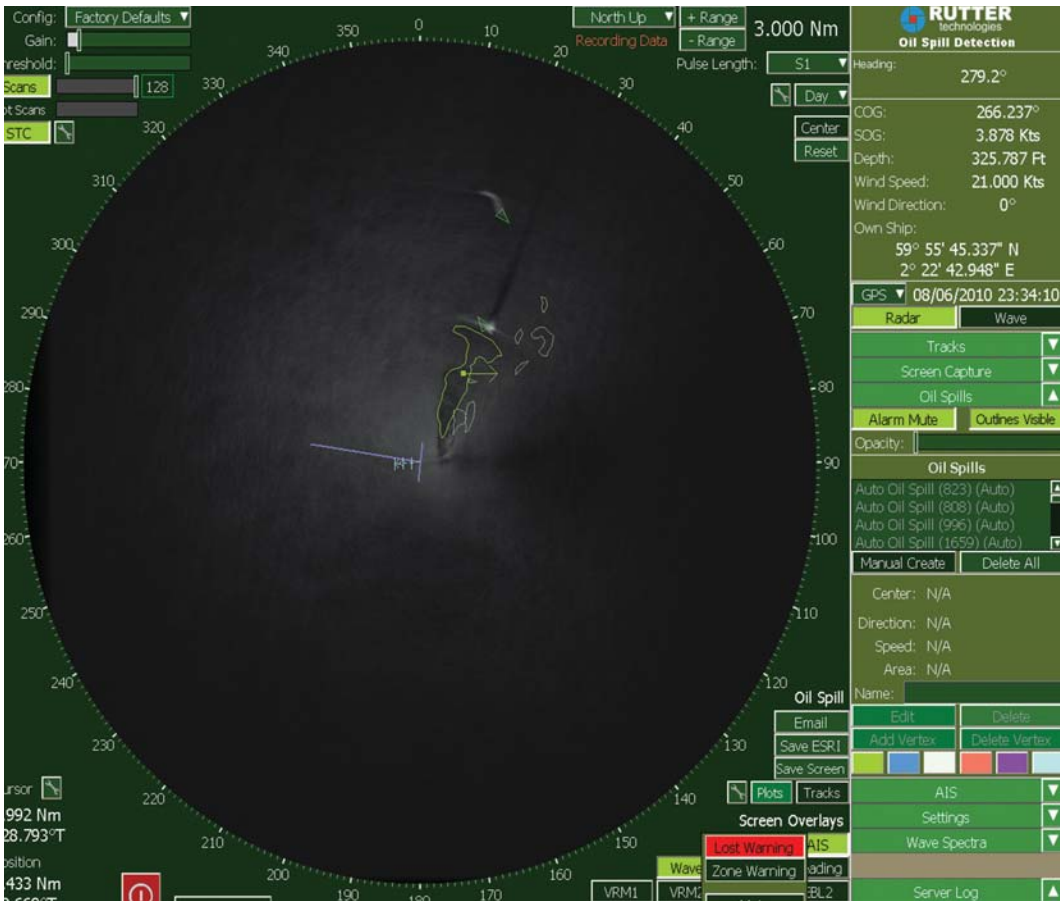
Byron Dawe, President, Business Development and Innovation, Rutter Technologies, a division of Rutter, Inc. "the Sigma S6 is one of only two systems in the world to be given the green flag indicating it meets the stringent requirements of vessels operating under jurisdiction of the Norwegian Clean Seas Association."

Rutter Inc. partnered with Aptomar AS of Trondheim, Norway to increase the system's functionality, and in June 2010 the two companies launched the Integrated Oil Spill Response and Management System. This system integrates Rutter's S6 radar processor and display with Aptomar's infrared camera, real-time video, searchlight capabilities, and chart-based display. The integrated system provides automatic oil spill detection and tracking, area, thickness and volume estimations as well as oil spill drift prediction, detection of boom leakage and disposition of the oil spill skimmer. The system can provide this functionality during both day and night operations.

The Sigma S6 system detects a potential oil spill target by detecting a reduced signal return where the wind-generated capillary waves on the ocean's surface are suppressed due to the presence of oil. Once the oil spill is detected, the Sigma S6 system continues to track and exchange data with the Aptomar system to validate the presence of oil. The resulting radar image is displayed and outlined in a chart system.

The infrared camera is used to determine the area where the spill is thickest. All of the information can then be distributed either onboard, ship-to-ship, or ship-to-shore. Edison Chouest Offshore LLC has purchased three Integrated Oil Spill Response and Management Systems to be deployed on vessels operating in Brazil in support of Petrobas. Rederi AB TransAtlantic has purchased a system to be deployed off Norway on a vessel in support of Statoil operations, and the Danish shipping company Esvagt is leasing two systems in support of Statoil operations off the coast of Egypt.

"With the heightened awareness of environmental issues and the opening up of the North," said Dawe, "these types of advances in radar processing and integration dramatically improve the efficiency and safety of operations, whether it be for oil spill or ice management."



Rutter's Sigma S6 Oil Spill Detection system: Outlined shapes show oil spills actively being tracked. Arrow pointing east from green outlined section shows drift direction. Triangles show the location of other vessels.

Photo credit: Rutter Inc.

Rutter's President, Business Development and Innovation

Byron Dawe

Byron Dawe is one of the original founders of Rutter Technologies and has over 30 years diverse experience in the marine technology business. Dawe is a founding member of the International Electrotechnical Commission, Technical Committee 80, Working Group 11, which has been responsible for the development of the testing standard for voyage data recorders. He is also active in the International Maritime Organization and has participated in the development of the VDR and S-VDR performance standards through this organization. MTR recently spend some time with Dawe to discuss Rutter and the evolution of the subsea technology industry.

You helped found Rutter Technologies; what was the impetus to create this company?

While working at a non-governmental organization and tasked to find opportunities for Canadian companies, I came across the opportunity for voyage data recorders (VDRs) or Black box for ships and recognized that a couple of companies had all the technologies in place to supply VDRs. These two small companies, Sigma Engineering and Consolidated Technologies, decided to take advantage of the emerging market opportunity, and I was offered to help run the business in manufacturing and marketing VDRs.

How is the company most different from when you helped create it? How is it still the same?

The company has grown considerably. Rutter Technologies was acquired by another group early in its lifecycle, because of its potential opportunity and because the company needed the capital to grow. Rutter Inc. has now grown into a diversified, publicly traded company on the Canadian Toronto Stock Exchange. Our radar signal processing technology, which we acquired a few years back, has been sold into multiple markets, including security, ice navigation, oil spill detection, and even bird tracking markets. We are still a recognized leader in the VDR business, with approximately 4,000 systems being sold over the last 10 years, and still deliver a lot of VDRs.

How did you initially take an interest in the maritime industry?

I've always been involved in the marine industry from the research and development perspective since early days in the university. I did a lot of work on the problems with ice management of the east coast of Canada and in the Canadian Arctic. I also did a lot of work for the United States and Canadian Coast Guards on Search and Rescue (SAR) detection technologies for SAR applications. I guess the maritime industry was kind of in my blood, and that's why I ended up in the business.

How would you describe your management style?

I treat our people with respect, and we work as a team. I try to keep the team informed and insist on quality in our products as well as on bringing a professional approach to the business.

Please provide a brief overview of Rutter Technologies and its position in the marketplace?

Rutter Technologies is growing to be a significant player in the commercial marine industry worldwide. We have captured a substantial market share in the VDR business.

Right now we are getting a well established reputation for our radar signal processing and display technology. Rutter has been a world leader in the shipboard ice detection and navigation market with its Ice Navigator radar system. We are now achieving a leadership position in the oil spill detection market.

Since helping to found Rutter, what do you count as your greatest accomplishment(s)?

We took Rutter in its infancy to making it a well-known and respected company in the marine business. We were a small Canadian company growing from virtually nothing, and now we are well recognized by the industry. I think this is a significant accomplishment.

What do you count as your greatest challenges?

Our greatest challenges have been finding the capital to achieve what we wanted to do, maintaining the products and services, and establishing a global network to support our products and services.

Since Rutter was created, what do you count as the most important industry trend that has helped to shape the company and its offering today?

Rutter was created to supply voyage data recorders for the mandated commercial marine market. The requirement of retrofitting VDRs to existing cargo vessels that came into place in 2007, along with the earlier fitting requirement for passenger vessels, was probably the most important industry trend at the time that helped shape the company and gave us the recognition in the market globally. We did realize early on that this market would phase out in a few years; so we made sure we had other technologies to diversify the company and to allow us moving into other markets. One of the more interesting trends that have recently occurred and impacted us was the offshore industry moving into the Arctic. This has given us the opportunity to provide our ice navigation technology and is certainly having positive impact on our oil spill detection radar business.

How is Rutter investing today to ensure its viability tomorrow?

We are heavily investing in our R&D, especially on enhancing our radar technology, to ensure that we're developing technologies available in different applications for multiple markets.

How has the current global economic crisis affected Rutter's business?

Certainly the global economic crisis over the past couple years has caused downturn in the marine industry and affected all companies in the commercial marine business.

The delays in fittings for simplified VDRs certainly impacted Rutter's business significantly. However, our radar line of products, which target diversified markets, had helped mitigate a lot of the impact.

Can you share with us your outlook on business for the coming few years?

We see significant opportunities related to the opening up of the Arctic for radar based ice navigation systems.

We also see a substantial opportunity related to both terrorism and piracy in the use of our technology to secure facilities, ships, and such. Security has been a very significant business in the world, including coast surveillance, port security, and shipboard security. Additionally, the environmental concerns and the recent Deep Horizon event will certainly impact the technologies for oil spill remediation and management.

What do you consider to be the biggest challenges to your company in terms of technical matters?

In terms of technical matters, our biggest challenge is keeping our company technologically ahead in the areas we're involved in. We are the leader in the radar based ice navigation and oil spill detection business. As the markets quickly grow, we fully expect competition to come in. Our challenge is to continue enhancing our offerings to maintain our leaderships in these areas of business.

We took Rutter in its infancy to making it a well-known and respected company in the marine business. We were a small Canadian company growing from virtually nothing, and now we are well recognized by the industry. I think this is a significant accomplishment.

The New SMFF:

Coming to a COTP Zone Near You

By Capt. Katharine Sweeney

As of February 22, 2011, vessels carrying petroleum products in bulk will have to have additional criteria covered in their emergency response plans. In an attempt to increase the salvage and marine fire fighting capabilities in the U.S., vessels will soon need to show proof of coverage indicating that the vessel's operators have the resources available to meet some very stringent requirements (15 in all) in the event of an emergency, such as fire, grounding, collision, for every U.S. port the vessel calls and for the areas of transit inside of 50 miles from the coastline. While these new Salvage and Marine Fire Fighting (SMFF) requirements directly impact petroleum carriers, the Coast Guard knows that not just oil tankers have unfortunate events (or carry oil) and these requirements could be extended to all vessels.

If a vessel or barge does not have the plans in place for the port it is calling, the vessel may be denied entry into the COTP zone. Or it may be denied movement if the vessel does not have a plan for the port it is in. Items making up the list of the robust new requirements include:

- a pre-fire plan
- marine fire fighting response
- lightering
- damage stability (the means to assess the condition of the vessel, as well the subsequent effects of fire fighting and damage control on the stability of the vessel)
- identification of a salvage tug with suitable characteristics (towing configuration, bollard pull, emergency towing capacity in 40 knots of wind). Waivers can be requested to extend the response time in which the resources must be able to get to the scene of an emergency. However the requirement to have the resources available will still stand. In other words, the waiver will allow your salvage tug more time to get to the vessel, but it won't waive the requirement to have a suitable tug available. Waivers are due by January 22, 2011.

Geographic specific waivers and Alternative Planning Criteria (APC), if granted, will allow for a deviation from the requirements. However, the Coast Guard will be looking to see that equivalent levels of safety and pollution prevention/response are met. Sector Juneau has such an Alternate Planning Criteria in place. The plan does not require specific identified resources that may be unavailable due to the remoteness of the region. Instead, Sector Juneau requires that no servicing or repairs that affect propulsion occur while underway outside of 12 miles, other than emergencies, without prior notification. Furthermore, no oil transfer operations are allowed outside of 12 miles. The regulations allow for agreements with local, state, and federal resources.

An example would be the use of the local fire department's fire boats and personnel. The local Captain of the Port (COTP) will ultimately make the call as to what equipment is used. For example, if your plan has a specific tug listed, but there is a better suited tug nearby, the COTP may use his or her discretion as the SMFF plan is put into action.

Currently, there are no trained commercial marine firefighting teams available in the State of Hawaii. Presently, plans must only account for the port of Honolulu and 50 miles outward (encompassing Oahu and part of Molokai). Tank vessels operating within 50 nautical miles of Honolulu Harbor will be required to contract with commercial marine firefighting providers from the mainland and submit a temporary waiver request to the Sector Honolulu COTP. The bottom line is that you must have a plan and put some forethought into what could go wrong and what you are going to need.

Furthermore, you must either train someone on the vessel or have someone shore-side who can assess how to proceed with the plan of action, when an emergency happens. This assessment must occur within the first hour following a casualty and an on-site salvage assessment (or fire assessment) must occur within six hours for near coastal.

Resolve, T&T Bisso Form FiFi Coalition

T&T Bisso team delivering 6000 gpm during offshore firefighting deployment exercise.

Resolve Marine Group and T&T Bisso announced a coalition for Marine Firefighting services in U.S. waters. The agreement combines both companies' firefighting infrastructure to produce overlapping coverage and higher volume firefighting capacity throughout the U.S. The coalition was created to help tank vessel operators fully comply with the new Oil Pollution Act of 1990 regulations that will be effective on February 22, 2011.

The regulations require that all tanker and tank barge owners operating in U.S. waters update their existing USCG-approved Vessel Response Plan (VRP) with a Salvage and Marine Firefighting (SMFF) plan. Tank vessel owners must certify they have pre-contracted firefighting services, equipment, and trained response personnel. During the past three years, both RESOLVE and T&T Bisso developed comprehensive in-house firefighting response systems which include newly purchased, custom-built equipment and networks of trained maritime firefighters to meet any vessel response needs.

MARINE TECHNOLOGY REPORTER

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MTR 100

Profiling the 100 leading companies in the underwater technology marketplace.

MARINE TECHNOLOGY REPORTER

MTR 100 APPLICATION

Marine Technology Reporter's annual MTR100 awards edition is the subsea industry's most awaited annual ranking of the leading companies serving the global subsea industry.

The July 2011 Edition of Marine Technology Reporter will profile the leading 100 companies currently serving the marine technology market. This exclusive editorial product will be distributed to MTR's world-leading qualified circulation, and will serve as an invaluable guide for companies, government agencies, municipalities, research institutions and universities seeking product and service providers throughout the year.

DEADLINE: Return this application to MTR's editorial offices by May 27, 2011, or visit www.seadiscovery.com to apply. Alternately, you can e-mail required information and images to trauthwein@marinelink.com.

Photographs: In addition to information, please submit 2 photographs: one of the top executive, and one which depicts your companies leading technology. Please submit at 300 dpi/.jpg files.

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Contact Person Title: _____

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_____

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Number of Employees: _____

Annual Sales (US$): _____

Company Profile: 250 Word Description

Please provide here a maximum 250 description of your company, its history, and significant accomplisments.

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Technology Profile: 250 Word Description

Please provide here a maximum 250 description of the products and services your company provides, with particular emphasis on unique developments, or current R&D initiatives.

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Diving Deep

Marine Technology Reporter recently spent some time with ***Devon Grennan,*** *President of Global Diving & Salvage, to get his views on the evolution of the diving industry, and challenges ahead.*
by ***Greg Trauthwein, Editor***

What is your background?

I graduated from the University of Washington and went straight to work for Global. I do not have a diving background, so when I started in 1995, I worked on the marine environmental side of the house, although the company was much smaller than it is today, and everyone relied on each other for help across the company service lines. I got the opportunity to tend on projects, and developed an appreciation for the work our divers performed. I eventually began to manage projects, and eventually was promoted to the Environmental Division Manager, and then to General Manager. When the two principals took a step back from the day to day activities of the company, I was promoted to President at the end of 2008.

How did you come to be involved in the Maritime Industry?

My family has always been involved in the maritime industry; my grandfather owned a marine diesel engine company in Seattle, my extended family has worked for various marine related companies, and my father worked for Crowley Marine Services for 35 years, so I always had a healthy appreciation for working on the waterfront. When I was in college, I wrote my thesis on the impact of the Oil Pollution Act of 1990, and got a chance to interview professionals in the towboat business about casualty response operations. For some reason, the idea of working on a marine salvage or oil spill response resonated with me, and working at a commercial diving and salvage company sounded a lot better than working at a consulting company, which was what all of my friends were doing. One of the original principals at Global gave me an opportunity, told me not to quit my other job, and told me to be at the shop at 0700 every morning to see if they had work. Over the last 15 years, I have enjoyed the opportunity to work with great professionals, and to work for a company that has such an amazing culture of professional pride.

Please give a brief description on Global Diving & Salvage, including physical assets, employees, etc.

Global was founded by seven original partners in 1979, and now is owned by two remaining partners, but sub-

Cheesman Dam images, clockwise starting righthand page:

- **Barge moored over the work area.**
- **The Diving Bell Area is readied for deployment.**
- **A new spool being lowered into place.**
- **New gate beinglowered in place.**
- **Diver on stage at Cheesman Dam.**

DB Performance Images, starting top:

- **Dive station mounted aboard derrick barge.**
- **Topside package being loaded aboard barge.**
- **Upper portion of jack-up barge that was destroyed by hurricane, raised to the surface.**

stantively run by the senior management and diverse group of professionals both in the field and in the office. The company's corporate offices are located in Seattle, WA, but we now have regional offices in Anchorage, AK; the San Francisco Bay area, CA; and Houston, TX to support our local operations in those regions. We also work internationally when the right opportunity comes about. We have six core services lines: regional day to day diving services such as underwater ship husbandry and diving support for marine construction operations; casualty response project management and operations both topside and underwater; marine construction operations as a prime contractor; marine environmental support operations including small vessel operation; offshore diving support operations for the energy sector; and unmanned underwater operations with ROVs. We are capable of supporting all of these service lines in all of the regions we operate.

We have built and operate four saturation diving systems, and we have multiple mixed gas and surface diving systems across the company offices. We also have seven inspection class ROVs and own a SAAB Seaeye Cougar XT light work class ROV as well. We own and operate a number of small dive support vessels. But perhaps the most important asset that Global has are the professionals that work at the company. We have approximately 350 full time diving and marine professionals who have worked at the company for a long time, and who take great pride in doing a good job the first time. This culture was instilled in the company from the beginning, and we carry it forward with our new personnel.

While it appears you have diverse operations, what do you count as your core business?

Our core business is commercial diving, regardless of depth and type of service. Ship husbandry, underwater marine construction support services, casualty response management, offshore support services, underwater inspection and infrastructure repair and maintenance, etc. Due to the breadth and depth of our service lines, we found that we have very few competitors who we compete with in all of the service lines we provide, with the different diving methods (surface supplied air, mixed gas, saturation) across the regions we are actively involved in. The other services such as ROV operations and marine environmental services are predominantly value added services that complement our core diving services, even though they are stand alone profit centers now.

What do you count as the core strengths of your company?

• **Culture:** our company and employees take great pride in who we are, what we stand for, and how we go about performing our work. Even though the company has been making great strides forward, we still make sure our decisions are sound for our employees, and that we can maintain the perspective of providing a quality service to our clients in a safe manner, regardless of the internal cost of doing so. This has been the way Global has gone about performing our work since the beginning, and we will continue to keep that business model as we expand.

• **Diversification of services:** all of our service lines have distinct market cycles, and we are well aware of how the various markets ebb and flow. The scope of services that we perform really allows us to be able to utilize and move our personnel and equipment across various regions and service lines, thereby keeping our equipment utilization up, and keeping good people employed as well as developing and increasing their personal skill sets and exposure to different types of work.

• **Expertise:** We are good at what we do, both in the field and in the office. We have a broad experience across the service lines that complement one another well. These in-house capabilities provide us with a distinct advantage in responding expediently to client's needs.

• **Opportunistic approach:** We have always been cognizant of preparedness and planning, and looking ahead. We are healthy financially, and are very aggressive when opportunities become available. This is an underlying business philosophy that has enabled us to grow and expand in the fashion that we have to date. And one that we will continue to focus on into the future.

New divers are highly motivated, but are generally not willing to put in the requisite time to gain real experience. It could just be a generational issue, but one which our industry will struggle with as competent, professional, and experienced diving needs escalate both domestically and internationally.

How has commercial diving changed most significantly in your career? For the good?

The continued focus towards diving safety is the best change I have seen. The efforts of the ADCI to renew its efforts with the recently published Consensus Standards, 6th Edition is another move in the right direction to pursue the highest aims of diving safety.

For the bad?

Not necessarily a diving industry concern, but generally across the maritime trade as a whole: we are not building new generations of maritime personnel for the known demand. New divers are highly motivated, but are generally not willing to put in the requisite time to gain real experience. It could just be a generational issue, but one which our industry will struggle with as competent, professional, and experienced diving needs escalate both domestically and internationally.

What, in your opinion, have been the two or three technical advances that have been instrumental in making commercial diving more safe and efficient?

It is not necessarily a technical advance, but the more frequent use of saturation diving as a method for executing work for shallower depths. The life support redundancy, coupled with technical and regulatory advances with reclaim gas capability and use of hyperbaric rescue chambers, make it tremendously safe. And clients are seeing that certain projects, depending on depth and anticipated duration, can be as cost competitive as traditional surface gas diving, but with the reduction of multiple

decompressions on the divers.

Another evolution in diving is the acceptance of underwater construction techniques and constructability. Civil projects with underwater impacts are more and more frequent, and project management and engineering firms are coming forward to discuss how to rehabilitate, repair and in some cases, construct civil infrastructure directly with diving companies. The concept of designing a project around performing the work in the wet is much more commonplace then it was in past years.

How has the evolution of subsea robotics changed the nature of your business?

Subsea robotics definitely have a role, as the offshore energy market expands into ever deeper water, beyond the reach of divers, and they provide an absolutely necessary function. The technological advances in the recent past, coupled with the design of tooling and fixtures that are ROV operable allow them to do amazing things, they are the key to working in deeper water (over 1,000 feet). For work less than 1,000 feet, we feel they play more of a supportive role to traditional commercial diving services. They provide the ability for owners or engineers to 'see' underwater. On projects, where there is a potential for entrapment, they can be utilized instead of putting a diver in harm's way, they also can get into spaces and locations a diver cannot. The can be used as a beneficial complement to the work a diver can perform.

Another evolution in diving is the acceptance of underwater construction techniques and constructability. Civil projects with underwater impacts are more and more frequent, and project management and engineering firms are coming forward to discuss how to rehabilitate, repair and in some cases, construct civil infrastructure directly with diving companies.

What do you count as the biggest challenge to running a successful commercial diving business today?

The biggest challenge is to remain diversified in services lines while balancing the execution and quality needed to be successful. We strive not to just be capable, but to be the best at what we do. As we continue to grow and develop our regional operations, it is demanding to maintain the same standard of care and quality that our clients expect. A concurrent issue that is challenging is the development of professional tradesman in diving and marine construction. We are fortunate that we have experienced personnel, but the industry as a whole will not keep up with the future demand of skilled divers, constructors and technicians. Commercial diving specifically is a physically demanding trade, and we need to build and retain professional trades to meet domestic and international needs.

What is on the horizon – in terms of competition, legislation or technology – that you believe will change the way you do your business most in the coming decade?

I think the two issues that will impact the industry the most in the next decade will be advances in unmanned intervention, namely in surveying and ROVs; and the impact of legislation and federal and state funding to carry out those legislative directives. The use and accuracy of underwater technology keeps getting better; we are excited as these developments further supports the capabilities of underwater services. In our marine construction operations, we are constantly discussing the issue of constructability, namely in underwater construction techniques. Instrumentation and surveying tools allow us to discuss quantitative methodologies with engineering firms, and convince clients of what can (and in some cases, can't) be accomplished underwater in a cost efficient manner.

The majority of commercial diving work has a direct relationship with legislation, especially in our business. We perform platform removal and plug and abandonment work in the Gulf of Mexico, along with inspection and routine maintenance of pipelines and platforms; we maintain and retrofit bridges, dams, and reservoirs; we manage and execute field operations for sunken wreck removals; we preventively boom marine fuel transfers. The list goes on and on; it was only recently that it dawned on me that a predominance of the work we perform in and out of the water is in support of compliance with state and federal regulations, and that the funding is also closely tied to governmental agencies in some form or another.

MARINE TECHNOLOGY REPORTER

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May 17-19, 2011 we return to the Newport Yachting Center in beautiful Newport RI. The location brings us right to the water's edge. Exhibitors will be showcasing their latest gear in a casual business atmosphere designed to highlight the technology on display while allowing attendees live access. This interactive atmosphere provides attendees the knowledge they need to make informed buying decisions about the systems and services available within the industry that address their needs.

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See you in Newport!

Rob Howard
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Presented by:
MARINE TECHNOLOGY REPORTER

Investment and Regulations & the Future of

Brazil's Pre-Salt

By Claudio Paschoa

Since the discovery of light oil at the Tupi pre-salt field in 2007 and other pre-salt fields discovered at the Santos and Espirito Santo Basins subsequently, there has been national and global excitement over the possible extent of Brazil´s pre-salt reserves.

It is important to get a big picture of the deepwater and pre-salt regions in Brazil, also looking at the major regulatory and policy changes that will occur and understand the effects that these will have on future investment opportunities in the Brazilian pre-salt.

The international players that managed to acquire concession areas in the early bidding rounds pertaining to pre-salt plots in the Santos Basin can be considered very fortunate. The next bidding rounds will most probably not be offering as many prime choices as before, since regulations are set for major changes that will most probably restrict international involvement in the Brazilian pre-salt market, new regulations will also allow Petrobras to have a minimum participation of 30% capital stake on all new pre-salt blocks.

Brazil´s congress is negotiating four major bills which will significantly alter state policy towards the pre-salt reservoir regions and this will have a game changing effect on business related to these pre-salt regions. There are actually three regions in the Brazilian offshore that have been proven to contain large pre-salt reservoirs; Santos Basin, Campos Basin and Espirito Santo Basin.

Of these three basins, the Santos Basin is by far considered to have the greatest reserves, and is also where the world spotlight shines. The very recent discovery of the Franco reservoir, estimated to contain 4.5 billion barrels and the Libra reservoir, estimated to contain 8 billion barrels has risen the stakes and there is still the possibility of more major (more than one billion barrel) discoveries in other new exploratory wells at the southern and eastern portions of the Santos Basin.

The fact that ANP (National Petroleum Agency), which has oversight over all aspects of oil and gas E&P in Brazil, released its estimate of a total Brazilian pre-salt recovery potential of a 80 billion barrels (many leading Brazilian geologists believe in over 100 million barrels), has only increased excitement over the discovery possibilities and potential of the pre-salt plays but also raised concern over Petrobras' capacity to finance and undertake the pre-salt E&P. Recently, Petrobras finalized the world's largest shares offer, done mainly to finance the continued pre-salt E&P through its $130b investment plan from 2010 to 2014. Petrobras announced that it raised approximately $67b. The share offer is vital to Petrobras' plans to develop the offshore deepwater pre-salt plays and also continue its pre-salt exploratory program. As of this writing, the pre-salt map of Brazil is being re-drawn, with high potential for new pre-salt discoveries between the north Campos Basin and south Espirito Santo Basin, along with a recent ANP disclosure that it is to receive, in the fourth quarter of 2010, the final seismic analysis from CGGVeritas for areas in the south Santos Basin, off the State of São Paulo. According to the ANP, preliminary seismic data analysis indicates a significant probability of major reservoirs of light pre-salt oil to be uncorked in this southern deepwater province. Possibly with reserves as big as Tupi and Libra.

Petrobras will invest around $130 billion over the next four years, hoping to almost double its oil output, to about 3.9 million barrels a day by 2014.

Regulation Changes

The four projects that constitute the new regulatory model

- Transfer to Petrobras of the O&G exploration and production activities in specific areas of the pre-salt layer that are not subject to concessions, limited to the maximum volume of 5 billion boe, this will be done for funding purposes and has been voted and approved by the Brazilian congress;
- Creation of a state owned company named Pré-Sal Petroleo S.A (PPSA), which will have power to coordinate exploration in the pre-salt, participate in all pre-salt exploration partnerships and have veto rights over decisions made by independent companies exploring the pre-salt, this also has been voted and approved by the Brazilian congress;
- Project that institutes the Social Fund (Fundo Social),

which also has been voted and approved by the Brazilian congress;

- Project creating the shared production system, which replaces the concession model, still to be voted, but it is widely considered that it will be approved by congress;

The main objectives of the new legislation is to raise funding needed to finance pre-salt E&P and to exploit the pre-salt; guarantee Brazil´s socio-economic development; guarantee that the State is the primary recipient of new oil revenues and Petrobras is the primary operator and at least partner at all fields; exert greater state influence on decisions on anything concerning the pre-salt, through the PPSA.

Petrobras will have a minimum 30% capital stake on each pre-salt venture in future bidding rounds, starting at the 11th round, to take place late 2010 or in early 2011. Petrobras will also be allowed to bid for larger block shares, if it chooses.

Another change is that Petrobras will be the sole operator of all the new pre-salt concessions and other areas considered "strategic" by future determination of the government, also from the 11th bidding round on. With this, Petrobras, will be in charge of all the exploratory operations, which encompass drilling new wells, extended well testing (EWT) and new geological studies to prove the range of the discoveries in all pre-salt areas.

Petrobras will invest around $130 billion over the next four years, hoping to almost double its oil output, to about 3.9 million barrels a day by 2014.

The Brazilian government has decided to shift to the adoption of production sharing agreements, instead of concession agreements, as has been the norm for a long time. The shared production system, which replaces the concession model, introduces the Profit Oil concept, which represents the total produced by a given field, deduced of the costs and expenses associated with producing oil there. Another concept is the Cost Oil, which corresponds to the costs and investments the contractor makes to undertake the oil research and prospecting activities. This will also come into effect from the 11th bidding round onwards, but will affect all blocks, including pre-salt and post-salt.

The Government´s idea is to harness the bonanza of Brazil's pre-salt into a social fund, akin to what was done in Norway, in order to finance much needed social and

Petrobras Financial Director is Almir Barbassa all smiles at the NYSE during the share offer.

(Photo: Petrobras)

The P-57 is equipped with unprecedented technology for collection of 4D seismic data, installed permanently on the seabed. It permits greater speed in obtaining seismic data.

economic development projects in the country, while not infringing upon the rights of other operators already active offshore. The social fund is also one of the main items in the new model. The fund will primarily be used for health, basic and higher education, along with scientific and technological research.

Petrobras Share Offer

Brazilian Government Buys More Petrobras Shares

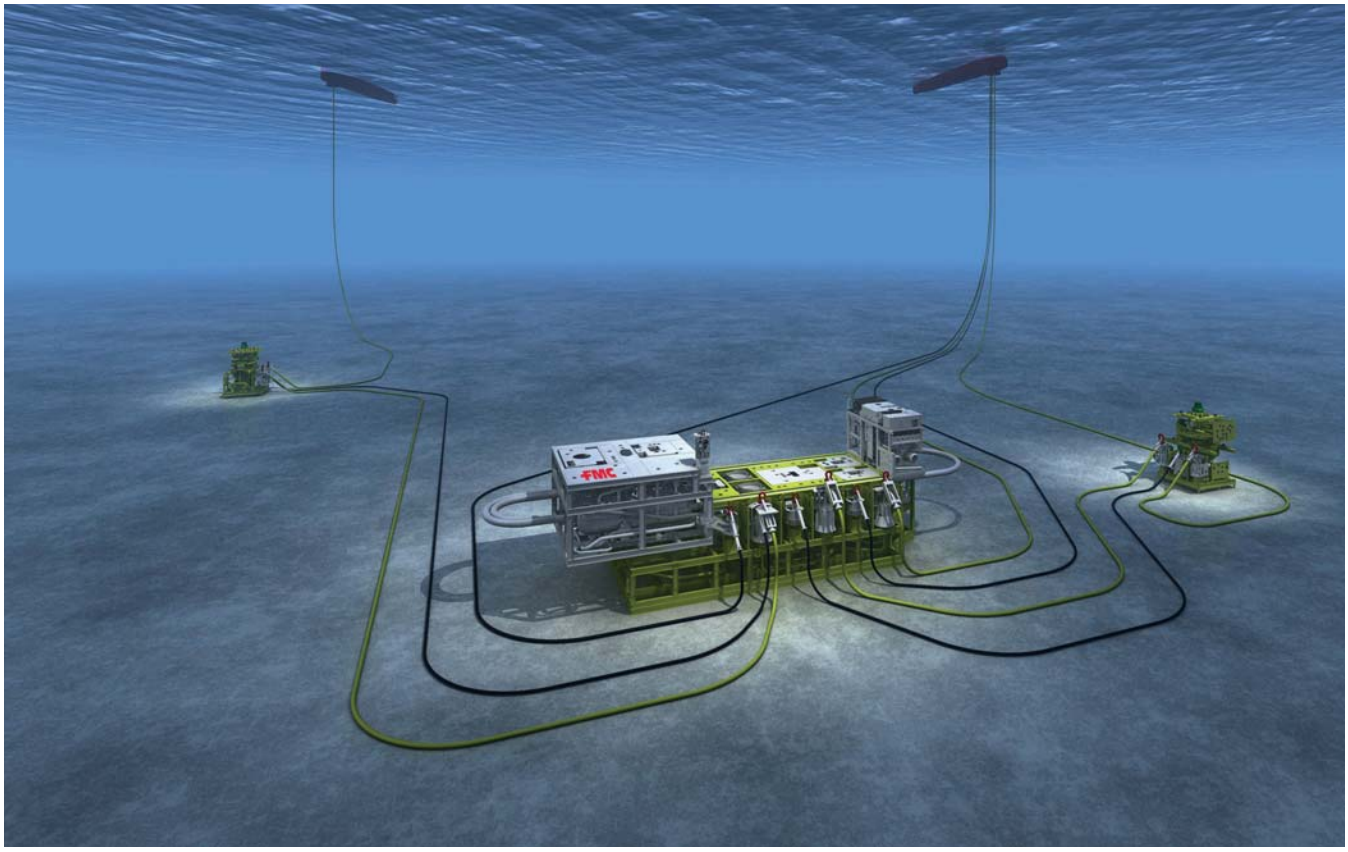
The Brazilian government has increased its Petrobras shares from 40% to around 48%, during the recent Petrobras shares offer, said Secretary of Finance, Guido Mantega, at the São Paulo Stock Exchange (Bovespa). The funds from the share offer will also reduce Petrobras' net debt-to-equity ratio, which has increased to nearly the company's self-imposed 35% limit. The capital influx will once again allow Petrobras to raise more funds on the international debt markets, as the company will most probably need even more money to invest in the growing pre-salt frontier.

"The operation was a great success, even beyond our expectations, at a moment of adverse conditions, as there is still a world crisis. Adding up all the government partners, BNDES, the Sovereign (Social) fund and State, our participation goes to approximately 48%," said the Secretary of Finance. Brazil´s President Luiz Inácio "Lula" da Silva said, "The Petrobras share offer is a government safeguard to avoid that the riches be lost in a labyrinth of misuse and equivocal interests". President Lula also exclaimed that to the eyes and ears of the world, the word Brazil is synonymous with the most promising development frontier in the twenty-first century.

While Brazil's political and financial leadership hails the movement, political and corporate entities outside of Brazil eye the moves with a more cautionary note, to see if the increased investment indicates a higher level of government meddling with Petrobras administration and an overall increase in government control over company business decisions.

On speaking of the reasons why the market supported the shares offer, Petrobras President José Sergio Gabrielli

Subsea separation system at work in Brazil.



(Source: Illustration FMC Technologies)

said, "Petrobras is the oil company with the greatest growth potential for the coming years, in five years it will have between 25 billion and 30 billion boe in reserves and has 85% of its revenue from the Brazilian market, processing its oil in its own refineries and selling its products internally."

Investment in Shipbuilding, Rig Construction

Petrobras has already ordered 12 drilling rigs from international shipyards for delivery up to 2012. It will need at least another 28 drilling rigs, planned to be built in Brazil for delivery from 2013 - 2018. The first seven of these contracts have been set aside for a single shipyard, making it possible for the tender winner to invest heavily enough to increase its shipbuilding technology capabilities and introduce a high level of automation, in order to achieve an efficient production line and meet the deadlines, thus helping to make the shipyard competitive in the international market. 49 tankers (three product tankers of 45,000 DWT in final round of bidding) have already been ordered by Transpetro to six different national shipyards, with deliveries scheduled from 2010 to 2015. Of these, only two have been delivered up to now.

Fourteen production rigs and FPSOs to be connected to 184 oil wells, will be soon be needed for the early pre-salt production, from a total of 95 rigs Petrobras is estimated to need by 2020.

Petrobras ordered 12 drilling rigs from shipyards for delivery up to 2012. It will need at least another 28, planned to be built in Brazil for delivery from 2013 - 2018.

The current Brazilian fleet of offshore support vessels of all kinds is estimated to increase around 59% by 2015, reaching a total of 422 vessels. Of the current fleet of vessels, 85% are on contract to Petrobras. This increase may even eventually be higher as Petrobras alone is expected to need to double its fleet, because of the distances involved in the pre-salt E&P.

Plans also call for a hybrid FPSO production line at the Rio Grande shipyard in Rio Grande do Sul, for the production of a first installment of eight nationally built FPSOs for the pre-salt. The plan is to develop construction methods based on repetition, creating an efficient and highly automated production line for the FPSO hulls and topsides, with advanced finishing capabilities and high

Petrobras President Sergio Gabrielli speaking about the pre-salt development plans.

(Photo: Petrobras)

level of quality control. The only system that will differ in each FPSO will be the CO^2 removal system, which will be dependent on oilfield characteristics. The Rio Grande Shipyard is going through a renovation which has already seen it build a large drydock and other new key facilities at its location in the city of Rio Grande, in the southernmost state of Rio Grande do Sul. The P-57 FPSO, which was christened at the Brasfels shipyard in Angra dos Reis in Rio de Janeiro on October 7, 2010, will be the model for the FPSO production line at Rio Grande.

The P-57 production system is equipped with unprecedented technology for collection of seismic data in 4D, installed permanently on the seabed. This technology permits greater speed in obtaining seismic data, as well as improving the quality of reservoir interpretation, consequently enhancing production efficiency. The unit will also adopt an innovative method of oil recovery from the reservoir to the FPSO, through the use of a subsea centrifugal pumping system.

"The cost of building platforms (production) in Brazil is already a little bit less than international market prices," said the Executive Engineering Manager for Petrobras, Perdo José Barusco Filho. Highlighting that the P-57 was build at the Brasfels shipyard in Rio with 68% local content, and that this had no influence on the unit´s price, which added up to $1,2 billion, including conversion. The ship hull for P-57 was converted at the Keppel shipyard in Singapore and the next two FPSOs that will be build are also having their hulls converted in Singapore as there is still no yard deemed specialized enough for this task in Brazil. The old Inhaúma shipyard in Rio, which has been leased for 20 years to Petrobras will be configured for this task.

Increased O&G Research Investments

At the same time, Petrobras has partnered with the Federal University of Rio de Janeiro (UFRJ) and Schlumberger to open a $10-million research center. The state of the art facility will be built alongside the COPPE "Ocean Lab," and will be dedicated to the development of local technologies for offshore exploration.

This new facility will focus on developing geosciences software, new technologies for producing and characterizing reservoirs in the pre-salt, and building a 4D geophysical processing and interpretation center. Research projects are planned in electromagnetic characterization, seis-

New P-57 FPSO will be the model for future pre-salt units

mic data analysis, nuclear magnetic resonance technology, and H^2S electrochemical sensors, with six more projects currently being evaluated. The center will allow Petrobras to develop experimental infrastructure with the advantage that the local suppliers will be present from the beginning of the research project, and therefore better able to supply the technology once it is qualified.

Emphasis will also be given to research partnerships with other leading universities, such as the São Paulo University (USP), among others.

Petrobras´ own research institute CENPES has recently undergone a major expansion, now occupying more than 300,000 sq. m., making it one of the largest centers of applied research in the world. There will be various laboratories designed to meet the technological demands of Petrobras' business areas, in particular, the laboratories of Biotechnology, Environment and Gas & Energy stand out. The expansion will also include modern laboratories dedicated exclusively to meeting the demands of the pre-salt projects.

Major Investments in Logistics

Petrobras will invest in three new ports and three new airports, which should all be operational between 2014 and 2016 for pre-salt logistics support. According to the company´s schedule, the new São Tomé airport in Rio de Janeiro and the new Ubu port in Espirito Santo should be launched by 2014. Plans call for a new airport and a new port to be operational in Santos, São Paulo by 2015, with a new airport in Itaguaí, Rio de Janeiro and a new port in Itajaí, Santa Catarina expected by 2016.

Logistics hubs will also be implemented in order to transport workers, produce and equipment to and from pre-salt E&P units at the Santos Basin, many of which are located around 186 miles from the coast. Petrobras plans to use these hubs as distribution centers for all the pre-salt operations at the Santos Basin. Some of these hubs may actually be located offshore, roughly between the coast and the pre-salt plays. According Araújo, "This will increase safety at the platforms and reduce costs."

New O&G refineries are also planned in order to make the downstream sector more efficient in coping with the new production influx from the pre-salt and in distributing the refined products to the national market and to ports for export.

From a small refinery in the state of Bahia in 1953,

(Photo: Petrobras)

Petrobras expanded its refining park to 15 units (11 in Brazil and 4 abroad), it is also building new conversion plants to produce high-quality, low sulfur content fuels, the new conversion plants will help to add value to the heavy domestic oil, which mainly comes from the Campos Basin. Of the four new refineries, one may be dedicated to export of refined oil products. The investment planned for Petrobras´s downstream area up to 2014 is $78.6 billion, 50% of which will be used to enhance the refining facilities and their efficiency.

Subsea O&G separation is also being tested and may be used in some pre-salt projects. A new concept FLNG is also being studied and is actually going through a FEED process. Inside sources and also some recent Petrobras management disclosures indicate the project is considered feasible and a final decision may be made by the end of the year. The idea is to build a huge ship or convert a VLCC or Chinamax hull. The FLNG moored over the well or system of wells, will receive gas that can be extracted from the oil by a subsea separator or aboard the FLNG, then frozen to liquefied natural gas (LNG) and offloaded to LNG tankers right there for delivery. With this the downstream will start right over the wells, greatly reducing logistics problems and overall cost. The FLNG is expected to cost around $5b.

Final Comments

Petrobras celebrated its 57th anniversary on October 3, 2010, and it ranks as second largest supermajor O&G operator in the world. In 2006, Brazil achieved self-sufficiency in O&G production, and soon thereafter Petrobras became a global energy leader. A leader in deepwater and pre-salt O&G exploration, an important and growing O&G, Biofuels and Environmental research sponsor and is now possibly the world´s biggest in market value.

The exploratory success in the Brazilian pre-salt has been impressive: Petrobras maintained an 87% drilling success rate and Shell has recently uncovered another pre-salt play. Although this success rate is not expected to continue at this pace, there is still a large potential for pre-salt discoveries in Brazil.

The major challenge really lies in the logistics for O&G transport from the plays to the refineries on the coast, as helicopters are about at the limit of their fuel capacity when going to the furthest plays. The bottlenecks caused by the local content policy is complex as there is need for efficient and modern shipbuilding structure, which will be necessary in order to deliver the large volume of tankers, FPSOs, drill ships and rigs that are in such great demand and also need to comply with local content policies during construction and operation of the vessels and units.

It is important to note that most players involved with the pre-salt E&P are collaborating with each other, at least to a certain extent, not only to develop technologies but also to make the tricky deepwater drilling and recovery safer. ANP is also playing an important role there, by bringing on more stringent regulations and hopefully more consistent inspections. History will note a different deepwater O&G exploration and production mentality before and after the Deepwater Horizon tragedy at the GOM, lest we forget.

Seadrill latest generation deepwater driller West Eminence arriving in Rio.

(Photo: SeaDrill)

Naval officers helps young people learn science and engineering

With SeaPerch, Students

Dive into Science

By Edward Lundquist

Two naval officers and little build-it-yourself underwater robot are helping create a new generation of scientists and engineers. Ensigns Natalya Aoki and Patrick Cooper, recent graduates of the United States Naval Academy in Annapolis, Md., say the "SeaPerch" remotely operated underwater vehicle (ROV) can teach valuable lessons—from grade school to grad school.

Aoki, from Seattle, Wash., graduated with a degree in astronautical engineering, a track of the aerospace engineering program, with a minor in Russian. She will be going to the Navy's Flight School for training. Cooper graduated with a degree in ocean engineering. The Portage, Mich., native will be going to the Navy's Nuclear Power School for training and eventually serve in the Submarine Force.

As part of the "Science Technology Engineering and Mathematics," or STEM, outreach program at the Naval Academy, Aoki and Cooper helped train teachers—and even made an instructional video—to build and incorporate SeaPerch ROVs in their classrooms.

"SeaPerch is an underwater robot made of everyday materials such as PVC pipes, DC motors, propellers and shaft adapters, wires, film canisters and toilet bowl wax. The three motors allow it to maneuver up and down, and left and right," says Aoki. "We use it as a teaching tool to convey principles such as buoyancy, stability, electricity, and electrical and mechanical engineering."

Aoki and Cooper teamed with students at Lafayette College in Easton, Pa, who were taking a course called "Envisioning Environmental Science," taught Prof. Arthur Kney, associate professor of civil and environmental engineering and Prof. David Husic, professor of chemistry, to teach science fundamentals to elementary school students.

According to Kney, "the course is focused on arming students with academically sound tools that will prepare them to better understand our globally-connected environment, to prepare them to be better stewards of the environment, and to develop the necessary knowledge base to assess and respond to the impact of the global environmental issues that accompany a 21st century lifestyle."

Envisioning Environmental Science was an interdisciplinary examination of environmental science by exploring New Zealand. The 22 Lafayette college students shared what they learned with the elementary school students from Martinsburg, Pa. Through webcasts, the Lafayette students could explain such topics as wetland and water quality, climate change, green building, and Maori culture to the elementary school students back in Pennsylvania.

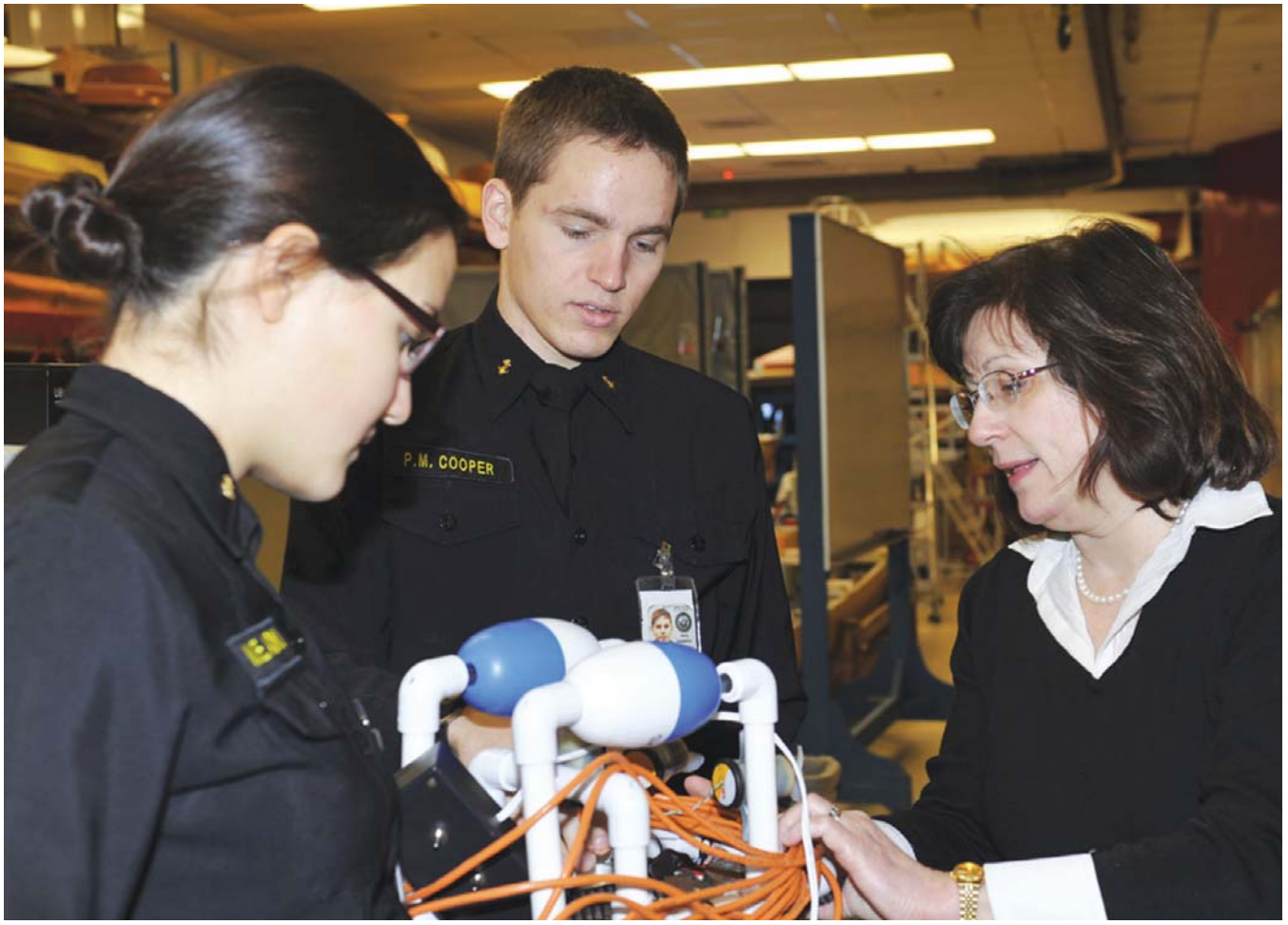
"SeaPerch was a part of the connection between the elementary school in Pennsylvania and the class at Lafayette College," says Cooper. "Natalya and I went to the elementary school and held a workshop with high-school students and teachers so that they would be prepared to build the SeaPerch with the elementary kids."

Lafayette students who were taking the interim course joined with the Martinsburg students, as well as students from several Easton middle schools, in learning to build and operate SeaPerch underwater robots at the Naval Academy in Annapolis.

"By using SeaPerch, we had a central education piece that all of the students worked on. We the used this common SeaPerch experience to thread together the various science and engineering activities to teach science as well as demonstrate engineering applications that tie to the science," says Kney.

Because of their involvement in helping the Lafayette students with SeaPerch, the two naval officers were invited to accompany them to New Zealand.

According to Aoki, the premise of the trip was for the students of the Envisioning Environmental Engineering course to get hands on experience with what they were learning and share it via real time video chats back to the 3rd graders they were working with in Pennsylvania.



Ens. Natalya Aoki (left) discusses the SeaPerch underwater robot with Ens. Patrick Cooper and Prof. Angie Moran at the U.S. Naval Academy. The photo was taken when Aoki and Cooper were attending the academy are participating in an educational outreach program for young people in science, technology, engineering and math.

Learning by teaching

"I like to use the idea of students teaching students," says Kney. "You don't really learn something until you teach it. Teaching to younger kids is fun for college students because of the interest level, excitement and wonder they bring to the table. It is a win-win-win situation. Our college kids get a new perspective with regard to what they are learning and it helps them better understand what it is they are learning. In the end we can help teachers with science and engineering."

The college students in New Zealand communicated to elementary school students back home through blogs and emails.

"We went to a geothermal park, climbed a glacier, stayed with the Maori people for a few days and learned about their culture, swam with Hector's dolphins, hiked and learned about the rivers and pollution." Aoki says.

The Lafayette students were in different focus groups, and we incorporated SeaPerch in their scientific activities. For example, the Water Quality group conducted water testing using one of the SeaPerch ROVs that the elementary school students built, with multimedia elements sent back to the elementary school," says Cooper.

"Whenever we got the chance, we put a SeaPerch in the water and took video to send back to the elementary students," Aoki says.

She says the most gratifying aspect of SeaPerch is seeing young students build a SeaPerch from just everyday parts and end up with an underwater robot that they can take complete ownership of.

Aoki enjoys soldering the parts of the SeaPerch control box. "The hardest aspect is washing toilet bowl wax off of your hands or fixing a switch that has not been soldered properly. But," she says, "There is endless fun in just playing with the SeaPerch in the water."

Cooper agrees. "The most difficult aspect of SeaPerch is

STEM: Root of our Future

Science, technology, engineering, and math (STEM) education is important for our Navy and our nation

The story about Ensigns Natalya Aoki and Patrick Cooper is an important story on several levels.

These two officers turned a diminutive, build-it-yourself underwater robot into a powerful impact on young people. The SeaPerch remotely operated vehicle (ROV) might look like a toy, but it is being used by educators from grade school to grad school to teach some of the fundamentals of science and technology.

By working with college, high school and elementary students, they represented the U.S. Naval Academy and the Navy in setting a marvelous example, while opening up a new world of discovery for these young people. Science, technology, engineering, and math (STEM) education is an important issue for the Navy and the nation. We need to reach young students at an early age, inspire them toward careers in science, technology, engineering, and math, support them as they get into college and graduate school, and provide them with careers that will be there waiting for them when they graduate.

According to the National Science Foundation, about 2.5 million high school students graduate each year. About 2 million of them go to college. Fewer than half of those—about 900,000— begin to major in science, technology, engineering, and math subjects, and fewer than half of those actually graduate with bachelor's degrees in those technical subjects. A fraction--about 186,000—actually go on to obtain advanced degrees. That's a pretty steep pyramid.

Supporting STEM is important for our country, but the Navy also has a vested interest in ensuring we can draw from a talent pool of good scientists and engineers to support the highly technical requirements of the Fleet, today and into the future. We also need the best and brightest to become science, technology and math teachers, to perpetuate the education of smart and innovative scientists and engineers.

By helping students to build their own SeaPerch underwater vehicle from kits, this program helps them learn about concepts in electricity, displacement, propulsion, buoyancy and stability, all while having fun. By adapting their SeaPerch to retrieve objects, avoid obstacles, collect samples or go faster, the students learn about problem solving.

Admittedly, this effort is hard to measure. For the young students in particular, we measure success by how many young people we can we can reach.

Ens. Aoki will be attending the Navy's Flight School before reporting for duty with the Navy's Air Forces. Ens. Cooper is attending Nuclear Power School and will enter the Submarine Force. Thanks to them, we are reaching young people in a meaningful and positive way.

Nevin Carr, Rear Admiral, U.S. Navy
Chief of Naval Research

putting down the controller so that other people can play with it."

More than a toy

Cooper says SeaPerch is more than a toy. He enjoys watching the children having fun with something that they actually built with their own hands. "They may have thought they couldn't do something so complicated on their own."

"The most fun part is helping student's think of a name for their Perch," Cooper says. "It is always good to be reminded of the creativity and imagination that children have."

Where young students may at first see their robot as a final product, they soon realize it can do many other things. SeaPerch can be adapted to be faster or more maneuverable, or equipped to retrieve objects or collect samples. It becomes a learning aid for problem solving.

According to Traci L. Shoemaker, a reading specialist at the Martinsburg elementary school, students have different abilities and interests, so it's a challenge to reach every student. The SeaPerch project, which teamed her elementary school students with the local high school mentors, the Lafayette College students, and the Naval Academy Midshipmen, connected with them on a variety of levels.

"For many of my girls, they loved having the undivided attention of 'cool' older students, and seeing them involved in a project that required the use of power tools and wiring made them realize that this kind of science projects is something they really can do. For boys, the power tools themselves were an allure. Any chance they had to use the drill, the soldering iron, or screw driver, showed them that maybe everything you learn in school is

not centered around writing and reading, the subjects that come a little harder for them. My top students realized all the answers weren't in black and white. They needed to think through problems, like why their motor wasn't working. Sometimes they would find the problem was a weak wire connection to the motor; or maybe they didn't follow directions as well as they thought they did. In the end, the look on the young faces when the motors worked and the SeaPerch was able to move through the water was priceless," Shoemaker says.

Shoemaker appreciated the help she received from Aoki and Cooper. "I am not a mechanic and have no claim to any knowledge of how to build mechanical things, so attempting to lead a project such as this was a bit intimidating at first. Having the training from Natalya and Patrick helped me gain confidence to build a complex piece of equipment with eight and nine year olds."

"The Navy people who brought the SeaPerch kits were viewed as superheroes," Shoemaker says. "They did a great job explaining what the project was all about and also what the Naval Academy was like. The students really enjoyed the workshops they attended at the Naval Academy and loved the challenges of 'driving' their SeaPerch in the tanks."

"Kids just naturally gravitate to the Midshipmen," says Prof. Angela Moran, who teaches mechanical engineering at the Naval Academy. "Patrick and Natalya are terrific ambassadors for the SeaPerch program. They were able to convey the concepts at just the right level but impress the kids with all the possible ways ROVs are utilized."

"I think the program has served them well in return," Moran says. "They have seen the benefits of their own education and had a chance to learn through teaching."

With a current shortfall of American engineers and scientists, Aoki says it's crucial to excite young students in the science, technology, engineering, and math disciplines. "SeaPerch addresses this issue quite well and also works as a great team building exercise."

STEM education is an important issue for the Navy and the nation, says Rear Adm. Nevin Carr, Chief of Naval Research. "We need to reach young students at an earlier age, get them inspired to careers in science, technology, engineering, and math, support them as they get into college and graduate school, and provide them with careers that will be there waiting for them when they come out the other end."

"SeaPerch is a wonderful tool to make STEM fun and interesting, and we also used it to bridge the gap between a Pennsylvania school and scientific testing in New Zealand," Cooper says. "Ultimately we were teaching the merits of SeaPerch in motivating students to be involved with STEM. By bringing along the Sea Perch that was built by the elementary students, they felt like they had a hand in contributing to the scientific testing" says Cooper.

Captain Edward Lundquist, USN (Ret.) is a science writer with MCR, based in Arlington, Virginia.

What is SeaPerch?

SeaPerch is an innovative underwater robotics program that trains teachers to teach their students how to build an underwater Remotely Operated Vehicle (ROV) in an in-school or out-of-school setting. Building a SeaPerch will teach basic skills in ship and submarine design and encourages students to explore naval architecture and marine and ocean engineering concepts. Students will also learn very important engineering and design skills and will be exposed to all the exciting careers that are possible in Naval Engineering, Naval Architecture, and Ocean and Marine Engineering, just to name a few. Most of all, the SeaPerch project is designed to be fun while also building teamwork and inspiring young minds. SeaPerch is a program of the Society of Naval Architects and Marine Engineers, sponsored by the Office of Naval Research. Educators interested in finding out how SeaPerch can make a difference for their classroom curriculum, after-school program, summer camp and extra-curricular activities should visit **www.seaperch.org.**

Feds, Military Use Underwater Metal Detectors

A number of US Navy dive teams are putting underwater metal detectors to work in their search and recovery operations. These teams include Mobile Diving and Salvage Unit 1, Explosive Ordnance Disposal Mobile Units 4 & 11, Underwater Construction Team 2, and the SEAL Delivery Vehicle team (SDV-1) in Pearl City, Hawaii. They use detectors for a variety of tasks such as locating explosive devices and weapons, finding anchors and chains, tracking pipelines and cables, and searching for tools that are dropped from ships and piers.

Military divers increasingly use Underwater Metal Detectors.

The Federal Bureau of Investigation (FBI) is also using underwater detectors in their search operations. The Bureau's divers are often called to assist state and local law enforcement agencies in their search for a weapon thrown in a waterway. Criminals mistakenly believe if they dispose of a gun or knife in the water, it will be lost forever. FBI dive teams prove them wrong time and again by recovering the weapons, even when they're buried deep in mud. In one case the team managed to find all the pieces of a hand gun that was completely disassembled before being tossed into a river.

ATF (Alcohol, Tobacco, and Firearms) is another bureau using these high tech tools. Their Explosive Training Branch (ETB) recently added a detector to their arsenal. ETB conducts programs for local, state, and federal law enforcement agencies to teach identification and location of explosives, and how to properly handle and dispose of them. With the threat of a terrorist attack on any front, officers need to know how to search for, and locate, explosive devices that are attached to ships,

bridges, piers, and other underwater structures. U.S. Army Corps of Engineers (USACE) use these instruments to locate metal objects when doing site inspections for environmental clean ups, like the one recently conducted at the former Hammond Bombing and Gunnery Range in Louisiana. The Corps' HTRW (Hazardous, Toxic, and Radiological Waste) branch recently picked up a couple of underwater detectors to assist in their restoration operations at former defense sites.

The detector of choice for all of these teams is JW Fishers Pulse 8X, a commercial grade machine designed for industrial and military operations. Robert Chacon, head of the FBI's California group, calls the detector's rugged construction "practically bulletproof". The Bureau's dive units in New York, California, Florida, and Washington DC are all using these machines for their underwater search operations. Each team has purchased a quantity of these high performance locators along with interchangeable coils. Six different coils can be attached to the electronics unit which gives the detector tremendous versatility. It can be used on land, diving to depths of 200 feet, or deployed from a boat.

The National Marine Fisheries Services, a branch of NOAA, picked up a detector for their Milford Laboratory in Connecticut. The facility conducts research on culturing fish and shellfish, development methods for commercial use, stock enhancement, and restoration. They join scientists from as far away as Hong Kong and Australia using underwater metal detectors for their marine resource management programs. The Department of Agriculture, Fisheries, and Conservation in Hong Kong are using a Pulse 8X with a probe coil to find metal plates buried in the beach that mark the location of sea turtle nests. Department spokesman KS Cheung says, "In the past we used some cheap detectors, but their performance was poor. Our colleagues at Taiwan University were doing the same work using the Fisher model and reported excellent results; they convinced us to switch detectors." In Australia, Dr. Tasman Crowe, a scientist with the Centre for International Agriculture and Research is using his 8X to monitor shellfish populations. He studies the movements of marine snail colonies by detecting small metal tags affixed to their shells and tracking their movement over time.

Other federal government agencies using this detection gear are the US Border Patrol, US Forestry Service and the US Environmental Protection Agency. Each of these agencies has a different use for their detector. It helps the Border Patrol search for weapons that are disposed of, and sometimes hidden in, rivers and water holes. It aids the Forest Service in locating chains implanted in river banks to secure soil and vegetation, and it assists the EPA in locating drums of hazardous waste that are disposed of in our nation's waterways.

www.jwfishers.com

Marport Appoints Dr. Pinto Chief Sonar Scientist

Marport Deep Sea Technologies appointed Dr. Marc Pinto as Chief Sonar Scientist. He will be employed full-time with Marport's French subsidiary located in Lorient, France. Dr. Pinto graduated from the Ecole Nationale des Ponts et Chaussees, Paris in 1983. He received his Ph.D. in Solid State Physics from the University of Paris in 1991. From 1985 to 1993 he worked as a research engineer for Thomson-CSF, specializing in the application of numerical techniques to magnetic recording. In 1993 he joined Thomson-Sintra (now Thales Underwater Systems) as Head of the Signal Processing Group, specializing in research of sonars for maritime mine countermeasures and airborne anti-submarine warfare. In 1997 he joined the NATO Undersea Research Center, La Spezia, Italy where he served as Head of the Mine Countermeasures Group and conducted research into Synthetic Aperture Sonar systems for hunting maritime mines. In 2004 he was appointed Head of the Expeditionary Mine Countermeasures and Port Protection Department where he oversaw research for AUV-based minehunting, maritime mine countermeasures and harbor defense.

Bolton Joins OMM

Offshore Marine Management (OMM) strengthened its position in operation and maintenance with the recruitment of industry specialist, Stephen Bolton to the newly created position of Director of Operations and Maintenance.

Scripps Scientist Honored

Scripps Institution of Oceanography at UC San Diego marine ecologist Ed Parnell has been honored with the 2010 Roger Revelle Award from the San Diego Oceans Foundation. The award, named after former Scripps director, climate science pioneer and UC San Diego founder Roger Revelle, annually recognizes a San Diegan who "has made a significant contribution to man's ability to coexist with the marine environment."

YSI Promotes Ellison

Rob Ellison has been promoted to Director of Business Development for YSI Inc. He will work with the company's R&D teams to commercialize new technologies for the water quality market. Rob has served as the Marketing & Business Development Manager of YSI's Environmental Monitoring Systems business since 2005.

Cosalt Appoints New Norwegian Head

Cosalt Offshore, a provider of lifting, tooling and marine services to the oil and gas industry, appointed Runar Blakstad as the new Managing Director of its Norway division. Blakstad was most recently Managing Director of Sir Fish in Stavanger where he has restructured the business and turned it around into a profitable venture. He takes over the role at Cosalt Offshore in Norway from Jack Braten who established the original Myhre Maritime business and saw it through the transition to Cosalt ownership.

InterMoor Names Landry Subsea Ops Manager

InterMoor named Ross Landry Subsea Operations Manager. Working out of InterMoor's Lafayette, La., subsea facility, Landry will manage all activities related to subsea operations including but not limited to abrasive cutting services, heave compensation services and all facility-based projects. Landry has served as Technical Manager and Assistant Operations Manager for InterMoor's subsea facility. He has been responsible for recruiting offshore personnel, implementing a preventative maintenance program to minimize operational downtime and for supervising the design modification of offshore equipment to improve reliability.

Capt. Score Takes Command

NOAA Capt. David A. Score assumed command of the agency's Marine Operations Center-Atlantic in Norfolk, Va., which manages the day-to-day operations of the nine research and survey ships in NOAA's

Atlantic fleet. Capt. Score served most recently as commanding officer of NOAA Ship Gordon Gunter, which conducted key research missions during the BP Deepwater Horizon oil spill response, including missions to detect subsurface oil and study marine life in the Gulf of Mexico. Score relieves Rear Adm. (select) Michael S. Devany, who has served as the center's commanding officer since June 2009.

Subsea 7's New Pipelay Vessel Mobilized

Subsea 7 announced that the Seven Pacific – a dynamically positioned (DP), pipelay and construction ice-class vessel, designed for deepwater pipelay and offshore construction activities worldwide - has mobilized for its first project. The eighth new vessel to join Subsea 7's fleet since 2007, Seven Pacific is capable of installing flexible pipes and umbilicals in water depths of up to 3,000m. Its first assignment is on the Block 18 project in Angola. "The Seven Pacific is a fantastic addition to one of the most modern, technologically advanced and capable fleets of subsea construction, pipelay and support vessels in the world," said Stuart Smith, Subsea 7, Vice President for Technology and Asset Development. "With the capability to work in a wide range of worldwide locations, from the Arctic to Africa, we look forward to working with our clients on the various work scopes the Seven Pacific will deliver for them in the coming years." The vessel's pipelay equipment has a tension capacity of 260 tons and a 2,500-ton storage capacity for flexible pipe on the two underdeck carousels. There is also a built-in deepwater dual 3,000m-rated work-class ROV spread and a comprehensive survey system. A large deck area of 1,700 sq. m. has been incorporated into the Seven Pacific for equipment and reel storage. The ship has a 6.6kV diesel electric power generation system and is propelled by three azimuth thrusters with fixed pitch propellers in nozzles at the stern.

Subsea 7's New Offshore Renewables Division

Subsea 7 S.A. (NASDAQ-GS: SUBC; Oslo Børs: SUBC) launched its offshore renewables division, transferring its seabed-to-surface expertise, capabilities and strong safety and risk management processes and systems to specifically develop and execute work in this emerging market. Subsea 7 will provide project management, engineering and construction services to support offshore developments in the global renewables industry. The division, based in Aberdeen, Scotland, will be led by Bob Dunsmore, Vice President, Renewables, Subsea 7. This new division also announced the signing of a Memorandum of Understanding with Scottish and Southern Energy plc (SSE) under which Subsea 7 will form an alliance with SSE, Siemens plc, Siemens Transmission and Distribution Limited, Burntisland Fabrications Ltd and Atkins. The purpose of this alliance will be to work together in a collaborative arrangement in order to secure substantial reduction in the cost of delivered power from offshore wind farms. Subsea 7 will be responsible for marine operations and offshore construction within the alliance.

Bluefin Robotics, Harvey-Lynch Team in GOM

Bluefin Robotics announced a partnership with Harvey-Lynch, a subsea equipment solutions provider in Strafford, Texas. Harvey-Lynch will promote and sell Bluefin products in Texas, Louisiana, Alabama, Mississippi, and Florida with a focus on the Gulf of Mexico market. The agreement highlights the emergence and maturity of AUVs as a cost-effective and capable tool.

"The partnership with Bluefin is an ideal fit for us. Capitalizing on our previous AUV Gulf of Mexico experience, Harvey-Lynch will address the critical needs of existing and new customers by serving as an extension of the Bluefin sales and support teams," said Harvey-Lynch's President, Phil Howells. "The commercial AUV market is on the verge of significant further advancement and growth and we believe Bluefin is at the head of the pack."

The partnership comes on the heels of Bluefin's 2-year effort to expand its business domestically and internationally into the commercial survey market. The company recently established a network of representatives and resellers to promote the application of AUVs and moved its facilities to a waterfront location that doubles its manufacturing and testing space in order to accommodate production.

"We are very pleased to bring Harvey-Lynch aboard. As subsea systems experts they have a great understanding of our Gulf of Mexico customers' needs and the operational challenges that they face in the field," said Michael Donovan, Director of Sales and Marketing at Bluefin Robotics.

P&O Maritime Services

Entering the Power Cable Install Market

P&O Maritime Services, owner and operator of specialist science and cargo vessels, has entered the power cable installation market with its vessel "CS European Supporter." The company has signed a long-term agreement with UK-headquartered subsea cable specialists, Offshore Marine Management (OMM), for the provision of a suite of capabilities to be marketed with the entrant cable installation vessel. The European Supporter is due to enter the European and international power cable market in March 2011 after undergoing a major conversion from a submarine fiber optic vessel to a state-of-the-art power cable installation and trenching vessel.

The 106m, DPII vessel will be equipped with modern cable installation equipment, work-class ROV, ROV trencher and survey spread. All ancillary cable equipment and cable lay deck operations are enclosed, allowing for a 24-hour all weather working area. A further extensive open working deck is atop which will be used for mattressing operations.

The vessel will boast DPII capability along with cable coiling arms within her three tanks.

Tekdata, SEA Succeed in Subsea Wiring Project

Tekdata Interconnections completed custom wiring for an underwater analysis pod designed to operate up to 100 m depth, enabling its customer, defense contractor Systems Engineering and Assessment Ltd (SEA), to deliver the completed pod within tight constraints on time and cost. SEA chose Tekdata for its expertise in areas such as hermetic feed-through connectors, high-performance sealing, signal grounding, thermal design, and specialist wiring skills to achieve robust and reliable interconnections within the confines of the pod's compact, lightweight chassis. Engaged to complete integration and assembly of the pod, SEA had been supplied with a number of subsystems, such as a potted transducer array that had been tested at depth of only two meters and was supplied without full documentation. To connect this array to the pod, Tekdata identified the exact interconnect arrangement using x-ray analysis and subsequently developed a corresponding feed-through. Five-level sealing prevents water ingress at extreme depths and creates a robust waterproof connection able to withstand any individual failure mode.

CARIS Offers DNC

CARIS is introducing a solution to the problems of converting Digital Nautical Charts (DNC's) to Electronic Nautical Charts (ENC's) and vice versa. CARIS, with S-57 Composer 2.2, now offers a DNC Plug-in available through an optional license. The DNC Plug-in has a unique capability of automatically converting, with a reported first-pass success rate of 80%, DNC to ENC and vice versa. "Not only do we believe that this capability is unique, but we have designed it to be simple to use. A couple of simple steps are all that is required," said Cameron McLeay, product manager for S-57 Composer.

Email: info@caris.com

Technip Wins Key Deal

Technip won a lump sum contract by Enbridge Offshore Facilities L.L.C. (Enbridge) for the development of the Walker Ridge gas gathering system in the Gulf of Mexico, at a water depth of 7,000 ft. (2,130 m). This award reinforces Technip's leading position in the Gulf of Mexico ultra deepwater market. It covers the engineering, fabrication and installation of 160 miles (270km) of steel catenary risers and pipelines as well as the installation of subsea equipments.

Technip's operating center in Houston, Texas will perform the overall project management.

Marport Spins Off Robotics Division

Marport Deep Sea Technologies Inc., said its Board of Directors has unanimously approved a decision to spin off its underwater robotics division. The division will be transferred to a new wholly-owned subsidiary company called Marine Robotics Inc.

"Over the past two years, our business has strengthened considerably," said Karl Kenny, Marport's

President & CEO. “We have made an important acquisition, invested in new products, secured new financing and implemented successful manufacturing, innovation and strategic restructuring processes. As a result we are well-positioned for the future.”

“We are pleased with the emergence of Marine Robotics Inc. as an independent developer of Unmanned Maritime Vehicles and Systems. Our innovative efforts in developing award-winning underwater robotics technology have resulted in the development of a highly motivated and talented organization. We expect that this new company will be better able to focus on the needs of its own customers and markets. This should lead to robust growth, enhanced profitability and increased value for our shareholders.”

Satlantic Joins Sea-Bird, WET Labs

The Sea-Bird Ocean Measurement Group and Satlantic Inc. announced that Satlantic is joining Sea-Bird Electronics and WET Labs in the Sea-Bird Ocean Measurement Group. “Satlantic’s technology and products are a natural fit and will allow us to better offer complete solutions to our customers’ measurement needs” Sea-Bird’s President Norge Larson stated in making the announcement. “Satlantic joining Sea-Bird and WET Labs is combining the best in biogeochemical and physical oceanographic sensors.”

“We have worked closely with the Satlantic team for many years,” said Casey Moore, President of WET Labs. “Our common customer base uses optics to measure and understand the ocean. That commonality has grown over the years as we have worked together in developing instruments and long-term monitoring systems. Our clients have seen the fruits of our joint efforts and we look forward to continuing, enhancing, and expanding those relationships.”

Aker Solutions Splits into 3 Separate Companies

International oil services, engineering and construction company Aker Solutions has decided to cultivate its core businesses by creating three separate companies. The new strategic direction, which will be announced at the company's capital markets day in Oslo today, is the conclusion of a strategy process initiated by the Board in second quarter 2009. "We have listened carefully to feedback from our customers and investors and analyzed how we should position ourselves to meet their expectations," says Øyvind Eriksen, executive chairman of Aker Solutions. "Their feedback is consistent. Our company enjoys strong positions in several market segments. However, to further accelerate our growth, we should be more focused, more flexible in our approach to customer specific requirements, and much more transparent," he said.

Leading on from this, the next step is to cultivate the current Aker Solutions business into three separate companies:

YSI EcoMapper AUVs

The University of Southern California (USC) in Los Angeles, CA, recently placed an order for a YSI EcoMapper Autonomous Underwater Vehicle (AUV). USC will use the vehicle’s water quality sensors, 6-beam Doppler Velocity Log (DVL), side-scan sonar, and acoustic modem to help its team research the roles of behavioral and physiological processes in algal bloom initiation and maintenance. The University of California, Davis has also purchased an EcoMapper equipped with an Extended Payload (EP) package, side-scan sonar, water

Marport Secures Private Equity Financing

Marport Deep Sea Technologies secured an equity investment led by Hasting Equity Partners, LLC and Admiralty Partners, Inc. Boenning & Scattergood, Inc., a U.S. based investment banking firm, served as financial advisor to Marport. “This capital raise, at a time of great challenge and uncertainty in the financial markets, is a true testament to the tremendous potential of our Software Defined Sonar technology and products,” said Karl Kenny, Marport’s President and CEO. “This new equity provides Marport with the financial resources it needs to execute its growth strategy and continue to deliver innovative sonar products. Having the support of Hastings and Admiralty combined with their extensive network in the United States defense market will allow us the opportunity to accelerate our expansion efforts in that area.” In connection with the financing, MacRae will join Marport’s Board of Directors as Chairman, replacing Derrick Rowe who will remain on the Board.

DeepOcean Wins Deal

On December 23, 2010 Statoil awarded DeepOcean a survey and pipeline construction support contract. The contract has a firm duration of 3 months plus 3 monthly options. The work is planned to start during February 2011 in support of Statoil's offshore pipeline installation activities at the Marulk and Smørbukk North East field developments. The scope of work includes a variety of survey and construction support activities covering pre-lay survey of pipeline routes, lay support and touch-down monitoring during pipelay, installation of turnpoints and start-up anchors as well as pipeline flushing and pigging operations.

DeepOcean will charter in the new build vessel Volstad Surveyor for this work, specially designed for ROV and survey support services as well as light construction work. The vessel was built at Freire Shipyard in Spain and was delivered to Volstad Shipping in May 2010. Volstad Surveyor with main dimensions 85m x 18m, is fitted with a 70t AHC offshore crane, ROV hangar, moon-pool, helicopter deck and has an accommodation for 72 persons. Volstad Surveyor is owned by Volstad Shipping AS.

quality sensors, and a 6-beam DVL. The AUV will be used to study the bathymetry and water quality of the Fall River. UC Davis researchers also plan to study aquatic vegetation with the system in the future.

Aker Solutions Signs CNOOC Subsea Contract

Aker Solutions signed a subsea contract with the state-owned oil company China National Offshore Oil Corporation (CNOOC) to supply a subsea production system for the Yacheng 13-4 gas field. The $20m contract was signed at an official signing ceremony at Zhanjiang, China, and is significant as it is the first subsea production system contract Aker Solutions has signed with CNOOC. The field development is located in the north of South China Sea, approximately 72 km southwest of Sanya City, Hainan Province of the People's Republic of China. The field's water depth is approximately 90m. Scope of work covers engineering, manufacturing and delivery of three subsea wellhead systems, three gas producing subsea trees, control systems, subsea distribution system and installation support services. Deliveries are expected to begin in the third quarter of 2011.

Breakthrough Subsea Deal for Aker Solutions

Aker Solutions secured a contract to supply heating systems for the subsea pipelines that Technip will deliver and install for the Goliat field in the Barents Sea. Direct electrical heating (DEH) of pipelines is a technique used to avoid hydrate and wax formation in pipelines used for transport of oil between the manifolds on the seabed to the offshore facility. Heating up the pipeline will prevent it from becoming blocked due to hydrate formation during shut-down periods thereby minimizing the use of chemicals and optimizing the shut down periods.

Rapp Hydema Wins Deal

Great Lakes Shipyard awarded Rapp Hydema NW the deck machinery packages for two U.S. Geological Survey research vessels now under construction. Rapp's award includes a pair of trawl winches, a centerline winch, side-sampling winches port and starboard, and a dual net reel, for each vessel. Rapp will be providing its state-of-the art PTS Pentagon Canbus system for winch control and monitoring, as well a Rapp Syd gillnet lifter for each boat. The centerline and side-sampling winches will be slip-ring capable. Joe Starck, President of Great Lakes Shipyard, said that he had been aware of Rapp machinery aboard the R/V Spencer Baird, a Michigan Department of Fish and Wildlife vessel. It also works the Great Lakes region and undertakes quite similar missions, including lake trout surveys. "While some of the operating assumptions are different here, there are enough commonalities that we felt Rapp was the right choice. And we had learned of Rapp's recent UNOLS and NOAA work," he said.

Statoil, Siemens Ink Tech Partnership

Statoil and Siemens signed a technology development cooperation agreement. The partnership will initially embrace wind power, subsea technology, electrical engineering

technology and energy efficiency measures. Cooperation between the companies facilitates the development of future path-breaking technology. Based on complementary user needs and technological opportunities we aim at developing technological solutions that contribute to more environmentally friendly, effective production. "This is a strategically important agreement for Statoil," says Halfdan Knudsen, senior vice president for process and refining technology in Statoil. Siemens is an important Statoil supplier within several areas, and the two companies already cooperate in the technology development area.

Bluefin AUV With SAS

Bluefin Robotics tested and demonstrated an AUV with a fully integrated commercially available synthetic aperture sonar (SAS). The PROSAS Surveyor, manufactured by Applied Signal Technology, Inc. (AST), provides a 1x1-in. resolution out to a 200-m range. The Bluefin-12 AUV combines this SAS data with navigation accuracy usually better than 0.1% of distance traveled to provide an advanced capability for many undersea applications.

The AST PROSAS Surveyor was integrated into the standard Bluefin-12 AUV for the purpose of a rapid proof-of-concept demonstration. Bluefin required only nine months to design, test and deliver the vehicle with the new payload, proving the efficacy and flexibility of Bluefin's modular design. In its current SAS configuration, the Bluefin-12 can operate for up to 12 hours at 200 m depth.

SeeByte Wins DoD Deal

SeeByte won a $8.9m modification to previously awarded contract (N00174-09-D-0001) to exercise option two for Common Operator Interface command and control software for Navy explosive ordnance disposal teams. The software application is used for mission planning, equipment data transfer, mission execution tracking, post mission analysis, and data reporting by Navy explosive ordnance disposal mobile units, mobile diving and salvage units, and research and development activities. Work will be performed in Edinburgh, Scotland, and is expected to be completed by December 2013. Contract funds will not expire at the end of the current fiscal year. The Naval Surface Warfare Centre, Indian Head, Md., is the contracting activity.

Bowtech Wins Contract

Bowtech Products was chosen by SMD and it's customer, iTech, to supply all the cameras, lights and strobes on twenty (with options for up to a further ten) ROV's.

This is the largest single order for cameras and lights ever received by Bowtech. Mike Winstanley, Sales Director at Bowtech, said "We are delighted at winning such a large and prestigious international order. It's testament to the design excellence and build quality of our products and establishes Bowtech Products as a major supplier of vision systems to one of the world's largest ROV operators and manufacturers"

Email: bowtech@bowtech.co.uk
http://www.bowtech.co.uk

Strategic Alliance Puts Retlif On West Coast

Retlif Testing Laboratories, an independent leader in EMC and Environmental testing since 1978, has announced a strategic alliance with Acme Testing (Acme, Washington). The arrangement brings Retlif's wide array of advanced Electromagnetic Compatibility (EMC) and Environmental Simulation (ESS) testing as well as extensive engineering capabilities to the Pacific Northwest, specifically the Puget Sound area. The expansion in combined capacity and capabilities enables Retlif and Acme to service the rising demand from commercial maritime, commercial aviation, homeland security and defense industry sectors. The Retlif-Acme alliance offers in-house EMI, Electromagnetic Pulse (EMP), power line fluctuation, and magnetic effects testing, in addition to EMC site surveys and EMC final compatibility testing. Combined ESS offerings include in-house full classic shock testing capabilities, as well as Ballistic and Pyrotechnic shock, vibration testing up to 20,000 lbf, salt fog, inclination, temperature, humidity and many more capabilities. In addition, Retlif and Acme also offer vibration site surveys and acoustic noise site surveys. In addition to Retlif headquarters (Ronkonkoma, NY), other Retlif locations include New Hampshire, Pennsylvania, North Carolina, and Washington D.C.

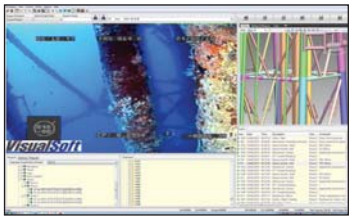
www.retlif.com

Teledyne Gateway Buoy

Teledyne Benthos released its new Teledyne Gateway Buoy, designed to provide real-time data monitoring of subsea sensors from a remote shore station. The new gateway buoy designed to be useful for a range of applications and incorporates the Teledyne Benthos ATM-886 modem. In addition, the buoy is two-man deployable, uses rechargeable batteries and has a deployment life of up to two months using Freewave transmission to a shore station.

http://www.benthos.com

VisualWorks 9.0



VisualSoft launched VisualWorks 9.0, an upgrade to its existing Pipeline and Structural Inspection Survey Suite. VisualWorks 9.0 introduces unique workscope support tools and a new integrated 3D Structural Viewer across the entire range of online and offline products: Visual3D-Inspector adds inspection workscope planning and progress tracking seamlessly integrated with digital video acquisition controls and anomaly logging. 3-D Structural Viewer loads electronic drawings and provides two-way linking of components in asset models with the real video and all associated survey and inspection data for better visualization during analysis and reporting.

www.visualsoft.ltd.uk

Specialist SV Sensors

OSIL/AML supplied a set of specialist SV sensors, calibrated to 2000 m/s, as part of the instrumentation package for use in water-filled cavity survey and well logging applications. In order to survey a well or cavity it is necessary to use a specially designed vertical sonar instrument. The vertical sonar instrument was designed around a standard 4-in. bore to enable easy access to the majority of situations. The sonar is capable of surveying subterranean caverns, sub-sea caverns and wells.

PAVS-150

Phased Array Velocity Sensor

Teledyne RD Instruments (RDI) released its new 150 kHz Phased Array Velocity Sensor (PAVS) for extended range navigation applications. The PAVS150 is reportedly the industry's first 1000 m depth rated compact Doppler Velocity Log (DVL) designed to provide precision velocity data at up to 500 m of altitude above the seafloor. Designed with the Unmanned Underwater Vehicle (UUV) in mind, the PAVS150 is compact enough to be packaged into vehicles as small as 12.75 in. (32.39 cm) in diameter. In addition to UUV applications, PAVS150's space saving design meets the payload restrictions onboard manned and unmanned submersibles. The PAVS150 is available in both an inline and a right angle configuration to accommodate the needs of a variety of applications, and can also be modified to meet customized packaging requirements.

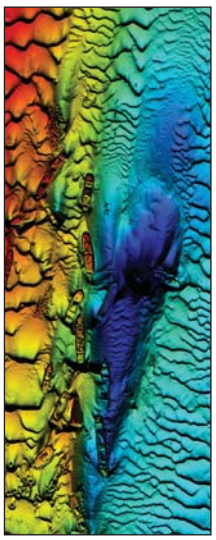
www.rdinstruments.com/pavs.html

Fluorometer Integrated on Micro-ROV

VideoRay and Turner Designs announced the integration of the Turner Designs C3 Submersible Fluorometer with VideoRay's observation Remotely Operated Vehicle. The Turner Designs C3 is specified by the USCG 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 an 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.

E-Mail: sales@turnerdesigns.com
Web: info@videoray.com

First Sale of SONIC2024



Swathe Services sales division announced its first UK sale of the SONIC 2024 wideband high resolution shallow water multibeam echosounder. Within a matter of days of announcing the inclusion of the SONIC2024 in their rental pool of survey equipment the company immediately supplied two systems for hire with a major UK survey company, on a contract that has now extended beyond three months. The complete SONIC 2024 system includeds the Valeport MiniSVS.

BlueView High-Res "Gap-Filling" Sonar

BlueView delivered a new sonar to Hydroid as part of an Atlas Elektronik UK project for the UK Ministry Of Defense. The Capability Concept Demonstrator (CCD) project, conducted on behalf of the Defense Equipment and Support Programs and Technology Group, is designed to enable the MoD to understand the capabilities that recent commercial and military UUV technology maturity could bring to future MCM operations. The new 2.25 MHz sonar (MB2250) was integrated into a Hydroid REMUS 100 UUV section to provide high resolution 2D and 3D imagery for side scan gap-filling and target identification in the region directly below the UUV typically associated with side scan coverage gaps. The Atlas Elektronik UK Classiphi software fuses the BlueView gap-filling sonar data with the side scan sonar data gathered by the REMUS 100 to provide seamless imagery across the entire swath.

www.blueview.com

USN Acquires MCM Software

The U.S. Military acquired six upgraded licenses of the latest underwater situational awareness technology for supporting Clearance Diving and Mine Countermeasures (MCM) Forces. The software known as SeeTrack Military

Wireless Comms for Marine Instruments

OSIL launched a new point-to-point wireless communications system, developed to overcome the issues associated with traditional GSM modems and VHF/UHF radio communications. The system, which uses GPRS technology, maintains an open, bi-directional wireless connection via a pair of coded modems. This is designed to allow users to connect seamlessly to a platform in the field for real-time remote monitoring of the data, as readings are transmitted and displayed on a PC continuously.

Email: sales@osil.co.uk

New BlueView 2D Imaging Sonar

BlueView re-engineered its P Series Imaging Sonar platform to create two new models that meet the stringent requirements for deepwater ROV operations. The new P Series Deepwater Systems deliver incredible detailed imagery and accurate point-to-point measurement in a compact, economically priced 2D imaging sonar. Able to operate at depths of 3,000 m (9,842 ft.) the new deepwater systems enhance real-time ROV navigation, obstacle avoidance, operations monitoring, inspections, and object detection even in low and zero visibility conditions.

www.blueview.com

New Materials Help Improve Transducers

Morgan Technical Ceramics launched a new range of piezoceramic composite materials which dramatically improve the performance of ultrasound and sonar transducers used in medical, biometric, military and industrial applications. As a result of using the transducers, image resolutions are higher and significant advances can be made to 4-D ultrasound. The new piezoceramic is used to make 1-3 transducer and 2-2 transducer plates which give high performance in frequencies ranging from 200KHz to 4MHz. Finely pitched composite configurations act with lower acoustic impedance than traditional monolithic components, providing better imaging resolution.

www.morgantechnicalceramics.com

or COIN (Common Operator Interface Navy – specifically tailored for the US Navy EOD), was developed by Scottish-based software company, SeeByte. The newest version comes with two modules: Performance Analysis Training Tool (PATT) and Automated Target Recognition (ATR) using Computer-Aided Detection & Computer-Aided Classification (CAD/CAC) components.

www.seebyte.com

Seawater Corrosion-Resistant LVDT

Macro Sensors designed a seawater corrosion-resistant, high-pressure, spring-loaded LVDT for use in a 5,000 psi pressure-balanced, oil-filled container. Designed from 316SS and Inconel 625 for pressure and corrosion resistance. A key element of the LVDT design is its zero leakage pressure sealing, verified by helium mass spectrometer leak testing.

The LVDT also offers repeatability, regardless of offsets due to pressure and/or temperature, which is of paramount importance to ensure that when the chokes are nearly closed, flow is entirely shut off. Failure to completely close the choke could result in an environmental disaster.

Recognizing that LVDTs are inherently high-reliability devices, a Macro Sensors developed compatible 4-20ma loop-powered electronics, with high-reliability to meet the 20-year lifetime requirement. A 4-20mA I/O also minimizes any noise over long transmission lines.

Email: positionsensors@macrosensors.com
www.macrosensors.com/subsea_marine_lvdts.html

DEFENDER III Sonar Processing

DEFENDER III is a complete wide band sonar signal processing, detection, tracking and classification, fusion and display unit developed and manufactured by Kongsberg Defense Systems for use with Kongsberg Mesotech Ltd. Diver Detection Sonars, DDS 9000/1. The MSI software is unique in applying data fusion capabilities to diver detection.

New 66 Series

SEACON (europe) Ltd. released a new range of underwater electrical dry-mate connectors to complement the existing 55 Series. The new 66 Series of reverse gender connectors enable power to be applied to the bulkhead connector yet still be safe to use. Manufactured utilizing tried and tested methods and materials this new range also incorporates shorter locking sleeves to ensure easier mating capability. The 66 Series is currently available in two shell sizes; 16 and 20 with two configurations (8#16/13#16), however more configurations will be added to the range if required.

Email sales@seaconeurope.com
www.seaconeurope.com

Buoys Survive Hurricane Season

Several AXYS Technologies Inc. (AXYS) metocean buoys deployed in seas plagued with extreme weather have survived an exceptionally rough hurricane season this year. Hurricane Karl was the most destructive hurricane of the 2010 Atlantic hurricane season. It crossed the Caribbean and hit the AXYS 3 meter buoy deployed off the East coast of Mexico on September 14. Data from the buoy shows a major pressure drop followed by 10m waves with 11 second period and winds averaging 30m/s with gusts up to 40m/s. The AXYS buoy performed for the duration of this storm, continuing to report data in real-time via satellite telemetry to the end user.

www.axystechnologies.com

SOSI Debuts ECO Sheave

Sound Ocean Systems released the ECO Sheave, an over boarding sheave designed for use with 1/8 inch electro-mechanical cable or wire rope (0.125 in. [3.2mm] nominal diameter). The ECO sheave is constructed of stainless steel (316L) and has an eight-inch Delrin sheave with permanently oiled bronze bearing. It's an accessory for SOSI's ECO Winch product line and has a working load limit of 500 lbs. (227 kg), suitable for small to medium-sized oceanographic or environmental sampling instruments.

www.soundocean.com

Extending the Panther ROV Range

A new powerful ROV was launched by Saab Seaeye. The Panther XT Plus, rated for operation to a depth of 1500m, is the latest addition to the Panther range – and with two systems already sold for delivery in the first quarter of 2011 this latest version is generating considerable interest in the ROV market. The new ROV gives operators about double the horizontal thruster power compared with the Panther XT, which makes it the most powerful ROV in its class, according to the manufacturer. The ROV is fitted with 10 thrusters to ensure its speed, agility and capability to hold steady in strong cross currents.

www.seaeye.com

Log onto SeaDiscovery.com to explore these new job openings.

SURVEYOR/INSPECTOR - MARINE INDUSTRIAL TECHNOLOGY

Job Location: Norway, Bergen
Verify Europe is part of the Verify Group of companies; a global group of businesses that has provided supplier quality management and product verification services to the aerospace, defence and marine industries for over 35 years. Using our network of local independent contracted field operatives, we perform third party activities including audits/surveys, source inspections, supplier surveillance, special project resourcing and technical support services.
Our requirements can range from single day supplier audits or single item inspections, to ongoing supplier surveillance and engineering/quality support. Please see our website, www.vscnet.com, for more information on our group of companies.
We currently have a number of requirements for survey, quality control, quality assurance and inspection personnel to support delivery on a global marine supplier inspection project. We would be extremely interested in hearing from anyone with any or all of the below skills:

•3 years marine experience
•3 years inspection experience
•Ability to interpret engineering drawings
•Understanding of classification societies

We have permanent opportunities for key personnel who will have a full-time availability to support the delivery of this program as well as contract/project staff who can supplement individual requirements on an ad hoc basis. If you meet the above criteria and would be interested in a preliminary discussion, please contact James Coote on +44 8456 432 501 or at jcoote@verify-europe.com.
We anticipate a number of on-going requirements throughout Norway and Scandinavia. As such, we'd welcome the opportunity to hear from anyone with a source inspection, mechanical inspection, quality control, quality assurance, quality inspection, supplier surveillance or component inspection within the marine industrial technology field.

James Coote
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1 Turpyn Court
Woughton on the Green
Milton Keynes, Buckinghamshire MK6 3BW
United Kingdom
Phone: +44 8456432501
Fax: +44 8456432502
Email: jcoote@vscnet.com
WEB: http://www.vscnet.com

ELECTRICAL CAD DESIGNER

Job Location: USA, MI Kingsford
- Develop conceptual and detail design of product per specified requirements and direction of lead and project engineers
- Prepare 2D and 3D lay-outs, assembly drawings, and detail drawings on CAD or drawing board when required
- Coordinate and check drawings prepared by drafting group
- Travel to manufacturing facilities to assist production efforts
- Prepare and process software data
- Develop requirements for and specify purchased components
- Customer interface/meetings
- Participate in design reviews and other assigned activities
- Direct checking of all drawings prepared for use on project
- need someone with prior experience with heavy machinery, overhead cranes, etc

Matthew Scherg
The SITE Group
N92 W17420 Appleton Ave
Menomonee Falls, WI 53051
USA
Phone: (262) 345-9933 x111
Fax: (262) 345-9934
Email: mscherg@sitepersonnel.com

OVERSEAS EMPLOYMENT OPPORTUNITY

Job Location: USA, NC Raleigh
Are you interested in getting your dream job in a foreign country? If you are kindly send your resume immediately to our head of Human Resources through this email address: tamia.peckers@btinternet.com
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11	Seacon Europe LTD	www.seaconeurope.com	011 44 1493652733
16	Shark Marine Technologies Inc.	www.sharkmarine.com	(905) 687-6672
49	Sidus Solutions LLC	www.sidus-solutions.com	(866) 978-1276
15	Sound Metrics Technologies, Inc.	www.soundmetrics.com	Please visit us online
9	Subconn	www.subconn.com	(781) 829-4440
20	T&T Salvage Marine, Inc.	www.TandTmarine.com	(409) 744-1222
60	UDT	udt-europe.com	44 (0) 207370 8636
C2	VideoRay LLC	www.videoray.com	(610) 458-3000

SS Kathleen

Gooey!

Global Diving & Salvage worked to salvage the SS Kathleen. Pictured is from the initial survey, which shows oil seeping from an overhead space.

(Source: Global Diving & Salvage)

MARINE TECHNOLOGY REPORTER

The international authority for business news and information from the marine technology and ocean science community.

Marine Technology Reporter 2011 Editorial Calendar

JANUARY / FEBRUARY — **AD CLOSE DATE: JANUARY 22**

FEATURE: Marine Salvage & Recovery

MARKET: Naval Underwater Warfare
PRODUCT / DIRECTORY: Commercial Diving Equipment & Services

BONUS DISTRIBUTION:
Underwater Intervention
February 22-24

MARCH — **AD CLOSE DATE: FEBRUARY 12**

FEATURE: Subsea Vehicles: AUV, ROV, UUV Annual

MARKET: Sonar Systems & Seafloor Mapping Solutions
PRODUCT / DIRECTORY: Ocean Business 2011 Exhibitor Guide

BONUS DISTRIBUTION:
Ocean Business - April 5-7

APRIL — **AD CLOSE DATE: MARCH 12**

FEATURE: Oil & Gas SubSea Monitoring

MARKET: Seafloor Engineering
PRODUCT / DIRECTORY: Deck Machinery, Winches & Cranes

BONUS DISTRIBUTION:
OTC
Offshore Technology Conference-
May 2-5

MAY — **AD CLOSE DATE: APRIL 16**

FEATURE: Subsea Defense Edition

MARKET: Renewable Energy: Wind, Wave & Tidal Power
PRODUCT / DIRECTORY: OceanTech Expo

BONUS DISTRIBUTION:
OceanTech Expo - May 17-19
UDT - June 7-9

JUNE — **AD CLOSE DATE: MAY 14**

FEATURE: Hydrographic Survey

MARKET: Communications, Telemetry, Data Processing
PRODUCT / DIRECTORY: Instrumentation: Measurement, Process, Analysis

JULY / AUGUST — **AD CLOSE DATE: JULY 23**

FEATURE: MTR100 Edition

MARKET: Work Class ROV & Auxiliary Systems
PRODUCT / DIRECTORY: Umbilicals, Cables, Connectors & Power Supply

BONUS DISTRIBUTION:
Offshore Europe - Sept. 6-8

SEPTEMBER — **AD CLOSE DATE: AUGUST 13**

FEATURE: Ocean Observation

MARKET: Environmental Monitoring & Pollution Control
PRODUCT / DIRECTORY: Training & Education Institutions and Facilities

BONUS DISTRIBUTION:
Oceans 2011 MTS/IEEE
September 18-23
OTC Brazil - Oct. 4-6

OCTOBER — **AD CLOSE DATE: SEPTEMBER 10**

FEATURE: Ocean Engineering & Design

MARKET: Underwater Imaging
PRODUCT / DIRECTORY: Scientific Deck Machinery

BONUS DISTRIBUTION:
MAST Americas - Nov. 14-16

NOVEMBER / DECEMBER — **AD CLOSE DATE: NOVEMBER 19**

FEATURE: Fresh Water Monitoring and Sensors
(lakes, rivers, reservoirs)
MARKET: 2012 Market Planner
PRODUCT / DIRECTORY: Shallow Water Survey

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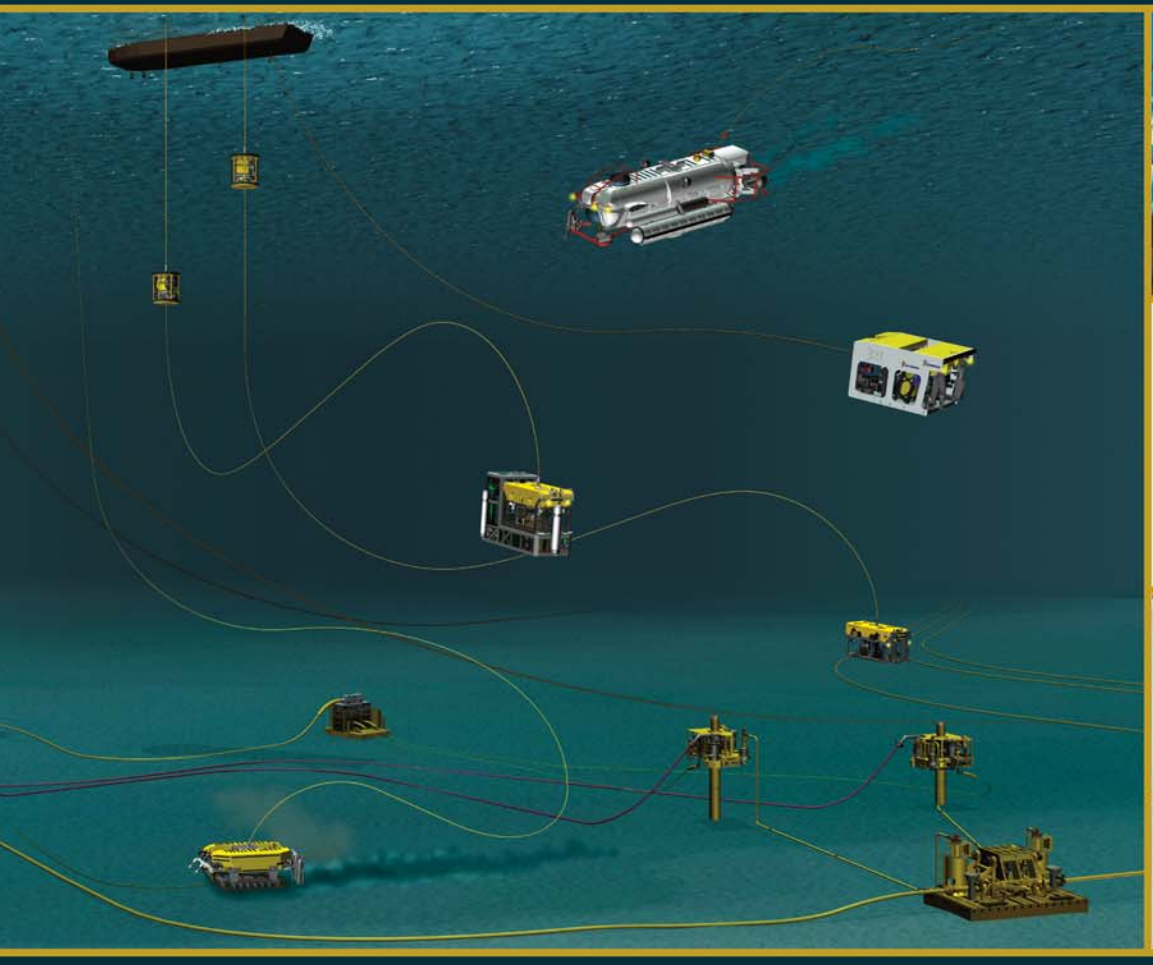

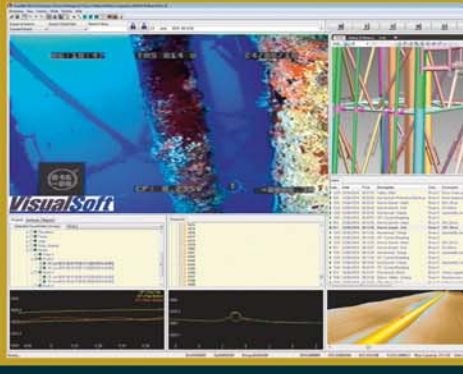

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