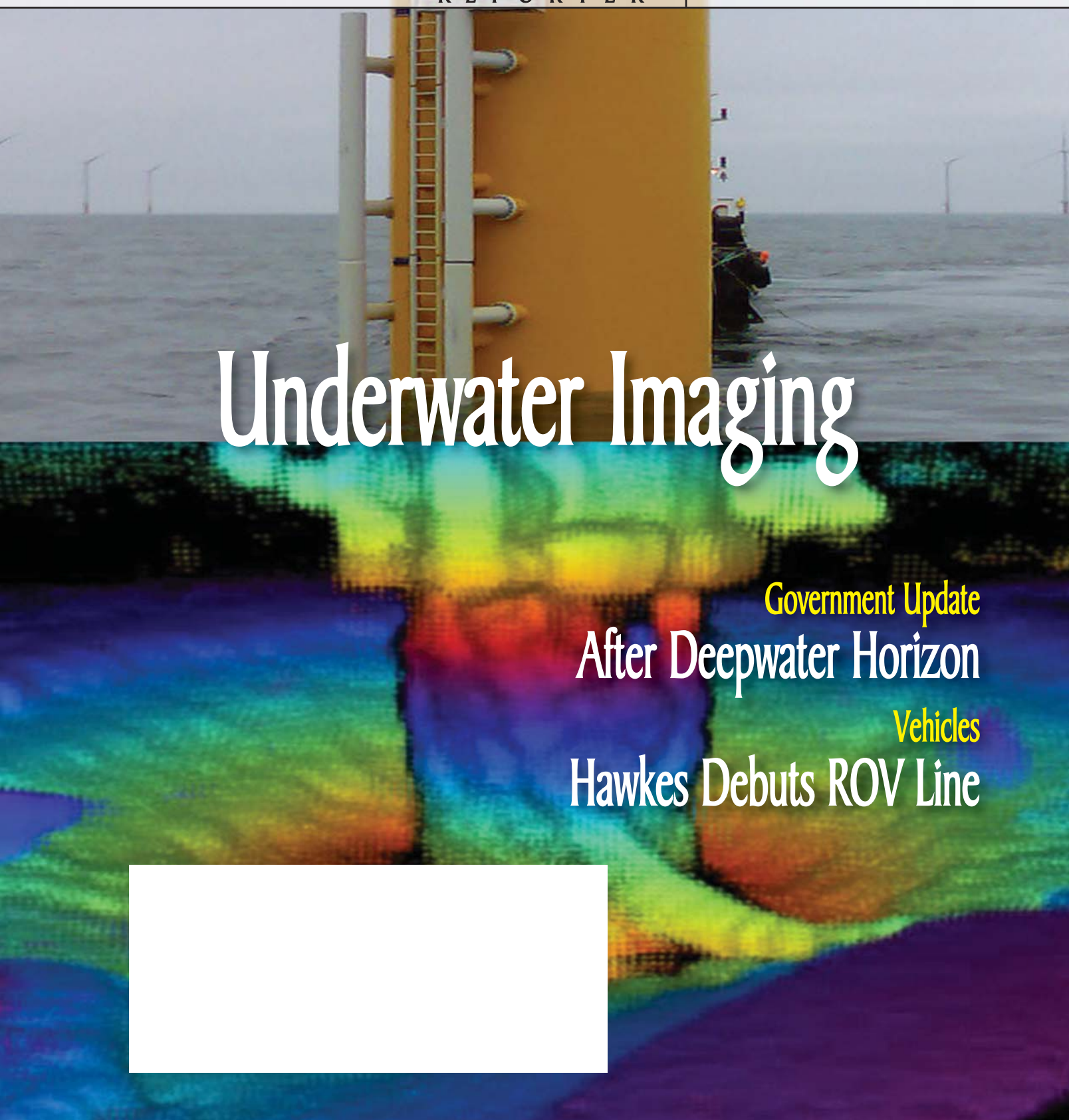
Connectors Hawkes Debuts Vehicle Innovation ... Again! Carbon Trust Tech Challenge

MARINE TECHNOLOGY REPORTER

October 2010
www.seadiscovery.com



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Vehicles

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October 2010

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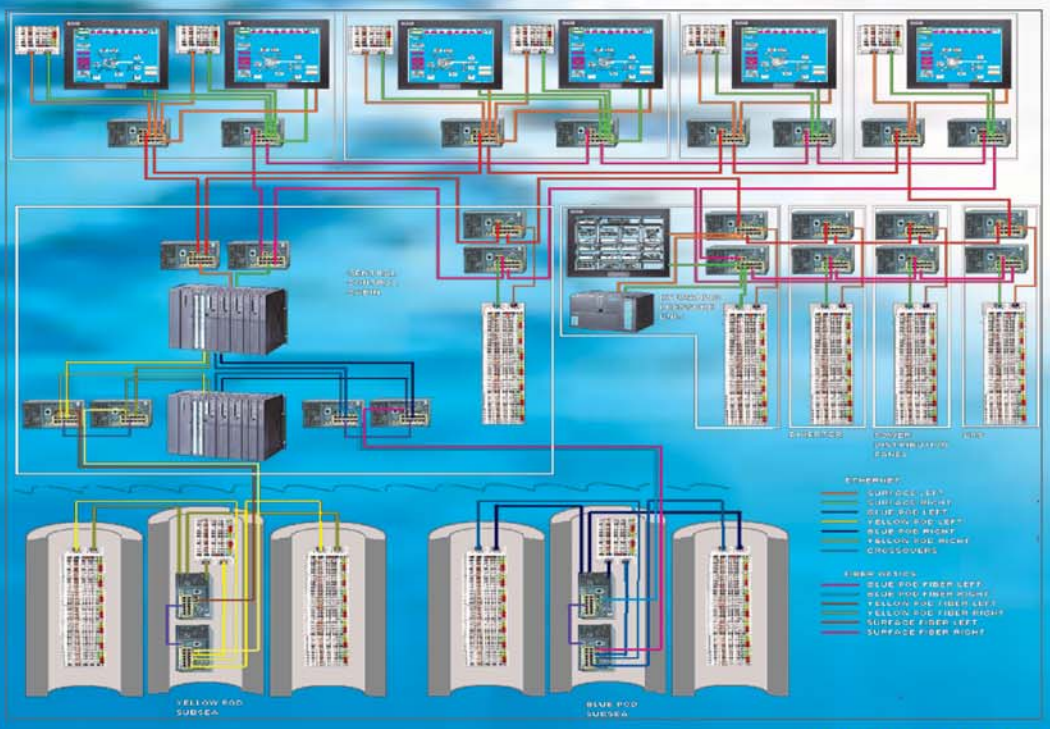
Pictured on the cover is wind turbine monopile viewed above and below water surface during windfarm construction in the UK. The 3D underwater data clearly shows scouring and the "J-tube" attachment for the subsea cable. Image illustrate data captured in real time by the Coda Echoscope 3D Real Time Sonar. No post processing has been applied.

Pictured in the background is a digital image simulating the **AX-S system** in operation. AX-S will undergo comprehensive field testing in Europe during October. Story on page 40.



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Carbon Trust Launches Technical Challenge

The Carbon Trust launched a global competition to find world-leading solutions to the problem of transferring engineers and equipment safely from boats to wind turbines as far as 300km offshore in 3m wave heights. The project aims to improve the economics of offshore wind by boosting revenues by as much as £3bn at a crucial time for the next generation of Round 3 offshore wind farms. The competition aims to generate at least a 4% increase in turbine availability through the development of new technologies for the most challenging sea conditions. This in turn could increase the power generated, which would mean saving £3bn of lost revenue. This improvement in availability would also save an extra 1.3 Mt CO2 per year.

The next generation of 'Round 3' offshore wind farms to be constructed from 2014 will consist of up to 1,500 turbines, located up to 300 km offshore. By enabling safe transfer to a turbine in 3m waves through the development of new systems, the increased potential for maintenance will improve availability.

The competition is part of the Carbon Trust's Offshore Wind Accelerator, a major industry collaboration with eight leading energy companies – DONG Energy, E.ON, Mainstream Renewable Power, RWE Innogy, ScottishPower Renewables, SSE Renewables, Statkraft and Statoil – which aims to drive down the costs of energy from offshore wind by 10%.

This latest OWA global competition aims to identify and develop the necessary technologies for access of far-offshore wind turbines, focusing on:

- Transfer systems
- Vessels
- Launch and recovery systems

The successful applicants to the competition will benefit from funding of up to £100,000 per concept to support the design and development of the successful concepts; the opportunity to work with eight leading offshore wind developers with licences to develop 30GW of offshore wind capacity in UK waters (representing 60% of today's licensed UK capacity) and potentially several million pounds of funding to take the concepts to full-scale demonstration. The competition is supported by RenewableUK, IMarEST, RINA, SMI & EWEA. **Companies interested can submit their designs until 5pm, November 26, 2010, by visiting**

www.carbontrust.co.uk/access or
Emailing: OWA@carbontrust.co.uk

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NEW YORK
118 E. 25th St., New York, NY 10010
Tel: (212) 477-6700; Fax: (212) 254-6271

FLORIDA
215 NW 3rd St., Boynton Beach, FL 33435
Tel: (561) 732-4368; Fax: (561) 732-6984

PUBLISHER
John C. O'Malley
jomalley@marinelink.com

Associate Publisher & Editor
Gregory R. Trauthwein
trauthwein@marinelink.com

Contributing Editors
Capt. Edward Lundquist, USN (Ret.) • Steve Withrow

Production Manager
Irina Tabakina
tabakina@marinelink.com

Production Assistant
Amanda O'Malley
aomalley@marinelink.com

Sales Administration & Office Manager
Rhoda Morgan
morgan@marinelink.com

Sales & Event Coordinator
Michelle Howard
mhoward@marinelink.com

Manager, Accounting Services
Rhoda Morgan
morgan@marinelink.com

Manager, Public Relations
Mark O'Malley
momalley@marinelink.com

Manager, Marketing
Jocelyn Redfern
jredfern@marinelink.com

Manager, Information Technology Services
Vladimir Bibik
bibik@marinelink.com

CIRCULATION
Kathleen Hickey
mtrcirc@marinelink.com

ADVERTISING

Vice President, Sales and Marketing
Rob Howard
howard@marinelink.com
Tel: (561) 732-4368 • Fax: (561) 732-6984

Advertising Sales Manager
Lucia M. Annunziata
annunziata@marinelink.com
Tel: (212) 477-6700 • Fax: (212) 254-6271

Japan
Katsuhiro Ishii • amskatsu@dream.com
Tel: +81 3 5691 3335 • Fax: + 81 3 5691 3336

As this edition was going to press the Obama Administration announced the lifting of its controversial deepwater and natural gas drilling moratorium, though it is widely expected to take several additional weeks to get back to business as usual. While the lifting of the moratorium comes about six weeks earlier than expected — perhaps coincidentally in step with mid-term elections in the U.S. — there are still many questions as to the breadth and depth that the Deepwater Horizon spill will have on the business of offshore energy discovery and recovery, this generation and next.

I am pleased to welcome to this edition of *MTR* the insights of **Jonathan K. Waldron** of Blank Rome LLP. Waldron is a long-time contributor to MTR sister-publication *Maritime Reporter & Engineering News*, and starting on page 24 he delivers thoughts on "What's Next" in the aftermath of the worst oil spill in the history of the U.S.

The only certainties are that change is imminent and that our business, the business of working more safely, efficiently and cost-effectively under the water — sometimes very deep under the water — will be called on increasingly to deliver the technologies and techniques to ensure that the chance for a repeat of the Deepwater Horizon is mitigated as much as possible. Having just returned from a successful Oceans conference and exhibition in Seattle, and having the opportunity to chat on the sidelines with a number of colleagues from the oil majors, it is a safe bet to assume that no one wants to see their uncontrollable oil well spewing 24/7 on major media outlet's web portals.

Gregory R. Trauthwein • trauthwein@marinelink.com • tel: 212-477-6700

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Kongsberg Signs BW Offshore Contract

Kongsberg Maritime signed a contract with BW Offshore Singapore to supply an ACET-package on an Engineering, Procurement & Construction (EPC) basis for the Kangean Energy Indonesia gas FPSO, which will operate on the Terang Sirasun Batur (TSB) fields in Indonesia. The contract is valued close to $20m. Kongsberg Maritime's scope of supply includes design, engineering, manufacturing, testing and supply of all materials, equipment, accessories and tools required for the complete integrated Automation, Control, E-House, Electrical hardware and Telecommunication systems, for installation and operation on the FPSO.

Schilling Wins Order from TS Marine

Schilling Robotics received an order for two of its 4,000m (13,000 ft.) rated UltraHeavy-Duty (UHD) Remotely Operated Vehicles (ROVs) from Australian subsea specialist TS Marine. The UHD systems will be outfitted with Schilling's XE extended excursion Tether Management System (TMS), and will be fully integrated within TS Marine's Havila.

New ROV

Hawkes Unveils New ROV Class

Hawkes Remotes Inc. (HRI) announced its initial product lineup, a family of three ROVs which incorporates new proprietary fiber-optic tether technology and high energy-density batteries to enable range, depth, and deployment capabilities well beyond those of current-generation ROVs. HRI's ROVs will leverage its new SpiderOptic technology, which uses thin armored fiber-optic tethers that pay out as the vehicles move, reducing drag, improving performance, and eliminating the need for cumbersome ship-based support infrastructure. HRI's SpiderOptic cartridge systems will be available in single-use (disposable) and reusable configurations, and are designed to be easily and quickly swappable in the field. In addition, all HRI vehicles will be made available for full ocean depth, building on a suite of tested components developed for the Challenger manned deep sea submersible.

"SpiderOptic technology fundamentally changes the way ROVs move through the water," said Graham Hawkes, the company's Chief Technology Officer and Co-Founder. "By using thin tethers deployed directly from the vehicle, we will fundamentally alter the performance and efficiency of deep sea and long range deployments. This technology also gives HRI's ROVs a decided advantage in portability, enabling rapid response deployments and utilization from smaller ships of opportunity."

"When you look at the cost of ROV operations, it's driven primarily by the ship costs, not the actual ROV cost," said Jonathan Epstein, the company's CEO and Co-Founder. "Moreover, the capital cost for standard ROVs capable of deepwater work requires expensive TMS and deck gear. For a large percentage of subsea tasks, HRI's vehicles enable those costs to be eliminated or reduced by 80%, which will improve the economics for existing subsea businesses, while enabling new subsea applications and increasing the potential scale of ocean exploration by the world's research community."

HRI is currently developing three different ROV models for launch in 2011. The company's first vehicle, the U-11000, is scheduled for release in Q1 2011 and will be optimized for long-range survey, observation, and light intervention, making it ideal for remote inspection, repair and maintenance

(continued on page 10)

HRI's U-11000 ROV, which ships Q1 2011, will combine long range and deep depth capabilities with tools for intervention.

(Photo courtesy Hawkes Remotes)

work (IRM) in commercial subsea environments as well as for a range of oceanographic applications. The U-11000 will have a range of as long as 20km from its launch point, allowing it to be deployed for certain tasks from shore or from an ocean platform instead of from a ship, further reducing cost of operations as compared to current ROV systems. HRI's next two ROVs will be launched in the second half of 2011, and will include the T-6500, designed for a broad range of tasks below the launch point, and the F-11000, a hybrid AUV/ROV model, with up to 6 knots forward thrust and a large payload for sensory and survey equipment.

www.hawkesremotes.com

(Photo courtesy Hawkes Remotes)

HRI's U-11000 ROV, which ships Q1 2011, will combine long range and deep depth capabilities with tools for intervention.

HRI's T-6500 ROV, shown here with a science skid package, is designed as a highly stable work platform for use below its point of deployment, as deep as full ocean depth

(Photo courtesy Hawkes Remotes)

Subsea 7 Wins $100m N. Sea Deal

Subsea 7 won a contract in the UK sector of the North Sea valued in excess of $100 m. The Subsea 7 work scope is to engineer, fabricate, install and commission a pipeline bundle system. Offshore installation of the bundle is scheduled for the first half of 2012.

HMC Contracted by Acergy

European agent for Flume, Hydrographic and Marine Consultants BV (HMC), has been contracted by Acergy to deliver anti-roll tank tests and engineering works onboard the pipelay vessel Acergy Borealis. HMC will, with the aid of computer models and tank tests, configure finely tuned anti-roll tanks for the Acergy Borealis - reducing roll at all relevant sailing speeds, including zero speed.

Subsea Contracts Awarded

Aker Solutions, through its subsidiary in Malaysia - Aker Process Systems Asia Pacific (APSAP), won two subsea contracts from PETRONAS Carigali Sdn Bhd (PETRONAS Carigali). The first is a work order to supply subsea production system and services for the Kanowit field, while the second is a contract to deliver 5600m of subsea umbilicals that tie back the Kanowit subsea wells to the Kumang Cluster, Offshore Bintulu, Sarawak, Malaysia. The engineering, procurement and construction work order is valued at $45m.

Expro Wins Subsea Contracts

Oilfield service company Expro secured 10 subsea contracts in its Europe CIS region for work in 2010 and 2011. More than $10m worth of new subsea business has been secured in the central North Sea and Norway with companies including Premier Oil and BP North Sea. Expro's subsea safety systems are designed to provide reliable and efficient in-riser landing strings for well interventions and completions.

C & C Orders New Vessel

AAM to Build Survey Cat

All American Marine (AAM) will build for C & C Technologies (C & C) a new catamaran survey vessel. C & C Technologies, which is highly regarded as a pioneer in the use of AUVs in surveying offshore plots, signed a contract with AAM to build a new 134 x 37-ft. aluminum catamaran for survey operations in the Gulf of Mexico. The two companies have been developing the design concept for the vessel for nearly two years. Teknicraft Design Ltd. of Auckland, New Zealand will provide the engineering and naval architecture services for the design, which is expected to be launched and delivered during the second half of 2011.

C & C worked with AAM and Teknicraft to make the custom designed vessel versatile and accommodating to perform AUV operations, water sampling, side scan sonar and multibeam operations while underway. The vessel will feature a sophisticated survey lab which functions as the control center for data collection during each mission. Transducer wells and deployable sonar struts were thoughtfully integrated into the hull to ensure quality data results. Topside, the working decks feature an impressive configuration of winches, a-frames, and cranes. The vast aft deck also provides suitable space for AUV launch and recovery operations as well as conventional geophysical surveys.

Once complete, the vessel will be kept on a busy schedule, making approximately 20 trips annually, each lasting a duration of 14 days. The hull tonnage will be certified less than 100 gross tons and will include accommodations for 26 research staff and crew. Caterpillar has been selected to supply the prime movers, inclusive of twin C32 ACERT engines and twin C18 ACERT engines. The propulsion configuration will provide a cruise speed of 20 knots with a total of 2153 bhp in each sponson. The pairing of two different engines allows for high speed transit to the survey site using all four engines and a slower survey speed when using only the smaller engines.

The C18s are coupled to ZF Marine gears with trolling valves to provide an economical speed range from 3 to 11 knots. Auxiliary power for onboard electrical needs will be supplied by twin Caterpillar C4.4 gensets rated 99ekW.

www.allamericanmarine.com

U-Boat Worx Unveils Deep Sea Sub at Yacht Show

Visitors to the Monaco Yacht Show had the opportunity to explore the new C-Explorer deep-sea submarine. This C-Explorer 2 can accommodate a trained pilot and one passenger, and was designed for a maximum depth of 1,000 m. It comes equipped with modern lithium-ion batteries which allow it to remain submerged for up to 12 hours at a time. Its powerful air-conditioning system, iPod stereo installation and champagne cooler are indicative of the luxurious surroundings from where the underwater world can be observed. “Of course, submersibles have been around for years and come in all shapes and sizes, but these user-friendly private subs make the still undiscovered underwater world so much more accessible,” said Bert Houtman, Director of U-Boat Worx. The submersibles are not only used for private purposes, but are also for oceanographic research and underwater photography, among other things.

www.uboatworx.nl

US Navy

SSN781 Sponsor Visits Sub

Northrop Grumman Corporation hosted a tour and christening briefing for Mrs. Donna Willard, the sponsor of California (SSN 781) on Sept. 22. During the visit, she met with ship's crew, California shipbuilders and toured the christening site. Mrs. Willard is the wife of Adm. Robert F. Willard, the Commander of the U.S. Pacific Command. "This was a very exciting day for me," said Willard. "To be able to spend time with the crew of California and see a completed submarine ready to be put in the water was very special. The enthusiasm of the crew should make all of us as Americans very proud. I am very honored to be the sponsor of California and look forward to the christening."

"California is 86 percent complete and approaching the construction milestone of launch this fall," said Bob Bolden, construction director at Northrop Grumman Shipbuilding-Newport News. "Launching the ship signifies the boat is ready to go in the water and begin a series of waterborne tests. During this time, the ship's systems and compartments are transitioning over to Ship's Force in support of sea trials next year." California, the eighth ship of the Virginia class, is named after the "Golden State." It is being constructed at the company's Shipbuilding sector in Newport News, Va. The ship's keel was laid in May 2009. Once delivered to the Navy in 2011, California will be the most modern and sophisticated attack submarine in the world, providing undersea supremacy well into the 21st century.

Northrop Grumman Shipbuilding hosted a tour and christening briefing for Mrs. Donna Willard, the sponsor of California (SSN 781) on Sept. 22. During the visit she met with ship's crew, California shipbuilders and toured the christening site.

(Photo by Chris Oxley)

German TV
Roving Bat Hits the Airwaves

The Roving Bat, a hybrid free-flying ROV and crawler designed and made by CSIP, was the star of a documentary recently aired in Germany. ZDF Umwelt magazine, a German television program focusing on environmental topics, chose to feature the Roving Bat in a documentary about how offshore activity requires high-tech equipment to function effectively.

The Roving Bat, equipped with a hydrocarbon leak detection system, was used in the documentary and underwater cameras gave viewers a clear view of the ROV in action.

"When ZDF Umwelt magazine approached us to use the Roving Bat in the documentary, we were only too pleased to demonstrate the ROV's impressive capabilities," said Simon Gilligan, Managing Director of CSIP. "The Roving Bat was originally designed to survey the hulls of ships, underwater structures and hydraulic dams for any signs of damage. It can also be used for the search and disposal of limpet mines and other explosive and suspect devices attached on ships hulls, harbor walls or piers, making it one of the most popular vehicles in our fleet.

"The Roving Bat has 6 built-in thrusters, 2 longitudinal and 4 vertical, making it very powerful and capable of withstanding heavy currents for stable and reliable inspection. Its body has been designed to minimize drag, reaching its target in free-flying mode and sticks to any vertical or inclined surface. It can then move along this surface in crawling mode for close inspection and can achieve coverage of up to 20m per minute. With a thrust of 80 kg when travelling in a vertical direction and 48 kg in a horizontal direction it allows the vehicles to operate in extreme conditions.

"Because of these capabilities, it was the perfect example to use in the documentary and since the documentary aired we have received several enquiries from researchers in Germany interested in the Roving Bat."

The Roving Bat, a hybrid free-flying ROV and crawler designed and made by CSIP, was the star of a documentary recently aired in Germany.

(Photo Courtesy CSIP)

NOAA Commissions Bell M. Shimada

Federal officials commissioned NOAA Ship Bell M. Shimada, a new research vessel. Bell M. Shimada's design allows for quieter operation and movement of the vessel through the water, giving scientists the ability to study fish and marine mammals without significantly altering their behavior. The vessel is the fourth of a new class of ships designed to meet the NOAA Marine Fisheries Service's specific data collection requirements and the International Council for Exploration of the Seas' standards for a low acoustic signature. Bell M. Shimada was named by a team of students from Marina High School in Monterey, Calif., who won a regional NOAA contest to name the vessel. The ship's namesake served with the Bureau of Fisheries and Inter-American Tropical Tuna Commission, and was known for his contributions to the study of tropical Pacific tuna stocks, which were important to the development of West Coast commercial fisheries following World War II. Bell M. Shimada's son, Allen, is a fisheries scientist with NOAA's Fisheries Service.

Sub Distress Beacon Enters RN Service

Thales UK's submarine distress beacon has been accepted into service with the Royal Navy (RN). Following a trial period, more than 100 SEEPIRB (submarine-ejected emergency positioning indicating radio beacon) buoys have been accepted into service with all classes of RN submarines, including the new Astute class. The SEEPIRB has been developed for submarines to provide distress alerting and position information via radio transmissions on a satellite-aided tracking frequency. The message transmitted by the beacon is unique for each unit, thus providing identification of the transmitter. Once the search and rescue forces are alerted via the satellite-aided tracking network, they can converge on the confirmed position. Intermediate and short-range location is aided by the SEEPIRB's onboard locator beacon. SEEPIRB can be launched from standard submerged signal ejectors (SSE) Mk 4, 6, 8 and 10. Launching can take place at maximum operational depth and submerged speeds of up to 15kt. No programming of the SEEPIRB is required.

Maritime Security

Averting Sea Mines

"The recent sinking of the South Korean warship Cheonan, a 1200 ton corvette which sank off Baengnyeong Island in the Yellow Sea is a timely warning that mine clearance is a critical activity for nations' navies," said ATSA Operations Director, Neil Hodges. Reports suggest the explosion that left 46 of the ship's crew missing after the ship sank may have been caused by a drifting sixty-year old sea mine. "Danger presented by either positioned or drifting mines highlights the need for the Australian Navy to ensure its readiness by having the latest equipment and technology that could prevent further disasters of this kind." "The Korean incident is a graphic example of the rapid and devastating effects of sea mines which are difficult to detect unless ships deployed for mine detection and disposal are kept at a high state of readiness," Hodges said. The RAN boosted mine warfare capability in 1993 when it six Minehunter Coastal Class ships were constructed in Newcastle representing a quantum leap to third generation minehunting capability. The ships are equipped with the sophisticated BAE SYSTEMS Tactical Data System, the Thales 2093 Variable Depth Sonar and the Saab Underwater Systems Double Eagle MK II Mine Disposal System. ATSA provides specialized Remotely Operated Vehicle (ROV) support and services for systems including the Saab "Double Eagle" operated by the Royal Australian Navy.

Bigelow Lab Wins $9.1m "Ocean Health" Grant

The National Institute of Standards and Technology (NIST) said that Bigelow Laboratory for Ocean Sciences received a $9.1mconstruction grant to build the Laboratory's Center for Ocean Health (COH) on its new Ocean Science and Education Campus in East Boothbay, Maine. COH scientists will conduct advanced research on marine microbial ecosystems and their role in maintaining the health of the oceans. "The COH will house the core of the Laboratory's focus on the relationship between marine microbial communities and ocean ecosystem function and resilience," said Executive Director Dr. Graham Shimmield. "By bringing scientists together in a unified COH facility, we will develop a multi-disciplinary, multi-scale approach to ocean health that will provide improved management tools to support healthy, productive, and resilient ocean ecosystems."

The COH will provide ecology, physiology, large volume algal growth facilities, mesocosms (experimental tanks designed to provide near-natural conditions in a controlled environment), and computing resources for ecosystem modeling and bioinformatics. The facility's 18,200 GSF main building will be augmented by a 1,000 GSF shore facility providing research vessel pier and dock space, support for SCUBA operations, and seawater pumping facilities for laboratory and field research. Bigelow Laboratory expects to complete construction of the COH by the summer of 2012, and will contribute an additional $2.3 million towards the project.

Neptune Canada

Wiring the Subsea Volcanic Region

On Sunday, Sept. 12, a team of scientists and engineers embarked from Esquimalt, BC aboard the research vessel T.G. Thompson on a deep-sea voyage that will complete installation of NEPTUNE Canada, the world's first regional cabled ocean observatory. Installation of cable and instruments at the Endeavour Ridge node site 300 km off the BC coast will give scientists an unblinking look at how the region—renowned for its volcanic activity—fits into and influences marine, climate and tectonic systems off Canada's west coast.

"NEPTUNE Canada is taking power and the Internet to the dramatic environments of the mid-ocean ridge," said marine scientist Dr. Mairi Best, co-chief of the expedition. "For the first time, anyone will be able to monitor this harsh but dynamic edge of a tectonic plate in real-time."

NEPTUNE Canada is managed by Ocean Networks Canada for a consortium led by the University of Victoria. It pioneers a new generation of ocean observation systems that—using power and the Internet—provide continuous, long-term monitoring of ocean processes and events, as they happen. Endeavour Ridge will be NEPTUNE Canada's most challenging installation yet. During the month at sea, the team was to lay three sets of 6 km long power and fiber optic cables between the node (installed in September 2009) and the scientific study sites. To do this across a subsea mountain range 2.3 km below the ocean surface, they need to avoid deep fissures, sharp glass-like rocks and hot vents spewing plumes of corrosive minerals and gases at temperatures exceeding 300°C. To start, 18 instruments will be installed at the site, including seismometers to measure tectonic processes, cameras, and moored instrument buoys to document the ocean currents and chemical fluxes. Scientists will also observe the unique deep-sea "black smoker" ecosystems that flourish in the main hydrothermal vent field. On the way to Endeavour, two major science platforms will be installed at the Barkley Canyon node site on the continental slope. A two-ton vertical profiler system—the first of its kind in the world—will measure nutrients and warmth from the seafloor 400 m up to the surface. Wally II, the second generation of the world's first Internet-operated deep-sea crawler, will measure processes of seafloor methane hydrates.

www.neptunecanada.ca

Under-Ice Mission for Bluefin-21 AUV

Last month, a Bluefin-21 Autonomous Underwater Vehicle (AUV) owned by the Alfred Wegener Institute for Polar and Marine Research (AWI) was sent out on an under-ice mission and retrieved valuable data that could shed light on climate change. The AUV was deployed by AWI and Bluefin crew members from the R/V Polarstern about 79° north. Equipped with an AWI-developed water sampler payload, the vehicle traveled under heavily packed ice collecting 22 samples in discrete time intervals for later analysis. The Bluefin-21 AUV is a 3000-m-rated system capable of traveling over 70 km at a speed of approximately 3.5 knots. A mission is configured on Bluefin's Mission Planner software and loaded onto the vehicle computer via an RF link. Once launched into the water, the AUV carries out the mission completely autonomously. Vehicle status is transmitted back to the operator computer via acoustic communications. Upon recovery, data is downloaded and the water samples removed for analysis. The AWI cruise began in Longyearbyen, Spitsbergen on the June 30. It ended in Reykjavik, Iceland on July 29.

ABS in Brazil

Torpedo Piles Take Center Stage

The ABS Brazil Offshore Technology Center, in partnership with the Federal University of Rio de Janeiro (COPPE/UFRJ), has begun work on its first research project – a multiyear study on the application of torpedo piles as an alternative mooring anchor system. The concept has been developed by Petrobras for continued use offshore Brazil. The study will examine state-of-the art techniques available to simulate soil conditions and determine a set of requirements and criteria that address the holding capacity and structural strength of torpedo piles in operation. The study is expected to result in the development of a rational approach for the class review and approval of the proposed mooring system. The study was launched in early August and is expected to be completed by February 2012. According to Christiane Machado, ABS Senior Engineer, Technology, upon completion of the study a report with recommendations to the industry will be issued together with guidelines for the design and use of torpedo piles. The torpedo pile has been recognized as a cost-effective alternative to traditional anchor-based mooring systems. It has been considered for use in mooring floating production systems and mobile offshore drilling units (MODUs). The pile is installed in a free fall operation from a support vessel. Some of the key considerations surrounding the design of offshore foundation systems, in particular those using torpedo piles, are the uncertainties related to the determination of holding capacity values. The determination of relevant parameters of soil characteristics and the final installed position angles, together with the safety factors to be considered in the design, will be addressed in this study, explains Machado. "We want to provide a set of parametric equations to better estimate anchor weight, installation limits for penetration distance and angles and check the adequacy of the installed pile holding capacity." Since the establishment of the ABS Brazil Offshore Technology Center was first announced in May of this year, it has been fielding proposals and considering research projects intended to support the development of new technologies for offshore facilities, particularly those in Brazilian waters.

Recently, the Center applied for Brazilian governmental funding through FINEP (Research and Projects Financing) to support the development of new technologies for pre-salt related engineering. The work would be carried out in partnership with COPPE/UFRJ and Rio's tank testing facility, Lab Oceano, and be focused on the development of Rules and guidelines for the global performance of closely moored offshore units.

Tidal Energy

MCT, EXBI Enter Project

ESB International (ESBI) entered an agreement with tidal energy company Marine Current Turbines (MCT) to develop an initial phase of a 100MW tidal energy project off the Antrim coast in Northern Ireland. ESBI and MCT will work together to submit a proposal to the forthcoming Marine Leasing Round in Northern Ireland to secure an Agreement for Lease from The Crown Estate to commence formal consenting of the project. If successful, and subject to the achievement of consent, the initial phase of the project, which will use the MCT SeaGen device, could be in operation by 2018. The ESBI/MCT project will assist Northern Ireland in achieving its marine renewable energy targets as outlined in the Northern Ireland Department of Enterprise, Trade & Investment's Strategic Action Plan which calls for 300MW of tidal energy by 2020. SeaGen is reportedly the largest and most powerful tidal stream turbine in the world and the only one that is regularly generating electrcitiy for customers, having been accredited by OFGEM, the UK industry regulator, as an "official" power station. The 1.2MW turbine has been operating in Northern Ireland's Strangford Lough since April 2008 and recently achieved another operational milestone by delivering its 2 millionth kWh of power to the grid.

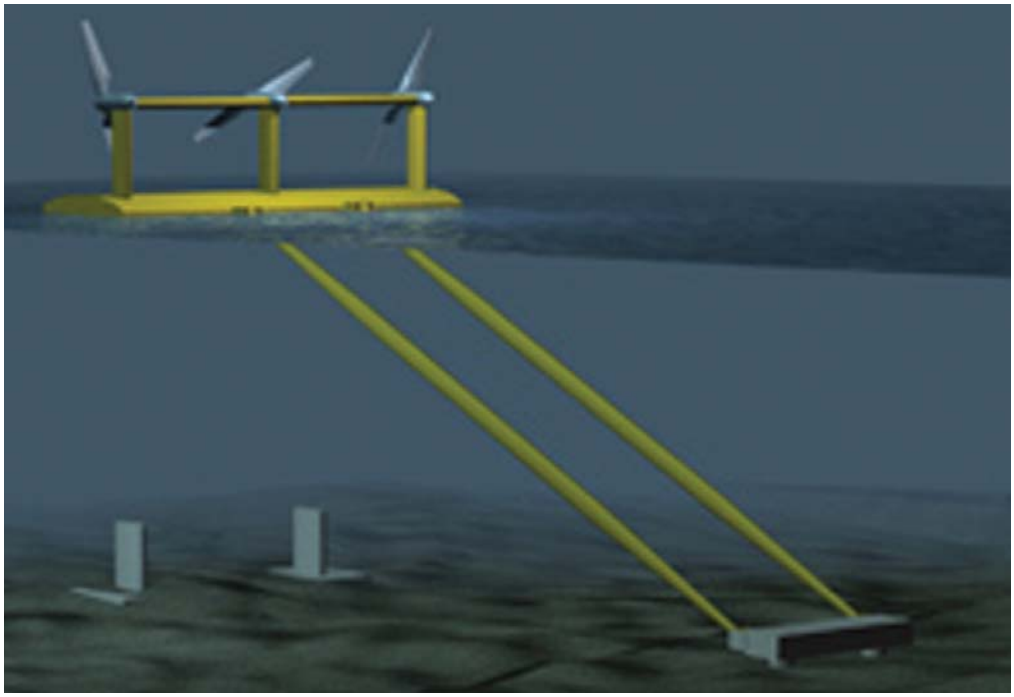
Thanks to Strangford being an exceptionally energetic location, SeaGen regularly produces as much electricity as an average off-shore wind turbine of double the rated power.

This power is already being sold by ESB's retail electricity supply business, ESB Independent Energy, to customers in Northern Ireland. ESB Chief Executive, Padraig McManus, said ESB's strategy to 2020 involves focusing on sustainable and renewable energies. "We look forward to working with MCT on this exciting new project. Our aim is to use our experience and technical strength to support the development of a viable ocean energy industry in Ireland and this project is an important step in realising that goal", he said.

Martin Wright, Managing Director of Marine Current Turbines said "This agreement underlines the success to date of the SeaGen project in Strangford Lough but importantly the real and growing commercial interest in tidal energy.

Our agreement with ESBI, which has been a valued shareholder in MCT for 2½ years, confirms MCT's tidal technology at being in the forefront in the race to harness the power of tides.

We are pleased that ESBI has chosen MCT to develop the initial phase of this project."



Raised for maintenance.

Harnessing Marine Renewable Energy

Offshore Ship Designer's first project in the marine renewable energy field will shortly be commencing on site trials in the UK's Humber estuary. By applying its experience and design knowledge, OSD has helped UK company Neptune Renewable Energy Ltd (NREL) to develop an innovative device to capture the potential of tidal stream energy. The Proteus NP1000 full scale demonstrator will harness tidal currents to produce at least 1000 MWh/year of electrical energy.

"There are plenty of innovative ideas on how to turn marine energy into usable power on the energy network," said Michiel Wijsmuller, managing director of OSD. "However, it takes solid marine engineering skills and design experience to turn these novel ideas into practical workable solutions, and that is where OSD comes in. The basic and detailed design of the NREL patented concept was developed in OSD-IMT's offices in the UK. The target capital cost per megawatt of power generating capability of the device is very competitive with wind power generation and, unlike wind, tidal stream power is continuous and not intermittent."

The original concept for the tidal current generator was developed at the University of Hull, where initial CFD, mathematical and physical modeling was carried out. In 2008 Neptune Renewable Energy was able to secure private investment to enable funding of the full scale demonstrator, and OSD turned the concept into reality with a full structural design to Lloyds Register approval, advice on equipment sourcing and building supervision.

The NP1000 is a catamaran type structure 20m in length, 14m wide weighing more than 150 tons. It was built in Sunderland under the supervision of OSD-IMT and was transported by barge to Hull where performance trials to validate the concept will be undertaken.

Installed in the steel hull is a 6 x 6m vertical axis crossflow turbine mounted within a patented, asymmetrical Venturi diffuser duct. The vertical turbine shaft connects through a right angle gearbox to two permanent magnet DC generators mounted in an aluminum deck house. The power is cabled ashore and connected to the grid via industrial regenerative drives and control systems. The device is designed so that almost all maintenance and component replacement can be carried out on site. The NP1000 will be moored in the free stream to minimize environmental impact and operates equally efficiently for both flood and ebb currents. The rotor is maintained at optimal power output by means of computer controlled shutters within the duct.

Future plans following full scale onsite tests are to install a further ten units in the Humber. There are at least ten more estuary sites around the UK, and hundreds worldwide, which potentially could support this new technology.

After the Deepwater Horizon ...

What Now Offshore?

By Jonathan K. Waldron, Blank Rome LLP

Who could have predicted such an incident? As discussed in more detail below, the aftermath of this incident is raising more questions than answers now that the focus can turn from the response efforts to claims efforts and future improvements. According to reports as of this writing, BP has spent more than $8 billion in the response and the Administration sent a sixth bill for another $128 million to BP and the other Responsible Parties in early September 2010. BP paid the previous five bills totaling almost $390 million. In addition, more than 42,000 claims have been filed against the new Gulf Coast Claims Facility since it opened in August 2010 and approximately $80 million has been paid since the BP claims were transferred to the Facility. BP has made approximately 127,000 payments totaling about $400 million prior to the transfer of the claims to the new Facility. Investigations are ongoing, it is unclear what legislation will ultimately be enacted, and the moratorium continues.

Law Suits and Claims

The Multidistrict Litigation Panel (MDL) has ruled that the suits pending against BP and others relating to the Deepwater Horizon oil spill will be consolidated for all pre-trial purposes before Judge Barbier of the U.S. District Court for the Eastern District of Louisiana. Judge Barbier has set the initial pre-trial conference for the MDL for September 16, 2010. The purpose of this conference is, in part, to establish case management orders for the proceeding. It is unclear how long these cases will take to resolve.

On August 23, 2010, the Gulf Coast Claims Facility (GCCF), administered by attorney, Kenneth R. Feinberg, trustee for the $20 billion fund established by BP Exploration & Production Inc. (BP) to settle claims arising from the Deepwater Horizon casualty, opened for business for the receipt of claims. Claimants can file for Emergency Advance Payments (EAPs) between August 23 and November 23, 2010 in accordance with the GCCF Protocol for Emergency Advance Payments and for Final Payments until August 23, 2013.

Although claims for Final Payment can be submitted to the GCCF now, the EAP Protocol published on August 23, 2010 addresses only claims for EAPs and not Final Payments. A subsequent protocol will be published to address Final Payments at a later date. Any party suffering damages or seeking reimbursement for removal costs as a result of the Deepwater Horizon casualty should consider submitting a claim for an EAP as a bridge until the claimant's full damages or removal costs can be fully assessed. Obtaining an EAP from the GCCF will not jeopardize a claimant's right to purse full compensation with the NPFC or against a responsible party through litigation if not satisfied with action taken by the GCCF.

If a claimant, however, is either not satisfied with the EAP payment offered by the GCCF or desires to pursue a Final Payment now, it does not appear that GCCF will be ready to act on a claim for Final Payment until the Final Protocol is issued. Once a claimant desires to move forward with a determination of a Final Payment from the GCCF, the claimant should be prepared to sign a Release and Waiver of Rights for any future claims as a result of this oil spill as a condition to receiving payment, or be prepared to litigate the matter or pursue the claim against the NPFC. Either of these options can take years to resolve. Claimants should consider conferring with legal counsel to ensure they understand all options available to them.

Investigations

The joint Coast Guard and Bureau of Ocean Energy and Management (BOEM) investigation continues to develop conclusions and recommendations as they relate to the Deepwater Horizon explosion and loss of life on April 20, 2010. The facts collected at this hearing, along with the lead investigators' conclusions and recommendations will be forwarded to Coast Guard Headquarters and BOEM for approval. The Blow-Out Preventer was just raised and it is only now that the government has an opportunity to review this evidence and the investigation has recently been extended to at least November 2010. It is unlikely that anything will be finalized until 2011.

Meanwhile, the Department of Justice (DOJ) continues its investigation and has not publicly released any information on its status. However, the stakes are high, as the specter of a possible finding of gross negligence looms in

this case and DOJ could purse substantial criminal and civil fines. For example, on a per barrel basis, a civil penalty could be pursed in the vicinity of $5.4 billion. If there is gross negligence the fine could be up to $21 billion.

In addition, the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, consisting of a bipartisan presidential commission, established by Executive Order by Barack Obama on May 21, 2010 is continuing its work to provide recommendations on how the United States can prevent and mitigate the impact of any future spills that result from offshore drilling.

Spill Legislation

In response to the Deepwater Horizon incident, numerous hearings have been held with a focus on the economic and environmental effects of the spill, as well as the impact of the oil rig explosion on offshore oil and gas development policy. When Congress broke for the summer recess, the House had passed H.R. 3534, the Consolidated Land, Energy, and Aquatic Resources Act of 2009 (the CLEAR Act). This bill incorporated key provisions from a bill introduced by Congressman Oberstar that would, among other things, repeal limits of liability, increase the minimum level of financial responsibility for an offshore facility to $1.5 billion, authorize recovery for non-pecuniary damages and human health injuries, require all vessels engaged in OCS activities to operate under the U.S.-flag and be 75% U.S.-owned (and a Mobile Offshore Drilling Unit (MODU) would also have to be built in the United States), and substantially revise the oil spill response planning and safety regimes for vessels, facilities, and MODUs.

The Senate, on the other hand, failed to pass a bill, but consolidated proposed oil spill legislation in S. 3663, the Clean Energy Jobs and Oil Spill Accountability Plan, which was introduced by Senator Reid on July 28, 2010. It became clear, before the Senate on August 6 went on summer recess, that there was opposition, both on the Democrat as well as the Republican side of the aisle. Senator Begich (D-AL) and Senator Landrieu (D-LA), both critics of the unlimited liability language in S. 3663, introduced separate measures shortly after S. 3663 was introduced intended to hold oil companies accountable, without placing a burden on taxpayers and shutting smaller companies out from operating offshore. In addition, the Republicans have their own legislation in play, S. 3643, the Oil Spill Response Improvement Act of 2010, introduced by Senator McConnell (R-KY) on July 22, 2010. Given the pressures involved with re-elections and other priorities, it is unclear whether the Senate can pass spill legislation this fall and then work with the House to finalize and enact spill legislation before the end of the year. If not this year, then most certainly it will be a major issue in 2011.

Moratorium

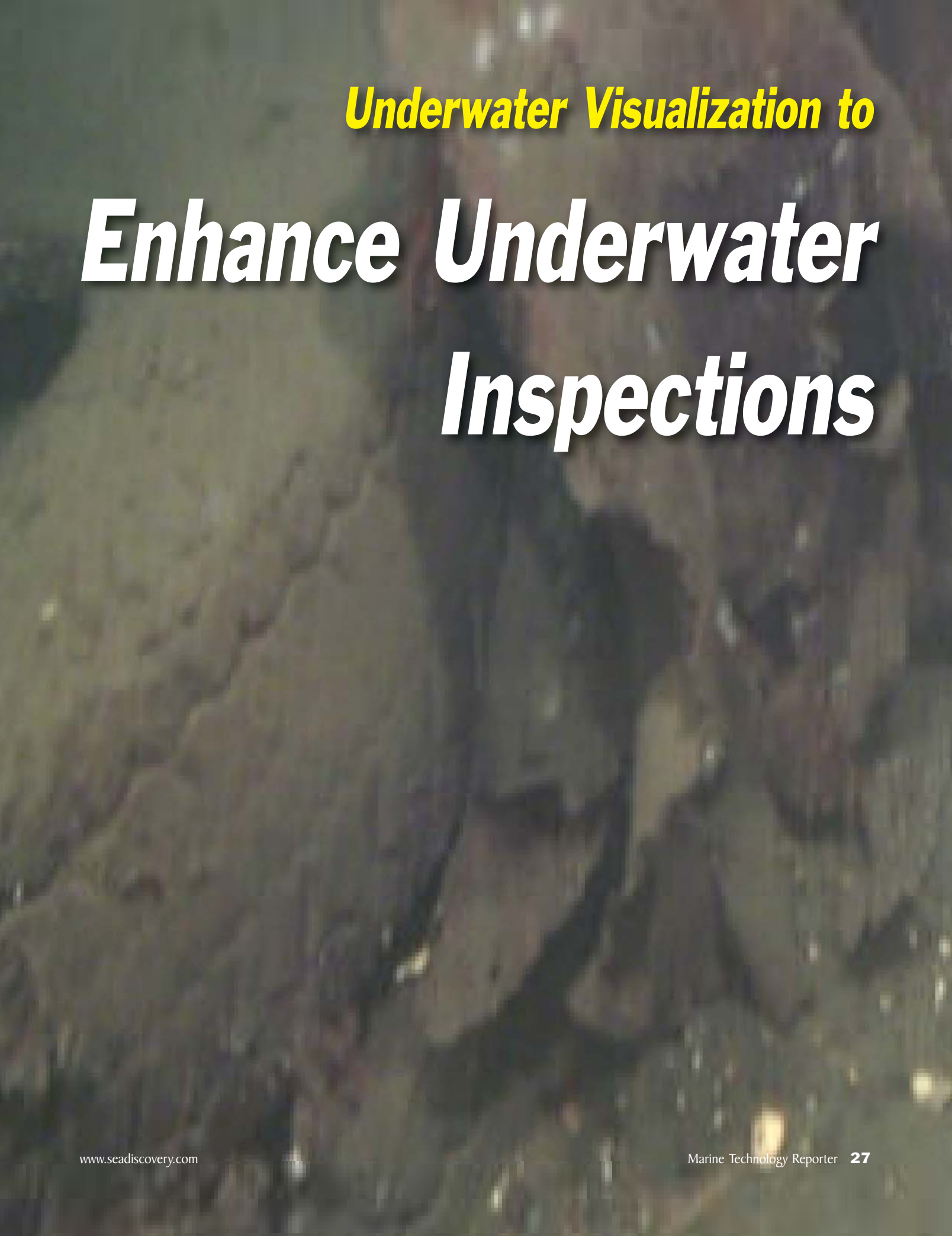
One of the key impacts of the spill incident is the six-month moratorium the Obama administration imposed on new deepwater drilling permits in May 2010 following the April 20 blowout. Although a federal judge in New Orleans blocked the ban after a number of energy companies filed suit challenging it, on July 12, 2010 the Interior Department replaced it with a revised one with additional justifications. The revised ban is still being targeted by industry to overturn it. Given the substantial economic implications, the moratorium is not only having directly on the offshore oil and gas operations, but also indirectly on the industries supporting these offshore activities.

The implications of the Deepwater Horizon are staggering. The oil impacts were substantial and the resulting claims, including for economic damages, huge. Many companies are simply considering whether it is worth conducting such operations in U.S. waters given all the uncertainties. Claims and lawsuits will continue for an extended period of time. We await the results of the investigations and Congressional action in determining actions that will be taken against BP and possibly other Responsible Parties and the potential for a completely revised offshore liability, prevention, and response regime. In the interim, stakeholders should continue to let Congress and the American public understand the importance of their interests, and the potential implications, to assist in resolving these outstanding issues.

About the Author

Jonathan K. Waldron, a partner at Blank Rome LLP, concentrates his practice in maritime, international, and environmental law and counsels clients in areas such as: citizenship and manning issues, coastwise trade, vessel/facility operations, and legislative and regulatory affairs. Mr. Waldron is ranked by Chambers USA as a leading shipping attorney and is recognized as a leader in shipping and maritime law by Who's Who Legal.

Figure 1
Comparison of Standard and High-Definition (right) Image Quality.



Underwater Visualization to

Enhance Underwater Inspections

By Simon Marr, Visualsoft Ltd.

Digital Video to support subsea pipeline and structural inspections has been around for more than a decade now and has become well established offshore. However, the quality of results and the time to conduct surveys is highly dependent on water turbidity, lighting and the ability of ROV pilots to locate and navigate to inspection targets efficiently. Good visualization and graphic representation of inspection targets within the field is therefore essential for workscope planning, conducting surveys safely and efficiently, and for performing faster visual inspections based on easy access to and better understanding of the survey data collected. In this article VisualSoft Ltd., describe methods of enhancing the optical imagery and other methods of imaging targets and then explain the benefits of Augmented Reality Viewers for planning and tracking surveys and how they can be used with existing survey toolkits.

Advent of High Definition Video

Digital High Definition (HD) video is any video image with a vertical resolution of 720 or 1080 rows and a horizontal to vertical aspect ratio of 16:9. This results in image sizes of 1280 x 720 and 1920 x 1080 respectively with one or two million pixels per frame, roughly five times that of Standard Definition (SD). Another important difference is analogue SD video is recorded to the PAL specification which only records at 25 frames per second – 720 and 1080i can record at 30 fps and 1080p can record at up to 60 fps.

For subsea inspection surveys, HD shows significantly more detail and the video imagery appears crisper and more vibrant. This makes it highly suitable for close visual inspections of pipelines, ship hulls and subsea structures where the early detection of cracks, corrosion and other anomalies is mission critical. HD is also rapidly becoming the standard for marine scientists involved in habitat mapping and site surveys. The higher frame rates possible should improve resolution when recording video from a moving vehicle.

HD adoption has been hindered by technical hurdles such as getting the raw signal from the camera into the ROV control pod and by the higher costs of multiplexing and transporting the signal up the umbilical to the surface. Another challenge of upgrading to HD has been the increased storage requirement. HD video recording

Figure 2: LYYN Video Enhancement Results.

records at 12-20 Mbps which generates up to 216 GB per camera per day which corresponds to 3-5 times the current storage volume required for SD/PAL digital video recording. For inspections that require synchronisation of video from multiple cameras, a more flexible solution is therefore desired. VisualSoft tackled this issue by developing a recording solution that allows one channel (the main camera) to record and playback in HD and other channels to record and playback in SD. Results from an HD survey of Bergen harbour showed considerably more detail on seabed objects and the video footage was noticeably clearer.

Dealing with Sub-Optimal Visibility

Most inspection surveys are conducted in less than ideal conditions and HD can sometimes exacerbate the situation by making disturbances more visible. Visibility may be poor because of sediments or algae in the water or due to a lack of light. Careful attention therefore needs to be paid to matching the lighting to the camera and to the environmental conditions to avoid saturation. Where there is high turbidity, or silt kicked up (for example by the thrusters of an ROV) the imagery can be badly obscured by suspended particles causing a 'snow' effect that can be hard to decipher.

During close visual inspection using remote vision and real-time video the human observer needs to be able to detect and classify anomalies such as cracks and coating failures as structural members are scrutinized. There are some solutions that can be plugged into existing video recording systems such as LYYN. Operating in real-time this unit helps to reduces visual disturbances from particles or algae, and removes predominant tinting from organic matter and increases contrast in surface colours for better inspection results.

Imaging sonars are another technology used to deal with low or zero visibility: these are sometimes referred to as acoustic cameras. These systems enhance real-time underwater navigation, obstacle avoidance, and object detection, tracking and classification with high levels of accuracy and offer 2D or 3D visualization to extremely high resolutions. They can offer near video quality results in turbid and very deep waters.

Model-Based Augmented Reality Viewers

Vision-based systems that rely on optical improvements

(Photo courtesy of Lyyn)

and digital enhancement are only capable of improving imagery within a few meters. Imaging sonars can detect and classify objects based on shape at a greater range but cannot show component detail clearly at greater distances or the positions of multiple structures in what may be a complex subsea field layout with infrastructure spread out over several kilometers. Augmented Reality (AR) Viewers offer the ability to rapidly fly through and view field assets with perfect visibility either from the perspective of an onboard ROV camera or from any stand-off distance. This improved situational awareness and ability to instantly jump to and view individual asset components enables faster field familiarization and saves considerable time during survey planning and when reviewing results. Additionally, being able to zoom in and rotate around structures to see more component detail and consider different methods of access enables Inspection Engineers to plan survey inspections using ROVs well in advance.

The field view is built using accurate models of structural members and components. Owners often have their own nodal identification hierarchy which can be used for easier recognition and tracking within the AR viewer during inspection. For greater efficiency and return on investment, these models can be re-used at each stage of the inspection process from definition of a task based workscope generation, through the offshore inspection process and on to the subsequent analysis and review in client offices.

The virtual field is laid out based on survey positions of assets. Significant operational downtime is saved by planning a course that stays clear of obstructions/risk areas and by working out how to approach inspection targets in a safe and efficient way. This technology is moving fast and it is now possible to track live positions within this virtual world. By attaching position, pitch, roll and heading sensor feeds to one or more ROVs/vessel models it is possible to update the 3D model in real-time showing track data, camera views and multi-beam coverage of the seabed. This is leading to a real-time network distributed view of all field operations within the 3D Field Model. A wider audience benefits from being able to view live operations within the field: pilots, crane operators, operations supervisors/superintendents, owner/operator representatives and increasingly onshore teams who may access the system via a SatCom link. Direct, real-time ROV position feedback through an AR Viewer can also be used alongside existing vision-based systems to aid pilot navigation.

Used as part of an Integrity Management (IM) solution, AR Viewers offer front-end access to different client structural datasets in a single 3D simulation of the field. Datasets are mapped to specific structural component IDs so that users can see and extract catalogues of data from current or previous inspection campaigns for comparison, interpretation and risk management.

Inspection Workscope Visualisation

Inspection Engineers need to take a lot of factors into consideration when deciding how to implement an inspection strategy. Different types of asset have different risk factors so inspections need to be tailored to the asset. Risk-based techniques are used to decide when to inspect and what types of failure to target. Inspection Engineers use their experience together with knowledge of the age of the asset, its original expected design life, its inspection and repair history, and its operational environmental to define a work scope of inspection targets. The ability to easily visualize, review, select and sequence different components for inspection based on ready access to this kind of target information makes inspections quicker to plan, track, audit and report on.

However, Inspection Engineers get what they inspect rather than what they necessarily expect. So what happens when unusually aggressive deterioration is observed or the Inspection Engineer finds anomalies in areas where it was not expected? After anomalies are logged and classified more evidence needs to be collected to see how widespread the effects are, and to find out if other components of the same type are affected to a similar extent. Therefore, Inspection Engineers need online tools to record what is found, keep track of what has and has not been inspected and be able to modify the scope of work as required to undertake more detailed inspections or to survey a larger sample of targets.

To get a comprehensive picture, Inspection Engineers need to tie all inspection data together. This is a complex problem that requires synchronisation between the online data acquisition system, offline review system and component model datasets. It involves linking recorded video, survey positioning, sensor measurements and condition observations with members and components and then providing access to histories of previous inspections. Referential documents such as standards, classification rules, company rules and procedures for inspection also need to be readily accessible. Having all this data in one place and accessible using a single user interface makes it much easier and faster to conduct condition analysis and generate inspection reports.

Improving workscope visualization and task tracking

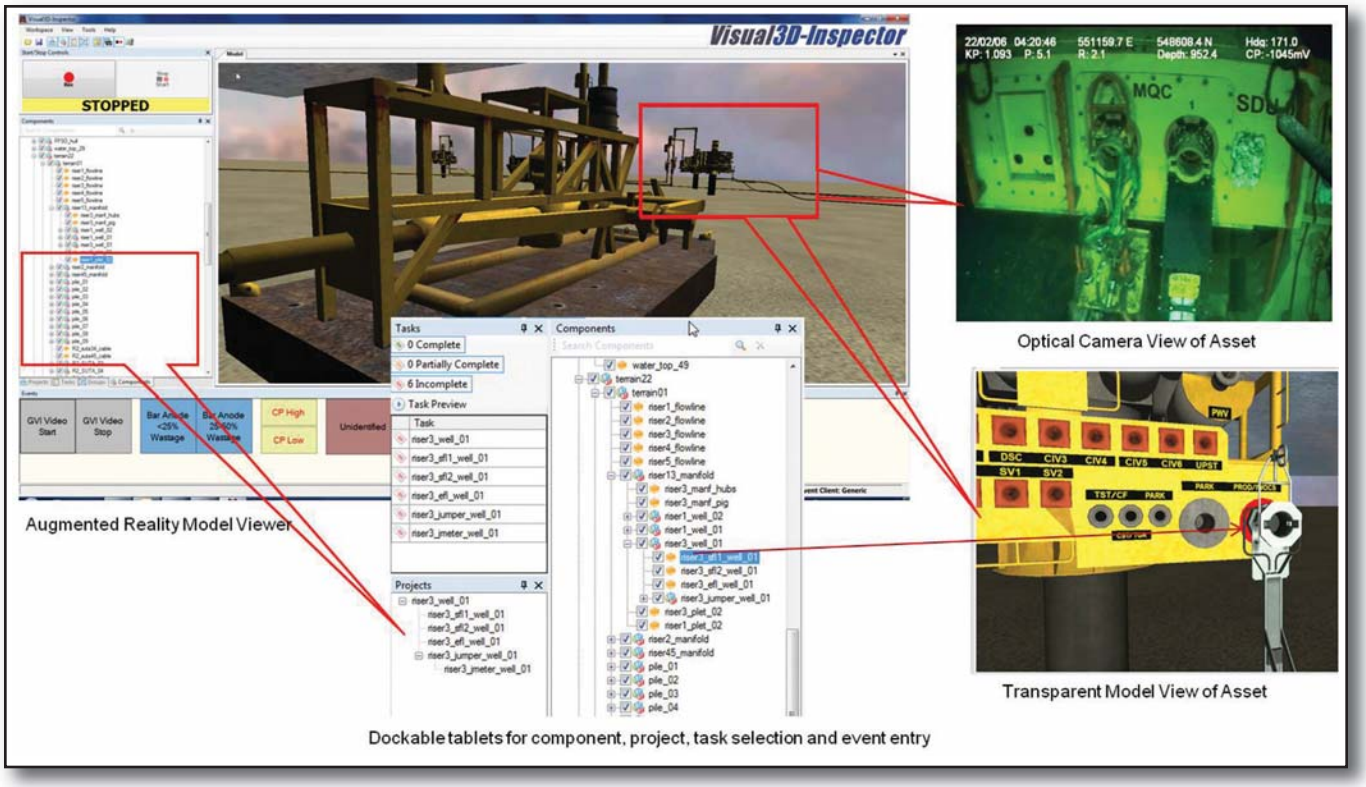


Figure 3: Visual3D-Inspector Integrated with VisualWorks for inspection workscope vizualization.

was VisualSoft's motivation for Visual3D-Inspector, a new add-on module to the VisualWorks Inspection Suite. Using Visual3D-Inspector, Inspection Engineers prepare and preview inspection workscopes and track completions using a set of inspection and visualization tools integrated with online video and sensor data acquisition and with offline video review and event editing. These tools also integrate with the leading software packages in the industry such as COABIS, EIVA, and Netlink to allow clients to see their data the way they want to see it. The ability to easily view information and understand complex spatial data from numerous different sources is extremely important in our data rich world. VisualSoft allow users to choose between viewing data through the client's own geo-spatial database structure/GIS or using the VisualReview program which is distributed free of charge and can be bundled together with the data on a CD/DVD for automatic playback.

Practical Deployment

As well as being designed for inspection workscope visualisation and tracking, Visual3D-Inspector can also be used for post-inspection visualisation of legacy data. For example, VisualSoft recently deployed the Visual3D-Inspector Viewer to a client in Egypt who wished to map inspection data they had collected of their platform using VisualWorks. This involved importing the platform model and automatically mapping its component list of conductors, elevations, faces, legs, risers, guards, etc to a client-specific project tree containing the survey data. The selection of components in the 3D Model Viewer enabled the client to jump directly to the component list to see what survey data has been collected and then step through all recorded event anomalies reviewing what had been observed and what features had been recorded. This allowed the client to visualise and interpret all survey data of the platform from their desktop PC, conduct rapid condition reviews and extract relevant video sequences, clips and stills and event details for submission of findings to their client. For future surveys they will be able to use Visual3D-Inspector from the start of the job and for tracking component inspection records for time-based component analysis.

VisualSoft is presently discussing other deployments of their integrated 3D Model Viewer with clients who wish to link together pipeline/structural and FPSO/Ship Hull inspection surveys in a single application and to integrate with existing GIS databases.

Palm-Size CastAway CTD Reveals

Complex Dynamics in a Small Harbor

The Mexican Institute for Water Technology (IMTA) had big questions to answer as it studied plans for the expansion of the Port of Manzanillo, an important container shipping center on Mexico's Pacific coast. The port authority received permission to upgrade the harbor on the condition that it restore an adjacent lagoon, cut off from the rest of the harbor by a road embankment decades ago. Reconnecting the lagoon to the sea will return circulation to the system and improve water quality. However, the lagoon has evolved into a freshwater system highly impacted by wastewater from the surrounding community, which has become home to mangrove stands and the bird populations that led it to be dubbed Laguna de las Garzas – Lagoon of the Herons. Biologists raised concerns that simply opening the lagoon to the harbor would alter the lagoon's salinity too quickly, stressing the mangroves and threatening the ecosystem that has developed there.

"We needed some environmental studies related to circulation and how to maintain good water quality," says Dr. Rubén Morales of IMTA's Grupo de Hidráulica Ambiental (Environmental Hydraulics Group) in Jiutepec, Morelos, Mexico.

"We wanted to understand the dynamics of the harbor induced by tidal forcing and gain insight into the vertical structure of the water column.

With that information,we could predict what was going to happen when they opened the canal between the lagoon and the harbor.

We needed to study the residence time of fresh water in the lagoon and the canal."

Working in a small boat in a harbor that rarely exceeds 50 feet (15 meters) in depth, Morales, Ariosto Aguilar and Armando Laurel harnessed the power of a new, palm-sized instrument – the CastAway-CTD from YSI – to get a clearer understanding of the dynamics of water column in Manzanillo. Weighing just one pound (0.45 kg) and reeled in and out on a fishing pole, the CastAway-CTD instantly delivers the same information that typically required a heavy, bulky instrument and extensive data processing.

New Tool

The CastAway-CTD uses its patent-pending design to collect high-resolution data on its free-falling downcast, and to continue logging conductivity, temperature and depth readings as it is reeled back up through the water column. Every cast is georeferenced by the instrument's built-in GPS. The CastAway-CTD has no moving parts – instead, an innovative flow-through design keeps water in continuous contact with the instrument's sensors, which capture data at a sampling rate of 5 Hz, or five samples per second. The CastAway-CTD temperature sensor responds in less than 200 milliseconds, the pressure sensor is accurate to within 0.25 percent of FS, and its unique conductivity cell is contained to shield its six specially arrayed and sequenced nickel electrodes from the possibility of errors from nearby conductive materials.

The result is data as accurate and as high in resolution as a previous generation of heavy, complex conventional instruments can gather – without the headaches and strained muscles. The CastAway-CTD also eliminates the hassles of field maintenance. A rinse with fresh water and an occasional scrubbing of the electrodes with dish soap are all that is required to keep the instrument ready for deployment in the field.

Calibration is handled by YSI during annual factory maintenance. Power is supplied by a pair of AA batteries, accessed by a simple twist of the rugged plastic housing. In fact, the only tool required to operate the CastAway-CTD is a plastic stylus to activate the unit's features. Almost immediately after each cast, the unit's built-in color LCD screen displays data points and graphs depicting conductivity and temperature versus depth – the measured parameters – as well as derived values for speed of sound and salinity. The instant feedback on the water column, allows users to adjust their sampling programs on the fly, doing additional casts or targeting specific areas or depths for further study.

"You can understand what's happening and you can say, 'I need more data' and cast again," Morales notes. "It's really incredible because we can even plan at which depth we should sample." With the lightweight CastAway-CTD, doing another cast is simple and painless, especially compared to hauling a larger unit. "We probably did 50 percent more casts because it's so simple, you want to try it wherever you go," he says.

Intuitive Software

After viewing data from each cast on the LCD screen of the CastAway-CTD, Morales and his colleagues used the unit's Bluetooth connection to upload data onto a computer running YSI's Windows-compatible CastAway-CTD software.

The convenience of a dedicated, wireless connection – no cords snaking around the boat, no pins and connectors to step on, no worries about compatibility or handshaking – was matched by the convenience of working with the intuitive software. CastAway-CTD software plots every cast – georeferenced with GPS coordinates, time stamp and unit number – on an interactive map. With drag-and-drop functionality, users can group or compare data, creating tables and graphs with the click of a mouse.

"It's definitely very easy and very practical to see the plotting of the data," says Morales. He used CastAway-CTD software to view and graph the data from his fieldwork and publish it in his preliminary report. For further analysis, it is quick and convenient to export data from the CastAway-CTD to industry standard software packages such as Excel, Hypack and Matlab.

Morales and his team saw a significant lateral temperature gradient – two degrees C at 12 to 14 meters in depth – at the entrance to the harbor. Guided by data from the CastAway-CTD, they gathered current data with a SonTek acoustic Doppler profiler (ADP) to determine that water flows through Manzanillo harbor in different directions on either side of the thermocline (a two-layer flow).

"At the main entrance to the lagoon, there is a very strong lateral gradient, which is really important in the dynamics of the harbor," Morales reports. "Travel in the surface layer is toward the sea. At the same time, water in the lower layer is moving toward the port.

Normally, it is thought that in small, semi-enclosed harbors the circulation is barotropic, but in the Manzanillo harbor, there is two-layer flow, which has been corroborated with the CastAway-CTD and a towed SonTek ADP. That's important to understanding residence time and the distribution of pollutants inside the port."

Identifying the temperature gradient in the water column illustrated to Morales and his colleagues the need to assess the port with more powerful models than they had been using before. "Normally we think we can model circulation with 2-D models, but what we found is that harbor dynamics in Manzanillo are not as simple as everybody thinks," he says.

Morales' future work will continue taking him to coastal lagoons and inland lakes to study vertical structure and motion in the water column. The instrument's high-resolution data and instant feedback are sure to yield more insights into the dynamics of Mexico's extensive coastal waters as well as lakes that supply drinking water to area communities.

Palm-Size CastAway CTD.

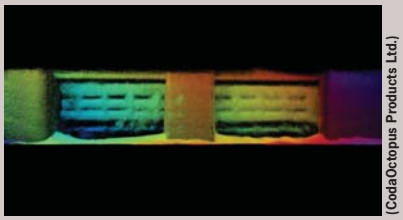
"It's really important for us to understand the structure of coastal lagoons," he notes. "We can also take the CastAway to an inland lake to measure stratification and see how the water is mixing. If we have stratification during the summer, we can have anoxic areas. In some cases, we will want to have mixing systems to improve water quality."

Existing equipment has reliably provided CTD data for years. But those huge, heavy, complicated systems can be a real challenge to manage in the small boats that Morales tends to use in his research. The appeal of the CastAway-CTD – its accuracy, convenience, flexibility and speed – all of which are contained in a carrying case the size of a lunch box.

"Normally, in coastal studies, we just need a small boat," Morales says. "It's easy to just take the CTD in its box. It's not cumbersome." For more information on the CastAway-CTD, visit

www.ysi.com/castaway

3D Real-Time



(CodaOctopus Products Ltd.)

Gates of the dry dock in the port of Marseille, France. Data captured in real time by the Coda Echoscope 3D Real Time Sonar.

A 3D sonar technology of the Coda Echoscope is set for new decommissioning projects in the North Sea and the Gulf of Mexico. The benefits of the Echoscope's 3D capabilities, which bring real-time visualization to the underwater working environment, were substantiated in a successful role in a recent 'plug and abandonment' task in the Gulf of Mexico, underlining its suitability for entry into the decommissioning arena. Echoscope technology generates a real-time 3D image from one acoustic transmission, or ping, and from a single ping over 16,000 range and bearing points are generated. The total viewing angle measures 50° x 50° and within this acoustic volume, an instantaneous 3D image is generated. Commercial achievements with Echoscope technology have been documented in a range of diverse applications including ROV operations where, as an intuitive aid to the ROV pilot, real-time 3D visualization augmented his spatial awareness when navigating through complex structures. Other projects include offshore wind farm installation and underwater breakwater construction; in all cases improvements in operational efficiency are reported.

DIDSON Does It

Acoustic Imaging Reveals 'Lost Town' Detail

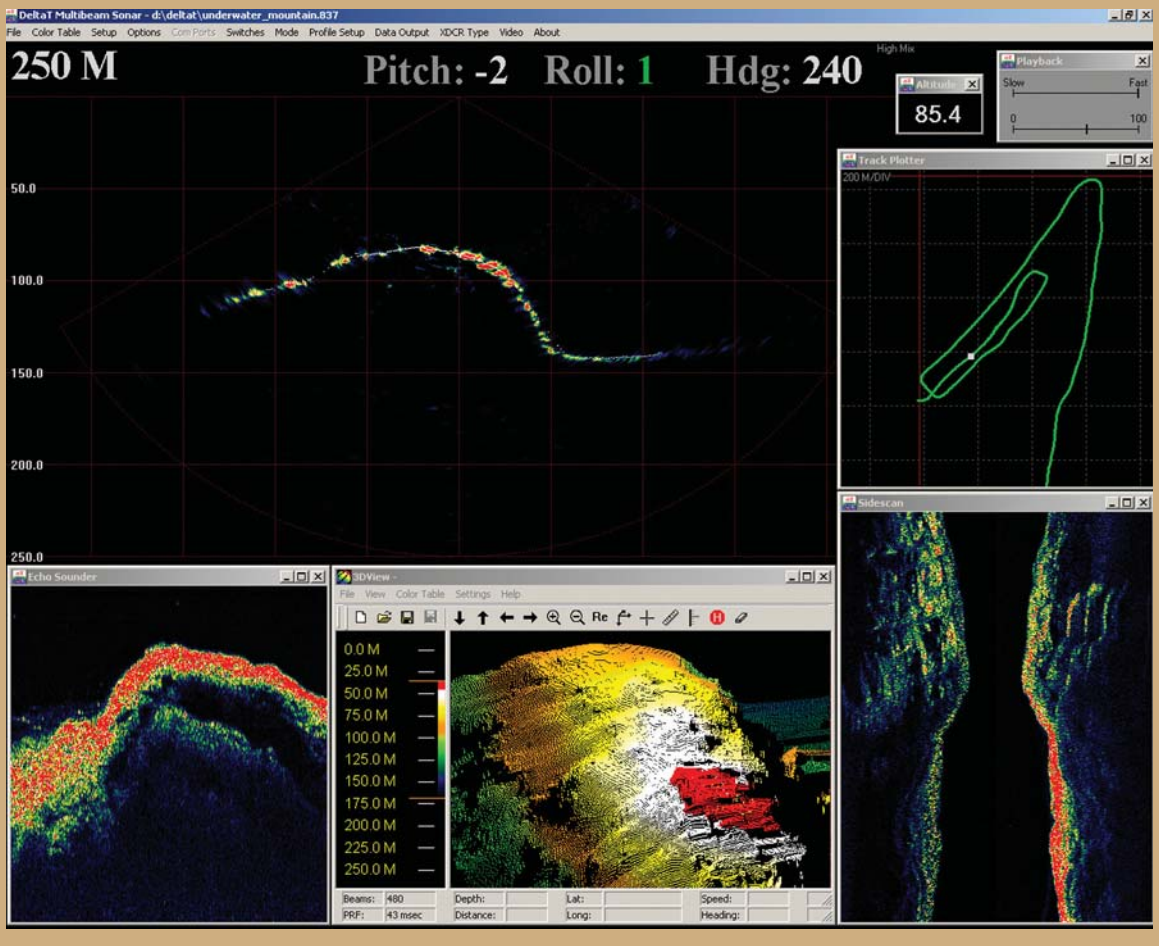
Off the coast of the Dunwich in Suffolk lies half a medieval town long since abandoned to the encroaching sea. Despite many diver and sonar surveys, the extent and detail of the well-known site are still unknown as poor visibility frustrates its study. In June 2010, acoustic imaging technology was introduced to archaeological survey of the site, revealing news detail.

The site of the sunken town of Dunwich has been the subject of debate for several centuries and the question of how much of the ancient capital of East Anglia remains just off the coast has been the subject of countless diving and archaeology projects. Since the 1300's, historic buildings have been lost to the relentless encroachment of the North Sea but attempts to gain any detailed view of what lies beneath the water, the silt and the sand off the coast have been frustrated by the poor visibility near the seabed. Tidal and wave currents keep fine sediments from the seabed in suspension, causing the poor visibility within lower meters of the seawater that limits diving and hampers archaeological survey.

In June 2010, a team working with the BBC and MacArtney Underwater Technology employed technology to examine the site. Marine Archaeology Professor, David Sear, based at the University of Southampton's School of Geography teamed with divers including Andy Rose from the diving instructor company, Learn Scuba, and enlisted the help of sonar imaging expert, Mike Sawkins from the MacArtney Underwater Technology Group.

Television presenter and historian, Dan Snow, (left) and Mike Sawkins from MacArtney (right) with the DH DIDSON system.

They deployed a special sonar camera, the diver held (or DH) **DIDSON**. Each diver clipped onto a shot line which had been previously positioned over the ruins using GPS navigation and side scan sonar data. The divers could then undertake circular sweeps of the sea bed around the shot line, gradually increasing their radius. A set of data was taken hanging over the ruins at a distance of between 8-15m, and the second set for close up visualisation at 1-5m within the ruins. The combination of high frequencies, acoustic lenses and very narrow beams increased the image detail and gave archaeologists greater detail of the site than ever before available: The DIDSON diver held system enabled us to see for the first time the worked and rubble masonry on the seabed from the ruins of St Katherines Chapel and St Nicholas Church lost to the sea in c.1550 and 1480 respectively. This ability starts to open up the options for marine archaeology in near shore shallow turbid waters around coasts," explained Professor Sear from the University of Southampton's School of Geography.



Multiple views of a seamount using the Delta T Multibeam sonar.

(Photo Courtesy Imagenex)

CARIS Helps Make Panama Canal Safer

The Panama Canal Authority completed the first round of tests in the installation of its new Electronic Navigational Chart (ENC) system using CARIS software at the Simulation Center, Research and Development Maritime in Panama. This new system will be designed to make navigation in the Panama Canal both safer and more efficient. Currently the Panama Canal carries around 13,000 oceangoing transits per year with a total weight of 300 million tons; close to capacity for the canal. In addition to aiding navigation, the new system is designed to enhance maritime security, as well as providing more cartographic information, allowing greater precision when navigating through the waterway.

The Panama Canal Authority worked in close partnership with CARIS to provide the data components of the cartographic database of the Panama Canal. This included information relating to the new locks and the depths of the various areas of the sea route. CARIS provided the training and support to fully utilize the selected CARIS software. The Panama Canal Authority acquired BASE Editor for the creation and management of bathymetric surfaces and S-57 Composer for the production of ENC's. The project entailed the creation of two main electronic charts: one for the Atlantic coast and one for the Pacific coast, as well as other more specific cartographic products within the canal. These ENC's are initially being used in a simulator as part of the training program for the canal pilots. In the future the ENC's will be mandatory for any vessels approaching or intending to transit the canal.

Email: alex.palmer@caris.com

OMA Academy Kicks Starts Trainees

Academy Director, David Martin (center) with the six trainees.

Six trainees from coastal communities in the South West started their new careers this week as Offshore Marine Academy kicked off its first training program. The Academy, an independent organization within the Offshore Marine Management (OMM) group of companies, spent weeks interviewing and short-listing candidates aged between 18 and 25 for the upcoming Academy courses and the final candidates will now join the 12-month intensive Bristol-based course.

Chairman at RESON

A recent change in RESON's board of directors will place Michael Brock as the new Chairman of the Board of Directors. Brock has a background as M.Sc in acoustics and comes to this position with a wealth of knowledge and experience including terms as CEO of BK medical; Divisional Director at Brüel & Kjær Sound & Vibration Measurement; and Managing Director at GN Otometrics.

Greenwood Joins Cortland/PSR

Greenwood

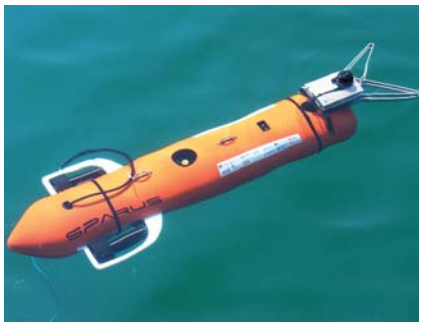
Puget Sound Rope said that Michael Greenwood has joined Cortland/Puget Sound Rope as Technical Sales Manager. He has more than 34 years in the rope industry, beginning with the family rope company, Tubbs Cordage Company of San Francisco in 1976. For the last 24 years he has been in sales and sales management with Samson Rope Technologies. Greenwood's past positions included, Western Regional Sales Manager, National Sales Manager, Director of Sales Commercial Marine and finally Director of New Product Development.

NRC Canada Orders OceanServer AUV

OceanServer Technology said that the National Research Council (NRC) of Canada took delivery of a new AUV. The Iver2 AUV, equipped with OceanServer's dual port camera system, side scan sonar and backseat driver/remote helming capability will be used in a broad range of upcoming research initiatives. The EP42 Expandable Payload (EP) platform includes a dedicated CPU with disk to enable the installation of a user-selected operating system, sensor drivers and behavioral software. In addition, the EP vehicle ships with a well-documented Application Protocol Interface (API) with select vehicle command options to permit backseat driver control of the Iver2.

Tritech Tools Assist Winning SAUC-E Teams

Tritech International supported several successful AUV teams at the recent Student Autonomous Underwater Challenge Europe (SAUC-E), in La Spezia, Italy. SAUC-E challenges multi-disciplinary teams of aspiring student engineers to design and build subsea vehicles capable of performing autonomous missions in an underwater environment.



The competition encourages student engineers to consider underwater technology and its future possibilities, as well as build closer links with organisations involved in underwater robotics. Tritech sensors enhanced the capabilities of competing Autonomous Underwater Vehicles (AUVs), specifically designed and built for the challenge. In first place, the University of Girona's (Spain) winning Sparus AUV integrated a Micron DST imaging sonar, Tritech's ultra compact mechanical scanning sonar.

Kongsberg Selected for Alaska Region Research

Kongsberg Maritime will supply a suite of acoustic systems, including multibeam and scientific echosounders for the Alaska Region Research Vessel (ARRV), R/V

Sikuliaq, which has been commissioned by owner, the National Science Foundation and will be operated by the University of Alaska, Fairbanks. Kongsberg Underwater Technology, Inc. was chosen as the scientific sonar systems integrator for the ship. R/V Sikuliaq will have an array of sonar equipment including several Kongsberg Maritime manufactured systems such as the EM 302 deep water multibeam echo sounder, EM 710 shallow water multibeam echo sounder, TOPAS PS 18 parametric sub-bottom profiler and the EK 60 scientific echo sounder.

DNV Confirms Seagen's Performance

Det Norske Veritas (DNV) issued a Statement of Conformity to certify that the performance of the 1.2MW SeaGen tidal turbine has been correctly evaluated according to the principles contained in the "Edinburgh Protocol" - the protocol for tidal turbine testing developed by the University of Edinburgh for the UK Government's Department of Energy & Climate Change, and also EMEC's own testing protocol.

DNV undertook a detailed review of the measurement program used by Marine Current Turbines (MCT) for determining the performance of the company's SeaGen tidal energy turbine which has been operating in Northern Ireland's Strangford Lough since 2008. DNV has verified that the measured results have been correctly obtained and interpreted. Some key results that came from this program indicate that SeaGen has met its design goals with the peak efficiency for both rotors on both tides averaging 48% (Cp = 0.48) and the best result was a peak efficiency of 52% and worst peak was 45%. The corresponding overall system efficiency, including all losses in the generator, gearbox and power electronics, was found to be in the range 40 to 45%; that is the proportion of energy in the flow of water intercepted by SeaGen's rotors that can get delivered as electrical energy into the grid. Peter Fraenkel, Technical Director of MCT, said "Our engineering team are delighted that SeaGen has been shown to deliver such good results."

SeeByte Supports Local Charity

Photo courtesy SeeByte Ltd.

SeeByte announced its support for four of its staff-members in their successful completion of the Wan Day Scottish Adventure Race. Battling the elements, team SeeByte X cycled, ran and kayaked through the unforgiving terrain of the Pentland Hills in an effort to raise funds for Erskine, a local charity which provides respite and long term care for ex-Service men and women in five care homes throughout Scotland.

The event, which took place in late summber, tested the physical and orienteering skills of the SeeByte team, taking them on a 5 hour expedition through the Scottish countryside. Gaining tenth place of the forty-four teams entered, SeeByte X raised more than $1,240 for Erskine.

"Although each of us enjoys outdoor sports, it really motivates you to go that extra mile when you know every penny of sponsorship is going to such a worthwhile charity. The generous donation from SeeByte was greatly appreciated by all involved. Hopefully we can make it a yearly event, and now that the benchmark has been set our sights are firmly placed on beating our efforts of this year." said Chris Haworth, SeeByte X team-member.

Sales Manager, Ioseba Tena, who was responsible for SeeByte's contribution to the sponsorship said: "We are very proud of the team's efforts. Erskine is a vital contributor to the support and care of those Scots affected by war, and SeeByte fully supports their hard work."

If you would like to contribute to SeeByte's efforts in raising funds for Erskine, you can still do so by sponsoring online at:

http://www.justgiving.com/SeeByte

Jifmar Offshore Orders ROVs

(Photo Jifmar Offshore Services)

French Jifmar Offshore Services has ordered two Saab Seaeye Cougar XT ROVs for a new Algerian contract. This project will involve work at three different oil terminal points where the ROVs will be used for IRM tasks on structures, pipes, manifolds and the umbilicals at five SPM buoys. Jean-Michel Berud, president of Jifmar Offshore Services, said that the Cougars will undertake a number of vital tasks that include checking the critical shape of the 'Chinese lantern' buoy structure and determining chain integrity. To check the shape and location of these structures, the ROVs will be fitted with a 3D multibeam sonar. And the chain thickness measured using a Tritech Typhoon laser scaling system. Jifmar is also planning to fit a water jetting cavitation cleaning system for blasting mollusc clear of the chains.

In addition the Cougars are equipped for a range of IRM tasks with equipment and tooling that includes low-light color and black and white wide-angle cameras on a pan and tilt mechanism; a USBL Tracking System; and a dual five-function heavy duty manipulator skid. **www.seaeye.com**

DOF Adds Schilling ROV

Schilling announced an order for two 200hp UHD ROV systems from DOF Subsea. In addition, two UHDs delivered to DOF Subsea in '06 will be upgraded to the advanced UHD Gen II design. Deliveries of the 4,000 meter rated UHDs are scheduled to start in 2010.

www.schilling.com

ABS Support for Papa Terra Field Development

ABS was selected to class two of the major components in Petrobras' Papa Terra offshore Brazil field development. The tension-leg wellhead platform (TLWP) known as P-61 and the floating production, storage and offloading (FPSO) unit known as P-63 will both be ABS classed. The P-61 is the first-of- its-kind TLP dry tree application to be installed in deepwater offshore Brazil. "ABS has a longstanding relationship with Petrobras and, since dry trees are being considered as one of the solutions for deepwater exploration in the region moving forward, we are excited to class this unit and look forward to assisting Petrobras in achieving another milestone in its exploration and production history," says Kenneth Richardson, ABS Vice President, Energy Development. Houston-based FloaTEC designed the TLWP which will be built at Keppel's BrasFels yard in Angra dos Reis. The unit is a conversion of a very large crude carrier (VLCC) and, when completed, will have 16 topside modules weighing more than 14,000 metric tons. The Papa Terra heavy oil field is located in the Campos Basin approximately 110 km (68 miles) off Rio de Janeiro in water depths of up to 1,200 m (3,940 ft.). Petrobras and partner Chevron are slated to put the field into production by late 2013.

Technip Wins Contract

Technip's wholly-owned subsidiary Duco Ltd. was awarded a seven year Framework Agreement Contract by Shell Upstream Europe for the supply of umbilicals. The contract covers engineering, procurement, project management and associated services for the fabrication and loadout of thermoplastic umbilicals up to 17 km long. The Contract Provisions shall predominately service the SWEEP portfolio of prospects in the Southern North Sea, but also include new and existing requirements for Central North Sea Assets.

Subsea 7 Picks BlueView

Subsea 7 selected BlueView Technologies to provide the acoustic imaging systems for its new line of Autonomous Inspection Vehicles (AIVs). Under this agreement, BlueView will deliver both forward looking navigation and tracking sonar as well as ultra-high resolution MicroBathymetry sonar for three dimensional tracking and mapping of pipelines.

DEA Books $30m Deal

The Marine Services division of David Evans and Associates, Inc. (DEA) announced the award of a three-year, $30m capacity indefinite delivery contract with the National Oceanic and Atmospheric Administration (NOAA) to provide LiDAR (light detection and ranging) hydrographic surveying and related support services for anywhere in the United States.

www.deainc.com

Fugro Renewables Acquires ERT

Plans for new offshore windfarms and wave or tidal device installations are subject to stringent marine environmental impact studies prior to approval. To provide these required studies, Fugro has acquired ERT (Scotland) Ltd., an Edinburgh-based marine environmental consultancy, to add another service to those already provided by Fugro Renewables. "From feasibility studies and initial assessments to site surveys and investigations, construction services, and ultimately, decommissioning, Fugro provides a full-range of marine renewable energy expertise for the rising challenges and opportunities around the globe," said Tony Hodgson, Fugro's Global Business Development Manager, Renewable Energy. ERT's environmental consultants, working with the Fugro team, will be able to ensure that each project has a smooth consent process by developing an effective approach to environmental planning. This involves clear project understanding, effective communication and a flexible approach to project changes. Services of particular relevance to the marine renewables sector include: environmental issues identification workshops; environmental scoping; environmental impact assessment; and stakeholder consultation. These 'tools' are supported by a full range of environmental monitoring and analytical services ensuring an integrated approach to environmental management planning. "The ERT team of highly qualified and experienced marine environmental scientists conducts survey, monitoring, consulting and reporting services that are supported by in-house chemistry and marine biology laboratories," said Pat Power, Managing Director of Fugro GeoConsulting. "ERT's service is a perfect fit with our Integrated Earth Science Consulting service; they complement the existing Fugro Environmental Survey business and enhance the benefits we can deliver to a growing number of clients."

www.fugro.com

L-3 Wins $24m Deal

L-3 Ocean Systems won a $24m firm fixed-price contract from the Egyptian Navy for its Low Frequency Active Towed Sonar (LFATS) system. LFATS is a long-range active/passive variable depth sonar used by surface ships to detect modern diesel-electric submarine threats. The contract is valued at $24 million with options, if exercised, which would increase the value to $27 million. The LFATS system is small, lightweight and can be easily installed on any class of ship without structural modifications. It consists of an operator console, power amplifier, towed body and handling system. Designed with an open architecture configuration to accommodate future technology, LFATS can be used in a standalone mode or integrated into the ship's combat system.

www.L-3com.com/OS

$1.55M Order for Sonardyne

SapuraAcergy will become the first company in South East Asia with Sonardyne's new 6G (Sixth Generation) acoustic positioning technology. The subsea engineering and installation contractor has taken delivery of over $1.55m worth of 6G products from Sonardyne for use in projects in South East Asia.

SapuraAcergy is upgrading its conventional and deepwater construction vessel, Sapura 3000. The vessel's existing Sonardyne Ranger Ultra-Short BaseLine (USBL) positioning system will be upgraded to the latest Ranger 2 standard that interfaces with the new 6G product range. In addition to the upgrade, Sonardyne is trialling its Lodestar subsea Inertial Navigation System on the Sapura 3000's ROV system to improve pipe touch-down monitoring. Over the next two years, SapuraAcergy will, use the 6G equipment for precise positioning of structures and pipelines on projects in South East Asia. The new range of Sonardyne 6G products has been developed to produce navigation, positioning and communications solutions for a wide range of subsea operations.

IHC, Marine Mineral Projects Join Forces

It is on the back of the experience and strong track record within the underwater diamond mining industry off the west coast of Southern Africa by Marine and Mineral Projects since 1993, that the shareholders of IHC Merwede joined forces with selected staff from this leading designer and manufacturer of underwater mining systems including crawlers, to form IHC Marine and Mineral Projects in April 2010 in Cape Town, South Africa. Through the cooperation of IHC Merwede's business units, Deep Sea Dredging and Mining (DSDM) with Marine and Mineral Projects, this cohesive partnership is able to provide innovative engineering and leading technology for underwater mining solutions. More recently, as the world's land based mining resources are steadily depleted and mining houses have moved their focus to underwater resources, IHC Merwede is in demand to develop both shallow and deep water sampling and mining systems. The deep sea mining industry is expanding and as such, the number of enquiries for deep sea dredging and mining solutions is increasing accordingly.

Email: info@marineandmineral.com

TSMarine Signs Expro Contract

The DP-2 Havila Phoenix will be used in conjunction with the AX-S system for worldwide operations.

Perth-based TSmarine Asia Pacific signed a multi-year service contract with leading international oilfield service company Expro. The contract, through TSmarine's new Aberdeen-based subsidiary SALT Subsea Ltd, will deliver worldwide support for Expro's groundbreaking subsea well intervention system AX-S. The deal has a potential value of $100m. TSmarine Asia Pacific chief executive officer John Edwards said AX-S would change the way oil and gas companies work on their subsea wells in the future, saving time and money.

"There are about 4,000 oil and gas producing subsea wells around the world and this number is growing," Edwards said. "Many wells are more than a decade old and require servicing to allow for maximum oil and gas recovery. "Current methods involve positioning a rig above the well while the work is carried out, which is time-consuming and expensive with rigs costing up to a million dollars a day."

Expro's AX-S subsea system is 35 m high and weighs 220 tons and is deployed from a monohull vessel, such as TSmarine's DP2 DNV-classed intervention vessel Havila Phoenix. The system can be lowered on to any subsea well down to a depth of 10,000 ft., providing a safer and cheaper alternative to current practices. Under the contract, SALT Subsea will supply the Havila Phoenix, a 110m long vessel built in 2009; dual Schilling 4,000m-rated UHD Workclass ROV systems; specialised tooling packages; survey and positioning and overall marine management of the vessel.

The Schilling UHD ROV systems were selected by SALT Subsea for their compatibility with the AX-S control systems and sub-assemblies, further enhancing the inbuilt redundancy and reliability of the system.

The Havila Phoenix and AX-S will be mobilized in Europe during October and commence a series of demanding offshore trials before being deployed for operational use.

BIRNS
Oxnard, CA 93033
Tel: (805) 487-5393
Email: abrown@birns.com
URL: www.birns.com
Product: High-performance lights and connectors for underwater, hazardous and severe applications.

Nexans
Paris, France
Tel: +33 (0)1 73 23 84 00
Email: nexans.web@nexans.com
URL: www.nexans.com
Product: Nexans is a global player in the infrastructure, industry, building and Local Area Network (LAN) markets. As a leader in the cable industry, it offers an extensive range of cables and cabling systems to raise industrial productivity.

SEA CON Brantner & Associates, Inc
El Cajon, CA 92020
Phone: +1 (619) 562-7071
Email: seacon@seacon-usa.com
URL: www.seaconbrantner.com
Product: The SEA CON Group are manufacturers of probably the largest range of underwater electrical and fiber optic connectors in the world. With a standard range consisting of over 2,500 products supported by a design and engineering capability that is second to none.

South Bay Cable Corp.
Idyllwild, CA 92549
Phone: 951 659-2183
Fax: 951 659-3958
Email: gary@southbaycable.com
URL: www.southbaycable.com
Product: South Bay Cable designs and manufacturers specialty cable for demanding subsea applications.Products include ROV tethers and umbilicals, tow cables, riser cables and a host of other specialty cable constructions.

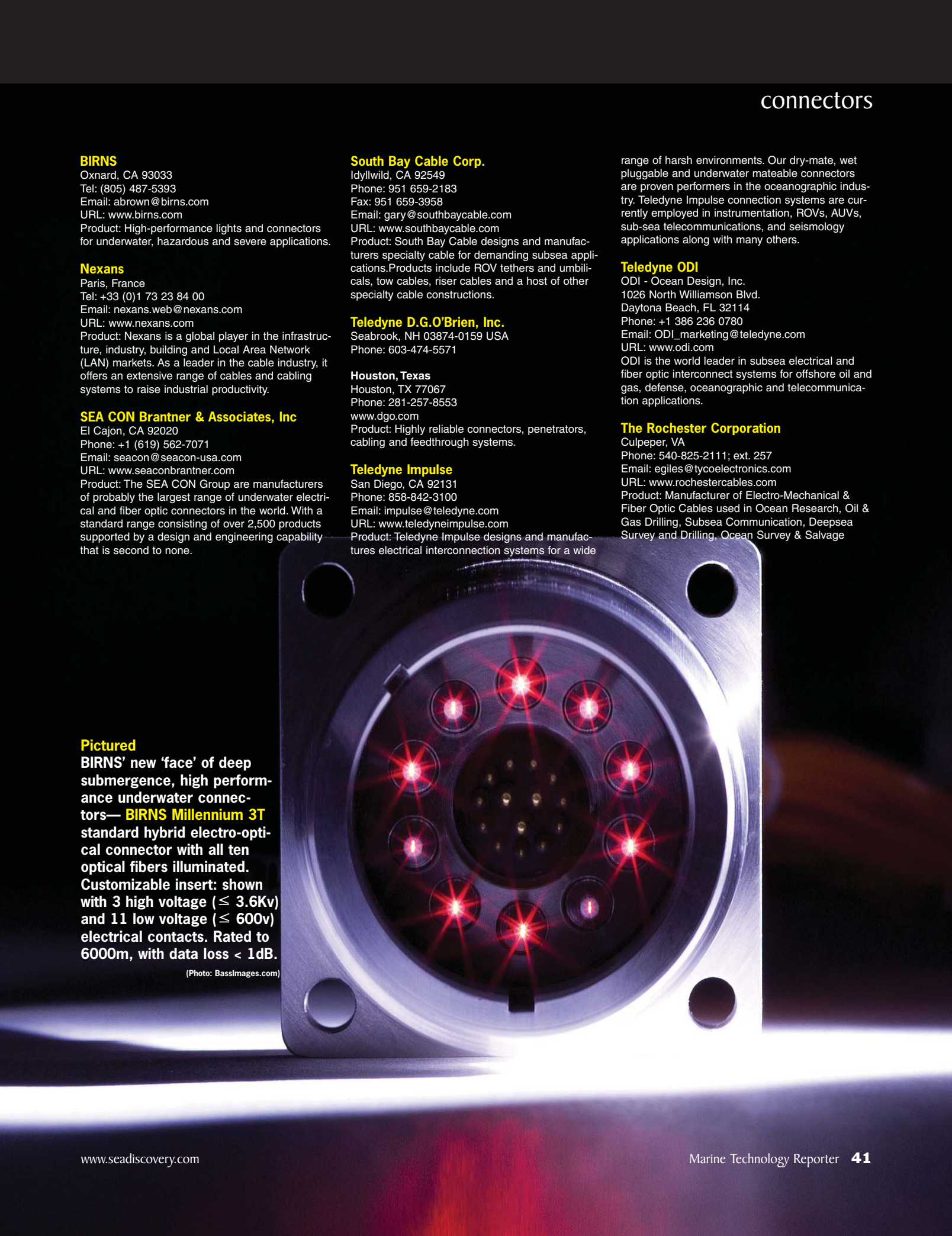
Teledyne D.G.O'Brien, Inc.
Seabrook, NH 03874-0159 USA
Phone: 603-474-5571

Houston, Texas
Houston, TX 77067
Phone: 281-257-8553
www.dgo.com
Product: Highly reliable connectors, penetrators, cabling and feedthrough systems.

Teledyne Impulse
San Diego, CA 92131
Phone: 858-842-3100
Email: impulse@teledyne.com
URL: www.teledyneimpulse.com
Product: Teledyne Impulse designs and manufactures electrical interconnection systems for a wide range of harsh environments. Our dry-mate, wet pluggable and underwater mateable connectors are proven performers in the oceanographic industry. Teledyne Impulse connection systems are currently employed in instrumentation, ROVs, AUVs, sub-sea telecommunications, and seismology applications along with many others.

Teledyne ODI
ODI - Ocean Design, Inc.
1026 North Williamson Blvd.
Daytona Beach, FL 32114
Phone: +1 386 236 0780
Email: ODI_marketing@teledyne.com
URL: www.odi.com
ODI is the world leader in subsea electrical and fiber optic interconnect systems for offshore oil and gas, defense, oceanographic and telecommunication applications.

The Rochester Corporation
Culpeper, VA
Phone: 540-825-2111; ext. 257
Email: egiles@tycoelectronics.com
URL: www.rochestercables.com
Product: Manufacturer of Electro-Mechanical & Fiber Optic Cables used in Ocean Research, Oil & Gas Drilling, Subsea Communication, Deepsea Survey and Drilling, Ocean Survey & Salvage



Pictured
BIRNS' new 'face' of deep submergence, high performance underwater connectors— BIRNS Millennium 3T standard hybrid electro-optical connector with all ten optical fibers illuminated. Customizable insert: shown with 3 high voltage (≤ 3.6Kv) and 11 low voltage (≤ 600v) electrical contacts. Rated to 6000m, with data loss < 1dB.
(Photo: BassImages.com)

The Strongest Link

MacArtney's new American Petroleum Institute (API) approved connector helps ensure Hydril's new blow out preventer system will function if needed. Automatic BOP systems constantly monitor the well and are designed to be fail-safe devices. Not only must they be periodically inspected and tested, the American Petroleum Institute sets standards that are clear about the types of risks against which such equipment must be protected. New designs are rigorously tested and certified and each element must meet stringent requirements before being API certified.

The size of the preventers and the depth at which they are deployed makes them impractical to bring to the surface often for testing. And as drilling sites are in increasingly deeper waters, BOPs have become more advanced. They must withstand the increased pressures at depth and they must also be reliable enough to permit increased intervals between tests or servicing. Systems and equipment on the BOP can be submerged for up to a year between servicing and must therefore be resilient to the harsh underwater environment.

When Hydril was designing its new BOP Control System, the company needed a complete infrastructure package that met the strict standards for testing and reliability stipulated by the American Petroleum Institute. The connector system within the complete unit needed be able to withstand submersion for extended periods and accommodate several failure modes stipulated in the American Petroleum Institute Pressure Controls guidelines. These stipulations included the requirement for the umbilical or termination assembly to function even when fully flooded with seawater and continue to operate for an extended period without conductor failure. A comprehensive design, build, test and deploy, program was implemented to fulfil the requirements of outfitting Hydril with three rig packages and just as many spares and test units. The brief was to fulfil American Petroleum Institute standards 16D for testing when assembled and the harder to attain 17E for functionality when flooded. Ensuring that connectors for the infrastructure system would function even if the cable was flooded required the combination of several design features. A boot was fitted behind the connector to ensure that any water entering the cable cannot penetrate to the connector and the connector will continue to work for its intended lifespan even with water flooding in the cable right up to the boot. For 17E standard certification, the cable is as important as the connector. The cable was selected for its ability to withstand wear underwater. The conductors inside the cable are also protected to prevent water ingress shorting the connections. Critical to the design was ensuring that the connector could be tested for integrity once assembled. MacArtney designed and integrated double test ports on the API connector itself to allow pressure testing of both sections after mating and before the connection is lowered into the water. Each system needed to be fail-proof on delivery and was tested at various stages of production and completion. Every element in the

cable was tested individually before construction to ensure that they were entirely intact and fully functional. The cable, and then the connector and cable were pressure tested before completion. The entire cable and connector unit were ultimately pressure tested prior to inclusion in the infrastructure package. The system has evolved over several years into a comprehensive high reliability power and communications infrastructure package for semi-submersible drilling rigs in operation around the world. The complete infrastructure package includes fibre optic media converter, multiplexer, MUX cable, slip ring, subsea stress termination, subsea FITA terminations, all subsea harness cable and POD connections.

The birth of a new range

The connectors have achieved a type certification that controls various design parameters and governs the production, testing procedures and metrics. MacArtney can vary the connector form factor of these connectors provided they fall under the type certification requirements and now offers a range of API (American Petroleum Institute) approved connectors.

Email sf@macartney.com, or www.macartney.com

New Wet-Mate Globe-Con

Sea Con Global Production announced the release of a new wet-mate version of its Globe-Con connector series. This new connector has most of the original features of the dry-mate Globe-Con but incorporates wet-mate capability. Originally developed for a major offshore project, the Globe-Con series is a rugged, small diameter connector. The Bulkhead Connector Receptacle (BCR) has a 316 Stainless Steel shell with a Neoprene faced GRE (Glass Reinforced Epoxy) insert. The Cable Connector Plug (CCP) is a Neoprene faced GRE connector that is molded onto rubber jacketed cable as standard but can be molded to many custom cables also. This innovative connector design incorporates a spring ring device to secure the locking sleeve once mated thus improving reliability in high vibration environments. Other key features include: Positive keying system for easy connection; Standard SAE/MS tube boss seal configuration; and, Pressure rated to 10,000 psi mated and open face.

This new addition is an alternative to the standard dry-mate Globe-Con where many repeated make and breaks are required in wet conditions.The wet-mate Globe-Con is suitable for many applications including ROV's, Underwater Cameras, Sensors, Signal Transmissions and Control Systems.

Man-rated Hull Penetrators and Feedthrough Systems

Teledyne D.G.O'Brien has developed and manufactured hull penetrators, connectors, PBOF cable assemblies and feedthrough systems for the world's most advanced deep submergence exploration vehicles:

- WHOI Alvin - (Woods Hole Oceanographic Institution)
- JAMSTEC Shinkai 6500 (Japan Agency for Marine-Earth Science and Technology)
- Ifremer Nautile (French Research Institute for Exploitation of the Sea)

In addition to ensuring the safety of human operated vehicles (HOV's), Teledyne D.G.O'Brien has a sterling performance record for remotely operated vehicles (ROV's) and autonomous underwater vehicles (UAV's).

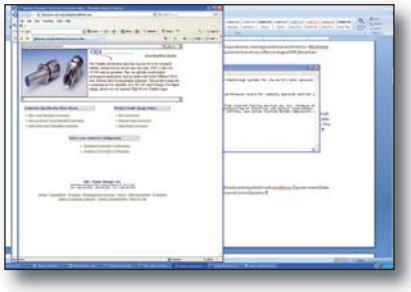
www.dgo.com

Princetel: Fiber Optic Connections

Princetel, Inc. is a dynamic technology manufacturer that manufactures fiber optic inter-connect products with the main focus on fiber optic rotary joints (FORJs), electrical slip rings, and video/data MUX/DMUX fiber media converters for the geophysical, military, biomedical, wind energy, broadcasting, robotic, and communications markets. Founded in 2000, the company has transformed itself into a major force in fiber rotary technology innovations. Princetel offers fiberoptic rotary joints with 1-12 fibers as standard products.

www.princetel.com

Teledyne ODI Online



Teledyne ODI, at **www.odi.com**, offers a Standard Electrical Connector Configurator Page which allows customers to access 3D models, outline interface drawings, specifications and part number identification. ODI is a leader in subsea electrical and fiber optic interconnect systems for offshore oil and gas, defense, oceanographic and telecommunication applications.

www.odi.com

Tritech Launches Next Generation StarFish Imaging Systems

Following StarFish 450F, Tritech International has launched new products to create a range of StarFish Seabed Imaging Systems. The intuitive, shallow water, high specification side scan sonar range now includes the higher resolution StarFish 452F and StarFish 990F; pro-

viding ultra sharp images from the signature full-body, compact, three-fin, hydrodynamic design. The imaging capabilities of the StarFish range are further enhanced through the application of Compressed High Intensity Radar Pulse (CHIRP) and digital-signal-processing (DSP) techniques StarFish 990F is for high resolution survey in ports and harbors, and inland waterways such as rivers and canals. With detailed image definition and target detection, StarFish 990F is also ideal for Search and Recovery (SAR) operations.

http://www.starfishsonar.com/store/stockists.htm.

Teledyne Impulse Awarded ISO 9001:2008 Certification

Teledyne Impulse achieved the ISO (International Organization for Standardization) 9001:2008 certification from Intertek Testing Services NA, Inc. Teledyne Impulse is one of a select number of companies to meet the stringent ISO 9001:2008 certification requirements. The ISO 9001:2008 certification demonstrates Teledyne Impulses' commitment to quality for the design and manufacturing of electrical and optical interconnect systems, motorized power switches, and custom inserted molded compression connectors for a broad range of harsh environments. Teledyne Impulse manufactures high reliability electrical and optical interconnect systems, motorized power switches, and custom inserted molded compression connectors for a broad range of harsh environments. Teledyne Impulse has created many innovative connection solutions from miniature underwater sensor connectors to the largest extremely rugged vehicle systems.

Email: impulse@teledyne.com

TriOS Fluorometer Range to 6,000m

The fluorometer portfolio of TriOS optical sensors includes the sensors microFlu and enviroFlu-HC, which are available in different versions. The microFlu is for detection of Chlorophyll-A, phycocyanin in blue algae and CDOM and the enviroFlu-HC for PAH or oil in water detection. Other filtersets for dye tracing are available on request. Hydrocarbons can be detected down to concentrations of 0.1 ppb. The reading of the enviroFlu-HC can be converted to total oil concentration of up to 200 ppm.

www.trios.de

Lightweight Electric Manipulator Arm

Since the launch of the first 5 Function Electric Underwater Manipulator Arm, CSIP has developed a lightweight version of the product following a customer requirement. Using mostly 6082 T6 anodized aluminium alloy to build the arm, it weighs 12KG in water, 4.5KG lighter than the original arm launched in 2009. The upper arm has been designed with a sandwiched closed cell foam core structure, adding buoyancy, and all component voids are retained as atmosphere air spaces as opposed to the more traditional oil filled and compensated spaces. All these modifications have resulted in the weight of the arm being drastically reduced when in water, and increased its stability when operating on an ROV or AUV.

E-mail: info@csip.co.uk

Hand Held Remote Camera Control

Bowtech Products extended its range of color zoom inspection cameras with the launch of the reduced size Surveyor-SD which includes a full functional hand held Remote Control option. The benefits of the hand held remote control include the ability to: Select and fine tune long line amplifier; Change camera control, either RS232, RS485, USB or Voltage; amd Select termination resister for RS485 multidrop control, among others. The Surveyor-SD camera itself utilises Sony ExView HAD CCD technology delivering exceptional picture quality with a 36:1 optical zoom lens, as well as 530HTV lines resolution, all within a 4000m high quality Titanium housing with an 99.7% optically clear sapphire window

Email: Bowtech@bowtech.co.uk

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

BROKER

Job Location: USA, WA Coupeville
30 year-old international shipbrokerage specializing in the sale, charter and appraisal of workboats is expanding and seeking to immediately hire another broker. This is a commission-based position with a base stipend for the broker's introductory period. Successful applicant must relocate to Whidbey Island, Washington, USA.
Position Skills:
• Three to four years experience in operating and/or surveying commercial workboats plus formal training or be a licensed marine officer.
• Self motivated with a high level of initiative and a sense of urgency.
• Effective communication and organizational skills, flexibility, adaptability, common sense, patience, sense of humor and strong attention to detail and service orientation are essential.
• MS Office suite of products (Word, Excel and Outlook) and database management tools proficiency strongly recommended.
• Must have full entitlement to work in the USA and to obtain a TWIC card.
To apply for the position, please send resume or further inquiry by email, fax or mail. No phone calls, please. Only pre-selected candidates will be interviewed.

Pat Hernandez
Marcon International Inc
PO Box 1170
9 NW Front St Ste 201
Coupeville, WA 98239
USA
Fax: 360-678-8890
Email: accounting-hr@marcon.com
WEB: http://www.marcon.com

GENERAL MANAGER

Job Location: United Arab Emirates,
EGS is an international group of survey companies providing a diverse range of measurement and mapping services to the civil engineering, construction, power, mining, maritime and telecommunication industries. Established more than 30 years, the core skills include geophysical surveys, hydrographic surveys and met-ocean surveys, working mostly offshore and in coastal zones.
With our new establishment in the United Arab Emirates, we are looking for a dynamic and energetic executive to provide leadership to the project and management teams, build on the group's operational and strategic plans, building and maintaining the future organization, and being accountable for the Company financial performance.
We are seeking a high caliber individual to be stationed in our UAE office.
Responsibilities:
• Work with the Board of Directors on the implementation of the company's strategic and operational plans.
• Direct and control operations to achieve agreed revenue. Develop and ensure implementation of strategies and concepts in line with the group's policies.
• Develop a high end project management team & maintain optimal strategies to execute opportunities within survey market segments.
• Utilization the best of existing resources and recruitment of key staff additions that enhance company's business model and delivery capabilities.
• Recommend and develop Marketing Strategies.
• Preparation of contract bids; contract negotiations and liaison; manage contract execution teams.
• Responsible for developing & maintaining excellent relationships with internal & external customers.
• Assist in multi-point sales opportunities with the global survey group.
Requirements:
The ideal candidate will combine the following skills and experience:
• Strong background of survey industry experience, including experience in project and/or executive management with P/L responsibilities.
• Strong project-management skills and start-up experience.
• Excellent communication and public relation skills.
• Knowledge of daily administrative and survey operations.
• Sales-and-marketing management experience.

Interested parties please email your C.V. with expected salary to the Personnel Division, at "personnel@egssurvey.com"

Alice Chong
EGS Group
9th Floor South, Somerset House
Taikoo Place, 979 King's Road,
Quarry Bay
Hong Kong
Hong Kong
Email: personnel@egssurvey.com
WEB: http://www.egssurvey.com

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11	Tritech International Limited	www.starfishsonar.com	Please visit us online
21	VisualSoft	www.visualsoft.ltd.uk	44 1224 766000

THE MARITIME ALLIANCE

"Promoting the Maritime Community"

Maritime Business and Technology Summit & Exposition

NOV. 16-17, 2010

The mission of The Maritime Alliance is "Promoting the Maritime Community". The non-profit The Maritime Alliance is the cluster organizer for the San Diego maritime technology community and fosters maritime business and technology innovation through collaboration around the U.S. and the world.

The Maritime Alliance announces the 2nd annual **Maritime Business and Technology Summit & Exposition**, Nov. 16-17, 2010, aboard the *Inspiration Hornblower* in San Diego, CA. The conference focus is to promote maritime technology and business opportunities in the global maritime technology industry. Because of the very large, local maritime technology community and the convergence of academia, government, industry, and military interest, San Diego represents a rich eco-system for US and international maritime technology companies.

The **Maritime Business and Technology Summit** is the centerpiece of the **2nd San Diego Maritime Week**, which has three goals:

1. bring together the highly diverse elements of the maritime community to build collaborative bridges that will promote innovation and project advancement;
2. facilitate interaction between the scientific community and makers of innovative technologies; and
3. maximize networking and business opportunities for maritime missions and individual companies coming to San Diego from around the world to participate.

The two day **Summit** with concurrent Exposition is organized around two themes.

Day One is titled "Technology Bridges the Oceans and Our Economies." Panels will address topics such as:

- Farming the sea for commercial opportunities, including aquaculture and biomedicines
- Visualization and mapping technologies
- Ocean energy
- Desalination, filtration and purity testing

Day Two is titled "Logistics, Security, & Technology in Maritime Domain Awareness."Panels include:

- Ocean observation
- Port and maritime security
- Maritime robotics
- Maritime transportation logistics and security
- Very large floating platforms

Sign up now to exhibit and attend the conference.
Speaking and sponsorship opportunities are available.

Please visit www.TheMaritimeAlliance.org
or contact Bill Riedy at briedy@themaritimealliance.org.

CUBIC

Unified Port of San Diego

OceanTech Expo

Explore the business of Ocean Technology

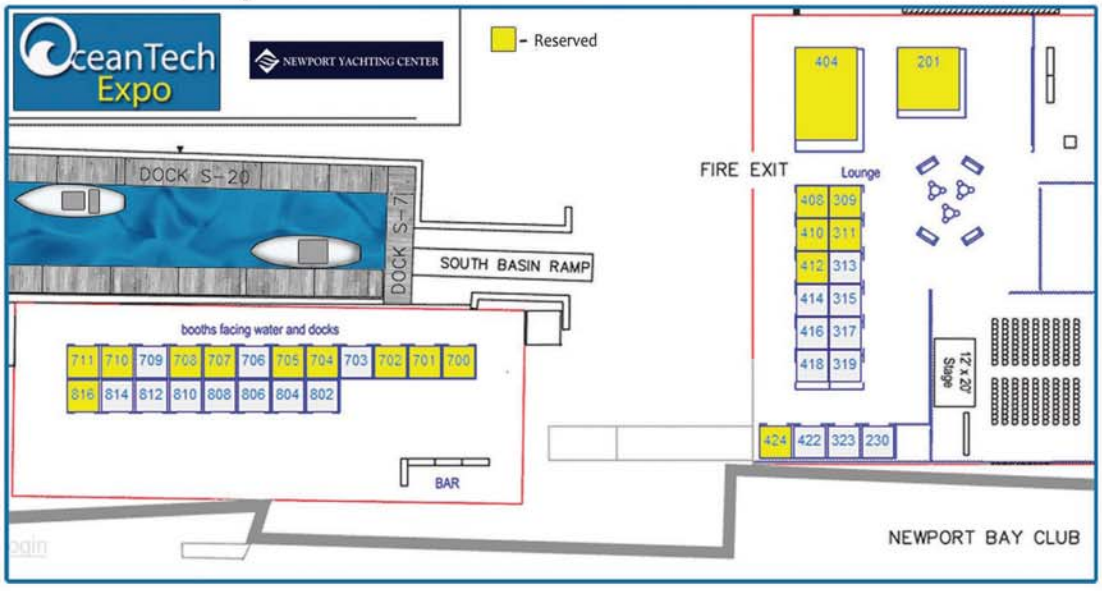
See you back on the water in Newport

In response to the demand for more room for cutting edge ocean technology demos, OTE is expanding the booth space in our Demo Tent!

We would also like to welcome our media partner, Hydro International ; they will be chairing the hydrographic panel at next year's event. We look forward to working with them on another successful OTE.

Space is filling fast! Register today!

2011 Floor plan



Supporting organizations:

SAIC From Science to Solutions · Newfoundland Labrador · Hydro International · RIEDC Rhode Island Economic Development Corporation · American Salvage Association

May 17-19, 2011

Contact Rob Howard to be a part OTE 2011 - (561)732-4368 or howard@marinelink.com

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