Ocean Policy Report Card Bourbon Orders 46 OceanTech Expo's New Date

MARINE TECHNOLOGY REPORTER

March 2007
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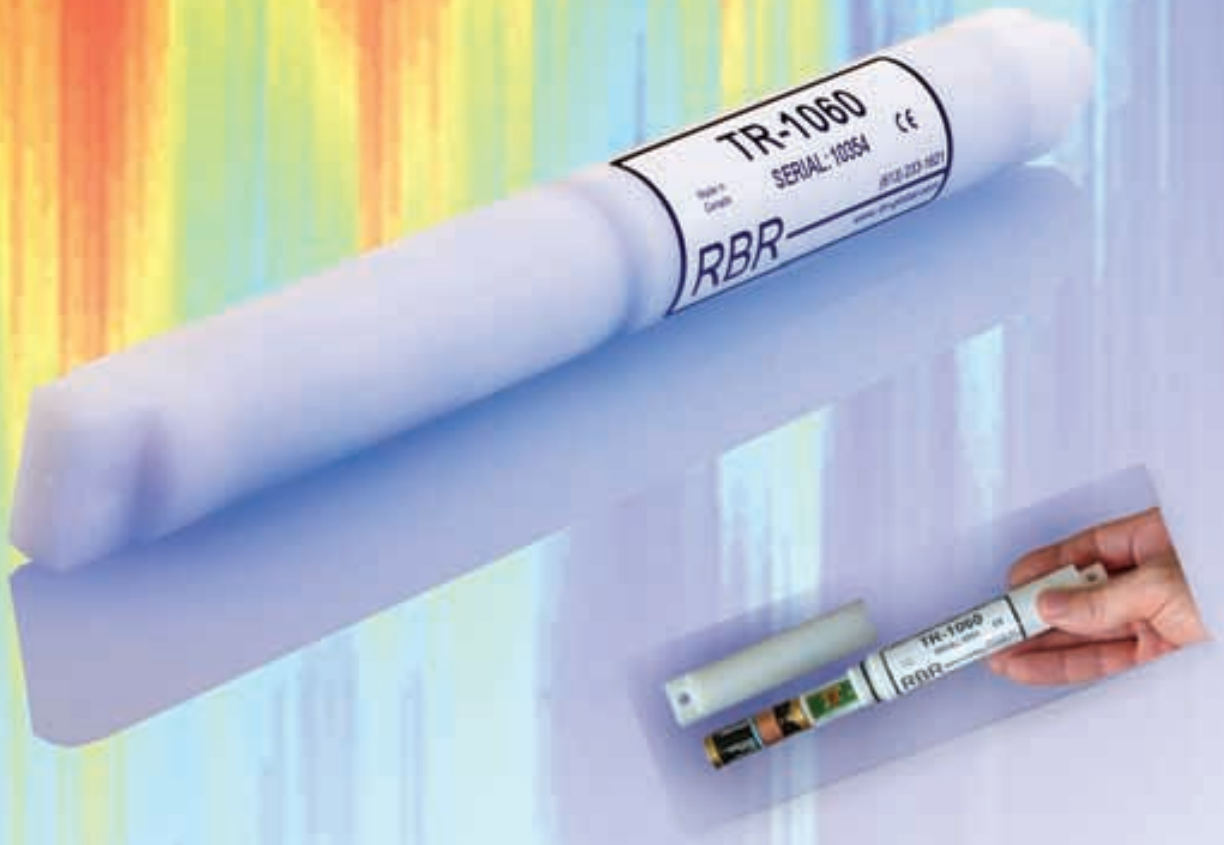

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March 2007

contents

Marine Technology Reporter • Volume 50 • Number 2

Pictured in the background is DSV Northern River, which was recently chartered for an additional 5 years by Bluestream NL for work in the North Sea. Story on page 14.

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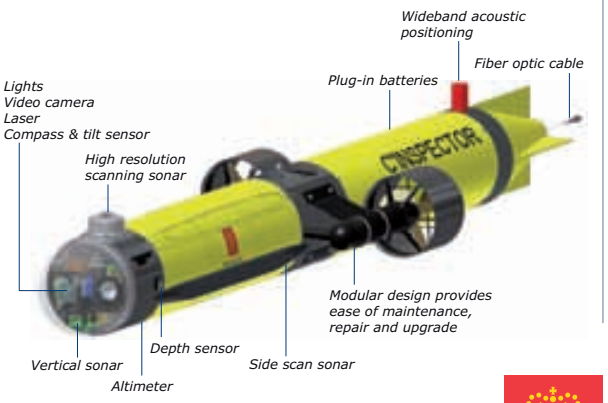

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KONGSBERG

on the Cover

Pictured on this month's cover is a Bluefin Robotic's Autonomous Underwater Vehicle coming out of the water. Read about advances in AUV and ROV technology, and their increasing acceptance in the marketplace, starting on page 24.

also in this Edition

Editorial Index

Companies & People with editorial mention in this edition

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editorial

Like most every sector of the subsea technology business, the market for Autonomous Underwater Vehicles (AUV) and Remotely Operated Vehicles (ROV) have been on a technological tear of late, with developers and manufacturers of vehicles and accessories delivering a virtual non-stop onslaught of more reliable, efficient and cost-effective systems. Growth is rampant, and most manufacturers are reporting full orderbooks and the need to add technical staff. (Growth in the market is illustrated perfectly by the two photos below, submitted by Hydroid's Kevin McCarthy, which illustrate the growth of Hydroid over the past three years.)

Following the tried-and-true lessons of Economics 101, a growing capability to supply systems is being driven by strong demand for more advanced systems that can dive deeper, work longer and gather volumes of data seamlessly, whether it be for a user in the military, oil and gas industry or academia.

Given that March is MTR's annual AUV/ROV edition, we were afforded invaluable insights from a large number of system users and manufacturers, insights that we share with you starting on page 24.

P.S. Marine Technology Reporter extends its congratulations to Seaeye Marine Ltd. for winning the free booth from MTR at OceanTech Expo. Ocean Tech Expo has moved its dates to September 5-7, 2007, in Providence, RI. Read more at www.oceantechexpo.com.

Hydroid then (left, in 2003), and now (right, in 2006) helps to illustrate AUV market growth.

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ISE's recent deliveries of seabed survey AUVs

IFREMER, France (2004)
Science mission validation, fish stock assessment, natural resource survey

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Photos of IFREMER AUVs and seabed courtesy of IFREMER

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Bourbon Orders 46 Vessels for $740m

Bourbon is again expanding its fleet with an order for 46 new vessels for an aggregate contract price of nearly $740m. Forty-four of the vessels will be built in the Sinopacific shipyards in China, with the West Atlantic Shipyard in Nigeria tapped to build two. The 46 new vessels in fact represents 3 new series of vessels:

- 28 AHTS GPA 254 supply and anchor-handling tugs with 80 tons traction
- 14 PSV GPA 654 platform supply vessels with 1600 tons deadweight

Both of these series are equipped with diesel-electric propulsion, classes DP2 and FiFi1. Also, one series of four PSV, Ulstein PX105 MACS supply vessels, 4400 tons dwt, 88.8 m long, with the X-BowM and the PG-MACST system.

This new series is the culmination of the optimization of the design of the P105 and PX105 models, four of which are under construction for Bourbon, while four others have already proven their operational value in the Bourbon fleet since 2005. Each is equipped with diesel electric propulsion, classes DP2 and FiFi1, and a double hull. Bourbon's Offshore Division has 110 supply vessels on order.

A New Reader Found @ UI!

Underwater Intervention 2007 was again held in New Orleans in late January, after a one-year, hurricane-damage-induced hiatus to Tampa, Fla. in 2006. By all accounts, the event was a success, particularly for Marine Technology Reporter (MTR), which you can see was read by everyone onhand! To get your free subscription to MTR, you don't have to don a mermaid costume, simply visit

www.seadiscovery.com

The Hunt for O&G Off New Zealand

L & M Petroleum launched its 2007 exploration for oil and gas with a seismic data survey to define future well locations in the southern waters of New Zealand. L&M Petroleum is reportedly carrying out seismic surveying and well drilling, concentrating on its Waiau permit in Western Southland. (Source: www.stuff.co.nz)

New USGS Publication

The USGS announced publication of Open-File Report 2006-1046, Surficial Sediment Character of the New York-New Jersey Offshore Continental Shelf Region: a GIS Compilation, by Williams, S.J., Arsenault, M.A., Poppe, L.J., Reid, J.A., Reid, J.M. and Jenkins, C.J. The report is available on-line at

http://pubs.usgs.gov/of/2006/1046

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Ocean Policy Report Card

U.S. Improves, But Gets a "C-"

Innovative state government initiatives, long overdue federal fisheries reform, and the designation of 140,000 sq. mi. of protected waters were among the highlights of U.S. efforts to reform ocean policy in 2006. These advancements were undercut by the nation's failure to commit funding and make policy reforms for the long term preservation of our oceans, according to the Joint Ocean Commission Initiative's U.S. Ocean Policy Report Card.

The report card is available at www.jointoceancommission.org

"In the race to preserve our oceans, the states are outdistancing the federal government," said the Honorable Leon Panetta, co-chair of the Joint Ocean Commission Initiative. The report card is an assessment of the nation's collective progress in 2006 toward fulfilling the recommendations of the U.S. Commission on Ocean Policy and the Pew Oceans Commission, which have joined together as the Joint Ocean Commission Initiative. The U.S. received an average grade of C- for the six subjects measured in the report card, up slightly from the D+ assigned for 2005. State leadership and fisheries management earned grades of A- and B+, respectively. Congress and the Bush administration took important steps forward with the passage of the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act, which sets a firm deadline for ending overfishing, the designation of 140,000 square miles of protected islands, atolls, and oceans under the Northwestern Hawaiian Islands Marine National Monument, and the development of a new national ocean research strategy. Similar progress, however, was lacking in other areas measured by the report card.

Incremental improvements in Research, Science, and Education resulted in a slight grade increase to a D+, up from a D for 2005. Although sophisticated monitoring systems have been in place for decades to measure changes in the atmosphere, no such systems exist for our oceans. The report card, echoing the administration's research plan, calls for the implementation of an Integrated Ocean Observing System to learn more about the ocean's role in climate change. Robust investments in ocean research and comprehensive management policies are needed to reverse the decline in the oceans, the report contends. New federal funding for ocean policies and programs remained flat in 2006, earning the U.S. a grade of F. The Joint Initiative has identified $750 million in funding priorities that, if allocated in 2007, would be a significant step forward for research, management and education programs. The recent announcement of an additional $140 million in the President's FY 2008 budget for ocean-related programs is welcome, but the challenges facing our oceans clearly require a much greater commitment of resources. The Initiative is guided by a 10-member Task Force, five from each Commission, and led by Admiral James D. Watkins and the Honorable Leon E. Panetta, chairs of the U.S. Commission and Pew Commission, respectively.

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Marine Subsea Orders Well Intervention Ship

Marine Subsea signed a contract with Ulstein Verft to deliver a Ulstein SX121 well intervention ship from Ulstein Design. This is the largest contract — $137m — for one ship for the Ulstein Group. It is scheduled for delivery in July 2009, and has been contracted in Angola. African Offshore Services, the holding company of Marine Subsea Inc., will carry out well intervention and other oil-service-related operations in West Africa. "We are very pleased when our new customers ask for ships with the characteristic Ulstein X-BOW. We are frontrunners in developing highly advanced construction vessels loaded with equipment enabling them to

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To learn more, contact Jennifer Menard at the SouthCoast Development Partnership at 508-999-8412 or visit www.southcoastdev.org.

SOUTHCOAST MASSACHUSETTS MARINE SCIENCE & TECHNOLOGY CORRIDOR

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perform demanding marine operations in deep water," said CEO Gunvor Ulstein. "More and more oil installations are now sea-bottom facilities, and we're seeing an increasing demand for subsea and construction vessels. Supplying vessels for this market will be an important priority area for Ulstein Verft in the future," said Karsten Sævik, MD of Ulstein Verft AS.

The vessel will be 120 x 25 m and will accommodate 100. It will be fitted with a tower for module handling, a moonpool, ROV hangar, offshore crane, helipad and a diesel-electric propulsion system. The principal shareholders and founders of African Offshore Services, Mårten Rød and Gian Angelo Perrucci, have more than 25 years' experience in both onshore and offshore activities. In addition, the company is buying three work/accommodations barges at a total value of $94.6 million.

For more information, visit www.ulsteingroup.com

Bluestream Charters DSV

The diving support vessel (DSV) — Northern River — owned by Trico will be operating from Den Helder. Diving operator Bluestream NL chartered the vessel for five years for the oil and gas industry and the wind energy sector. DSV Northern River measures 93 m long and is equipped with a 50-ton crane, class 2 DPS and accommodation for 60. It is designed for carrying out diving work and laying cables offshore. In May 2006 Bluestream NL took possession of the vessel, chartering it for one year. "With the exception of just six days, over the last year we have been continuously at work in both the Dutch and British sectors of the North Sea," said Kieran Pieters, MD. "We have also laid energy cables in the offshore wind turbine park off the coast at Egmond." The performance of the vessel coupled with promising prospects prompted the company to extend the charter to May 2012.

SonTek/YSI Forum Highlights Global Water Issues

Multi-disciplined areas of hydrology were represented at SonTek/YSI's 2007 International Water Resources Forum, held January 24-26 in Barcelona, Spain.

Nearly three dozen users of acoustic Doppler technology discussed the challenges facing their respective geographies, and in many cases, identified a common thread when it comes to finding the right technological "fit" when measuring water flow in complex and challenging outdoor conditions. The address of Keynote Speaker and retired Senior Hydrologist for the UK Environment Agency, Dr. Reginald Herschy, drew attention to what he has termed a "shocking state of affairs" in regards to the decline in world water resource monitoring. Dr. Herschy said a decline in the investment into Hydrometric monitoring has left huge gaps in data collected in critical areas such as Africa, China, Russia and India.

"In fact, it is a shocking state of affairs when many countries are reported to be less able to assess their water resources than they were 20 years ago. And this is in spite of the fact that demand for water is rising more rapidly than at any time in history" said Herschy.

He also spoke on the topic of international water rights and the difficulties of managing transboundary rivers, especially where water scarcity is an issue for countries located downstream.

"Measurement of river flow to international standards in these circumstances is crucial to international agreements. However it is clear that there are not sufficient streamflow stations to meet these demands" said Herschy.

On the topic of global warming, Herschy said without long term, reliable streamflow and rainfall benchmarks available, climate changes are difficult to quantify. A complete list of presentation topics can be found on SonTek/YSI's website at:

www.sontek.com

Superior Acquires Warrior

Superior Energy Services completed the acquisition of Warrior Energy Services Corporation, a natural gas and oil well services company. Under the agreement, which was approved by Warrior's stockholders at a special meeting, Superior acquired Warrior for approximately $175 million in cash and 5.3 million shares of common stock.

Aker Kvaerner Wins Contract

Atlantia awarded Aker Kvaerner a $23m contract for installation of a semi-submersible floating production unit (FPU) for the Thunder Hawk development system in the Gulf of Mexico. Atlantia will be the client and owner of the FPU and Murphy Exploration and Production Company will operate the platform. Aker Kvaerner will install the spread mooring system, transportation and hook up of the FPU. The marine installation is planned to commence in 2Q 2008, using the offshore construction vessel, BOA Sub C. The Thunder Hawk facility which will be based on Atlantia's deep draft rig will be moored in 1,800 m of water and equipped to produce up to 60,000 barrels of oil and 70 million standard cu. ft. of gas per day.

Ensco To Use Tesco Equipment On Offshore Rigs

Tesco Corporation has entered into an equipment placement agreement with Ensco Offshore Company to provide its proprietary Casing Drive System (CDS) onto Ensco's offshore rigs. Ensco Offshore Co., based in Broussard, La., is a full service drilling contractor operating in the Gulf of Mexico and South America.

Aker Kvaerner to Deliver Deepwater Drilling Riser

Maersk Contractors awarded Aker Kvaerner a contract to deliver a spare riser for their ongoing semi-submersible drilling rig building program. The spare riser comes in addition to orders received in 2005 and 2006 for three complete riser systems to be delivered from 2008 to 2010. The first of four riser systems will be delivered in January 2008 and manufacturing of riser joints for Maersk starts in May this year. The projects are on schedule and included in the deliveries are the new Aker Kvearner telescopic joint / tension ring systems which provide enhanced environmental protection with a triple packer system.

ECO to Build 30 New Ships

Edison Chouest Offshore (ECO) will build several new anchor handling towing supply vessels (AHTS), as well as more than a dozen new generation 280-ft. platform supply vessels (PSV) in its affiliated shipyards in the U.S. Construction highlights feature seven new anchor handlers: Two 348-ft., 21,600 hp new generation anchor handlers and five 288-ft., 16,000 hp vessels. Also slated for construction are fourteen 4,700-dwt PSVs. All the vessels are slated for delivery between February 2007 and mid-2010, and will be constructed at ECO affiliated shipyards: North American Shipbuilding (NAS) in Larose, LA, North American Fabricators (NAF) in Houma, LA and Gulfship in Gulfport, MS. One year ago ECO announced plans for the first three AHTS vessels, and has now ordered the equipment for the additional four. "ECO continues to provide the new generation vessels that meet the requirements of the deepwater operators," said ECO President Gary Chouest. The first 288 x 66 x 29.5-ft. AHTS, the Max Chouest, is slated for delivery in March 2007 from NAS. The Joshua Choust, the next 288-ft. AHTS vessel in the series, is due for delivery in November 2007 from NAS. Three more are to follow with delivery dates at six-month intervals beginning in mid-2008. These vessels feature 200 MT bollard pull, DP2, increased capacities for both deck and below-deck cargoes and a deadweight tonnage of 4,236 LT. The ships will also be equipped with a 500 MT three-drum winch, secondary winches, chain lockers, dual tow pins, shark jaws and stern rollers. The first 348 x 72 x 31-ft. AHTS in the series, the Dino Chouest, is scheduled for a May 2008 delivery from NAS. An identical ship is slated for delivery in June 2009 from NAS. These vessels are also DP2, 210 MT bollard pull, new generation anchor handlers similar in size to the Laney Chouest, a 348-ft. AHTS.

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North Atlantic Right Whale Lecture Series

A series of talks and associated mini course for teachers, on the critically endangered North Atlantic Right Whale will be offered at two locations: Boston and Cape Cod this spring. Speakers are all leading experts in whale science, and have been involved in significant research just off New England shores. Speakers and topics are listed below and they will be repeated at the Boston and the Cape Cod locations at the dates listed here.

(Image Credit: NOAA)

The Boston location is: University of Massachusetts/Boston Harbor Campus, Science Building, Small Science Auditorium. These talks will be held on Mondays: March 12, 19, 26, April 2, 9 and 23. These talks are free but there is a fee for parking at the campus parking lot. The Urban Harbors Institute is a program partner. The Cape Cod location is: Cape Cod Museum of Natural History, Route 6A, Brewster. These talks will be held on Wednesdays: March 7, 14, 21, 28, April 4 and 11. There is a fee of $6 per talk but parking is free. The Cape Cod Museum of Natural History is a program partner. Speakers and Topics for both locations are listed here:

"Grappling with Giants: Disentangling large whales and understanding entanglement." Scott Landry, Provincetown Center for Coastal Studies.

"Dinner for 50 Tons: A story of one of the largest animals on the planet feeding on one of the smallest." Dr. Mark Baumgartner, Woods Hole Oceanographic Institution.

"Whale Whisperer: Listening for right whales in the sanctuary." Dr. Leila Hatch, Stellwagen Bank National Marine Sanctuary.

"Collision Course: Whale tracks and ship routes." Dr. David Wiley, Stellwagen Bank National Marine Sanctuary.

"CSI Right Whale: A forensics look into the issues impacting right whales." Dr. Michael Moore, Woods Hole Oceanographic Institution.

"The Urban Whale: North Atlantic Right Whales at a crossroads." Dr. Scott Kraus and Dr. Roz Rolland.

For more information visit the sanctuary's web page at

http://stellwagen.noaa.gov.

International Rules to Allow Storage of CO2 in Seabed

Storage of carbon dioxide (CO2) under the seabed is permitted as of February 10, 2007, under amendments to an international agreement governing the dumping of wastes at sea.

The amendments to the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (London Protocol) were adopted on 2 November 2006 at the First Meeting of the Contracting Parties to the London Protocol.

The amendments regulate the sequestration of CO2 streams from CO2 capture processes in sub-seabed geological formations, for permanent isolation, thereby creating a basis in international environmental law to regulate this practice. It is likely that

this option would apply to large point sources of CO2 emissions, including power plants using fossil fuels, steel works and fuel processing plants.

Sequestration of CO2 streams is intended to be part of a suite of measures to tackle the challenge of climate change and ocean acidification, including, first and foremost, the need to further develop and use low carbon forms of energy and conservation measures to reduce emissions.

Guidelines on how to store CO2 in subseabed geological formations will be developed for adoption by the Parties to the London Protocol when they meet for their second session in November 2007. These guidelines will address how to store CO2 in a manner that meets all the requirements of the Protocol and is safe for the marine environment, over both the short- and long-term.

WHOI Sea Grant Seeks Pre-Proposals

Woods Hole Oceanographic Institution's (WHOI) Sea Grant Program is seeking pre-proposals for the 2008-2010 funding cycle. The theme areas are fisheries and aquaculture, environmental technologies, and estuarine and coastal processes-however, proposals representing other areas will be considered. Regional and collaborative proposals are encouraged-projects that address problems or issues related to regional-scale changes that impact ecosystem-level processes, involve collaboration among a number of Sea Grant programs, and are broad enough in scope to support a multidisciplinary team effort. For more information, see the WHOI Sea Grant website, email Judy McDowell, or call (508) 289-2557. Submissions are due by March 14.

EPA BEACH Act Grants - EPA has announced the availability of $10 million in grants for beach water-quality monitoring and public notification programs. All 35 coastal and Great Lakes states and U.S. territories maintain monitoring programs using the EPA funding, with an additional focus on developing new rapid analysis technologies for bacteria. Applications are due by April 11. For more information, see the grant announcement or email CZMAIL@state.ma.us

TSS: On the Right Track

TSS (International) is a world leader in subsea inertial navigation systems and cable and pipe tracking. MTR discussed the company and market with John Frost.

— by Greg Trauthwein

MTR Please give us some background on yourself.

Frost I started my career in 1964 after leaving school with technical qualifications, and become a full indentured student appentice with Smiths Industries. As a chartered engineer and full member of the Institue of Electrical Engineers, I joined Sperry Gyroscope in 1971 working in a number of engineering and management roles on memory systems, naval products and weapon systems. In 1981 I joined ML Aviation (now Cobham Industries) progressing to Production Director running a multi-site operation involved with pyrotechnic devices and aircraft weapon system interfaces. In 1995 I joined Vosper Thornycroft, progressing to General Manger for VT Controls, which produced platform management systems for the naval industry. Following the sale so the business to Rolls-Royce, I ran an aero engine control business and marine equipment business for the VT Group as managing director, before leaving them to facilitate a management buy out of VT TSS & SG Brown. The newly formed business, renamed TSS (International) has been running and very successfully expanding its operations within the defense and oil and gas markets. A five-year growth strategy has been implemented which will see substantial investment in R&D and enable the company to maintain its position at the forefront of technology.

MTR What are the most significant changes that have occurred in the industry in the last 5 years.

Frost

A] The subsea telecoms crash in early 200 greatly affected TSS' detection business, but that is now recovering.

B] The huge increase in accuracy for heading and attitude sensors mainly due to the availability of fiber optic and ring laser technology that is becoming available to the commercial markets.

John Frost on efficient manufacturing:

"The challenge is consistency. Most people can bring something from an idea to a product, but to efficiently make many products over a long period you need consistency. People will change, processes won't."

C] The major trend over the last fives years has seen an increasing rate of company acquisitions and consolidations. To TSS' credit, we have movd in the opposite direction, with the management buy out from VT Group (in August 2005), which has enabled us to maintain our independence and given us the flexibility to invest more resources into our research and development.

MTR How has the industry changed since you began you career?

Frost Other than technology, the principles of business are unchanged. You must give your customers the best value for price and be prepared to engage into a long term relationship.

MTR What would you say (so far) has been the pinnacle of your career?

Frost The pinnacle of my career has undoubtedly been in recent times the acquisition of TSS (International) Ltd., as this has allowed me to apply my management philosophies without larger corporation policy interference. The risk versus reward opportunities are greater, but that makes life more exciting.

MTR What investments is your company making that are intended for the long-term health of the company?

Frost We have derived a five-year strategy for the business and within each product/market sector we have individual strategies for future technology and/or products. Considering the size of our business, we have a very diverse technology and product base, and although further acquisition is something we may consider over the next three years, we can achieve our shorter term objectives by focusing ourselves on our current products and markets.

MTR What is you annual R&D expenditure?

Frost Approximately 16% of our costs are spent on R&D, and this has been increasing and will continue to do so in order to maintain our position as a leading technology provider. Currently our main projects are within the subsea detection area, and the inertial navigation area where we are working with two highly regarded UK Universities to expand the boundaries of technology. We have 70 percent of the pipe and cable tracing business in the world. We're also aware that future technology depends on technology that can find cables and pipes at greater depths. Coming in 2008/09 will be our next generation subsea detection products.

MTR How have industry and/or customer demands affected your product and service offering?

Frost TSS built its reputation on the highest level of customer service. Our industry demands it. Customers have come to expect 24-hour service. In addition o our Watford, UK headquarters, TSS offers sales and service departments in Aberdeen, Scotland and Houston, Texas. TSS also has a premier worldwide network of authorized sales representatives.

MTR What do you consider the most important trends in your business to be?

Frost Changes in technology and keep up with it is interesting, but recognizing what is out ther and making the correct timely decisions to capitalize on which technology to use is key to this fast-moving industry.

MTR What are the top priorities, project-wise, in the coming year or two?

Frost TSS is currently working on a number of new, exciting projects, including a range of Inertial Navigation Products - the first of which, Orion, will be launched at the Ocean Business exhibition (Southampton, UK) in March 2007. Apart from providing very accurate surface and subsea navigation and positioning, these systems will provide many other features such as cost-effective solutions for electronic/hydraulic control systems for ROVs and other mobile subsea and surface machinery, for example, this will improve remote tooling accuracy and allow

John Frost on bringing a product from R&D to the market:

"Most companies are full of great ideas, the key is to identify the products that will become a business line. You must keep them (developers) focused, as it is so easy for these bright people to go off on a tangent, looking for the next great idea before the first one is finished. That said, you have to be flexible enough to world changes, to either re-engineer or kill a product if necessary."

many routing functions to be automated, which will assist skilled personnel during complex, time-consuming subsea intervention. We are also investing heavily into the next generation of pipe and cable survey systems which will push out the maximum range envelop o better match the potential requirements.

MTR What is you business outlook?

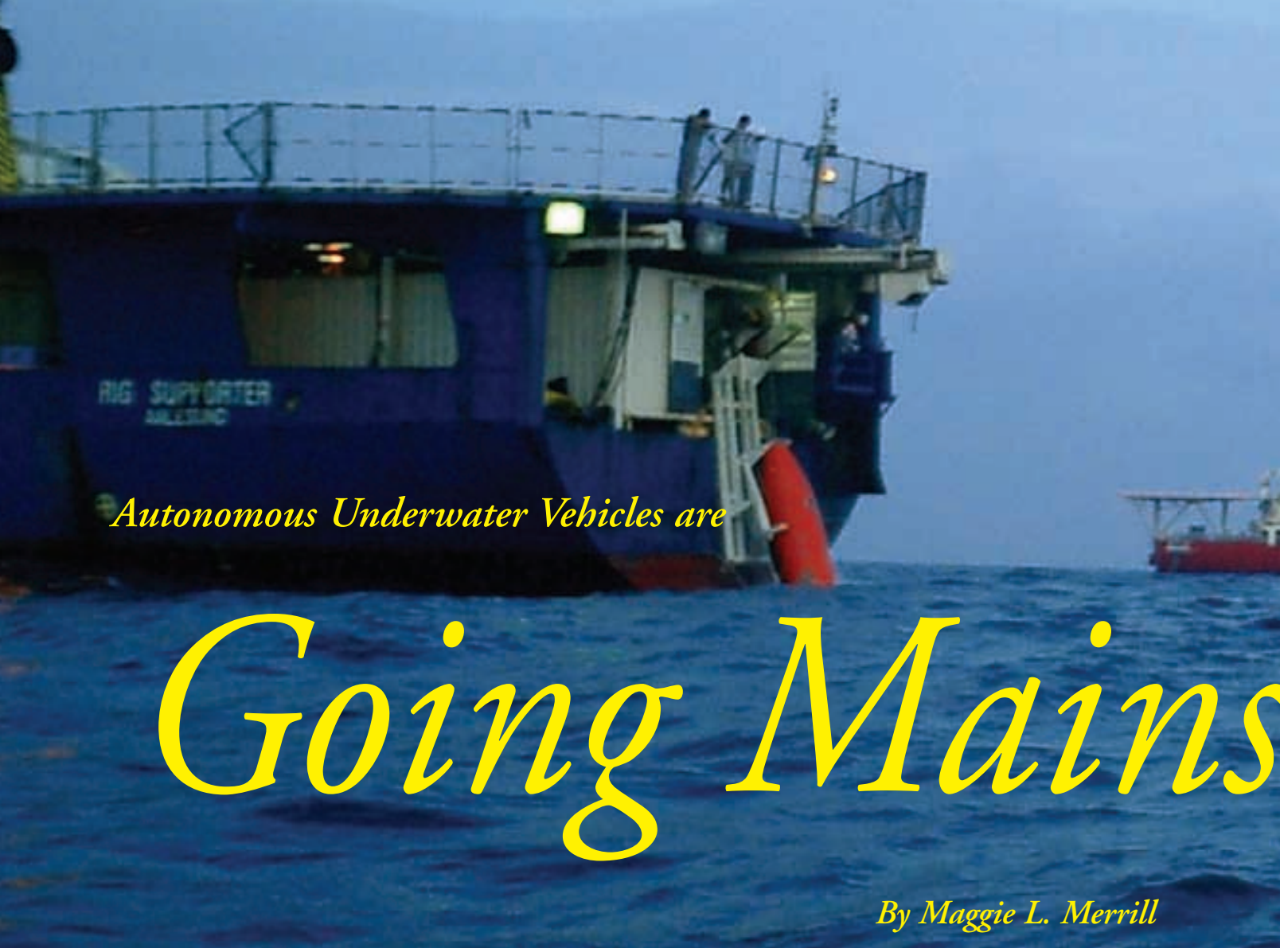
Frost 2006 was an outstanding year for TSS with sales in the region of $20 million, which will give an average growth rate of 11 percent over the last three years, the greatest growth rate in the company's history. However, with the company growing rapidly, we have many challenges ahead. Most importantly, we have to continue to provide the service that our customers have come to expect, and we will need to invest in our employees in order to broaden our skill base.

MTR What markets do you see as lucrative in the coming years?

Frost In the current economic climate, there is a relatively high level of activity being experienced by the hydrographic and survey companies, shipyards, DP manufacturers and ROV operators.

Some of the markets are difficult, as they are often price driven therefore we have to have a model that suits that profile, but with the cost of raw materials and manufacturing increasing every year, we have to find different processes to remain competitive.

TSS sees potential in the military marketplace, including the continued focus on homeland defense. TSS is working on a line of attitude heading and reference system (AHRS), surface and subsea, as well as future INS products designed specifically for military applications. We also see the great potential for growth in the U.S. market. Within the last year we have invested more resources in the U.S. with recent personnel additions in sales and technical support.



Autonomous Underwater Vehicles are

Going Mains

By Maggie L. Merrill

2007 is the 200th year of NOAA's existence and, perhaps more significantly — at least from an AUV manufacturer's point-of-view — is that it is the first year that the traditionally cash-strapped federal organization is considering adding a few Autonomous Underwater Vehicles (AUVs) to its research fleet. A small sign, but a good one for AUV makers and suppliers, as NOAA and other organizations — both public and private — are increasingly pressed to amass, analyze and distribute more and better data emanating from the world's oceans, accelerating interest in further development of AUV capabilities.

The AUV design and development market is largely a fragmented one, populated by smaller companies that have devised proprietary technology primarily for use by academic and military customers. While acceptance of the AUV technology — or for that matter, most any state-of-the-art technology — is traditionally slower in the commercial market, there are some notable new applications of the AUVs incredible capabilities in the Oil & Gas market, as the push to discover and recover assets in increasingly deepwaters and remote areas is forcing oil majors to explore the cost efficiency inherent in AUV operations.

Whether you call it an Autonomous Underwater Vehicle (AUV) or Untethered Underwater Vehicle (UUV), they are underwater vehicles that are not attached to anything. They are self powered and propelled and can either run pre-programmed tasks or in the more advanced cases, can pop to the surface transmit and receive data and submerge with a new route and mission. Generally they are equipped with bathymetric survey devices to map the seafloor. They also can be equipped with oceanographic, meteorological or surveillance equipment. Communications to and from are done via an RF or satellite link when they are on the surface or via acoustics or fiber optic cable when submerged. They run fairly slowly going from 1-4 knots. They range is size from 1 to more than 15 meters long.

Having been in the AUV development business for almost 30 years, Dick Blidberg, AUSI director, has seen a lot of advances in AUV technologies. He has nurtured

C&C Technologies' HUGIN Sea Survey AUV being deployed off ship.

many vehicles and students on their way to operational success. When asked MTR on recent activities in the AUV community, he readily rattled off a dizzying list of institutions, companies and different factions of the U.S. Navy. In all, he said, there are more than 100 different AUVs currently being developed within various agencies and research institutions, with just a handful available commercially. He also said that there are significant R&D and operational AUV efforts underway in the U.K., France, China and Russia, to name a few in the international engineering community.

The list of companies that offer AUVs include, but is not limited to: Hydroid, Bluefin Robotics, Prism, Ocean Server, International Submarine Engineering, Lockheed Martin, BAE Systems, Falmouth Scientific, Kongsberg Marine and Hafmynd.

AUVs in the Real World

The fact that the U.S. Navy and NOAA are evaluating and seriously considering fleets of AUVs, and the development of increasing AUV use in the offshore market are sure signs that the technology is finally maturing after 20 years of development, reaching the point where the vehicles offer a desirable dependability and cost effectiveness.

C&C Technologies, a large survey company, is using the Kongsberg Hugin AUV to conduct deep water high resolution geophysical surveys for offshore oil and gas industry all over the world. C&C owns four Hugin AUVs (Sea Survey 1,2,3,4) that are equipped Edgetech chirp side scan sonars and sub bottom transducers. Sea Survey 3 and 4 also have the Edgetech dynamically focused sonar on board to improve survey resolution. Jay Northcutt, Director of Geophysical Operations for C&C, said that running the Sea Survey AUVs is no simple task, requiring trained operators and software engineers to keep track of the system and the resulting data. The advantage of using the deep water system is that it omits the need for a second vessel, there is no huge winch and cable handling system that is used when towing a vehicle and the AUV can change direction within minutes as opposed to the

Hydroid's REMUS 6000.

hours it takes for a ship to turn when it is towing a vehicle. This time savings, combined with virtually no dropped data, has made high resolution surveying with an AUV a money maker for C&C.

Hydoid recently delivered 50 REMUS 100 vehicles that were specially designed for the Defense Advanced Research Projects Agency (DARPA). According to Kevin McCarthy, VP Marketing at Hydroid, the company's focus for the next couple of years will be to diversify its customer base and introduce the vehicles that were developed for military use to the wider commercial markets. For instance the Hydroid REMUS 100 is being used by Fugro in support of its offshore survey work and the REMUS 6000 AUV - which is rated to 6000 meters and measures 12.6 ft. long and 28 in. in diameter - may soon be considered competitive with the Kongsberg Hugin AUV. While commercial applications for AUVs are becoming more common, Blidberg said that the U.S. Navy is still the principal customer for AUVs, as USN builds and tests its own vehicles, worsk extensively with other agencies, research groups outside the Navy and companies.

NUWC Christens New UUV Facility

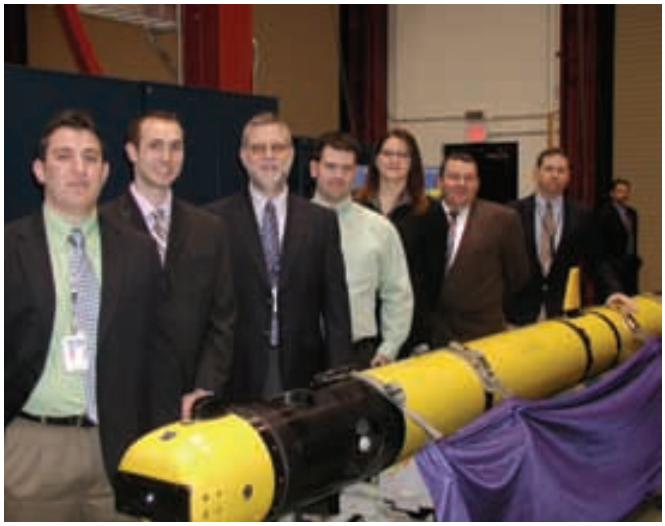
The Naval Sea Systems Command (NAVSEA), Naval Undersea Warfare Center (NUWC) in Newport, RI, houses a hub of engineers and scientists with capabilities to develop cutting edge UUV technologies. The NUWC UUV Center develops technology for several Navy customers who include: ONR, the Navy's Unmanned Maritime Vehicle Systems Program Office, and others. A new $20.5 million facility was dedicated in mid-February to bring both the Missiles and Autonomous Undersea Systems design and testing functions under one roof.

According to Chris Egan, the newly appointed UUV Customer Advocate for the Center, "the mission of the UUV Center, established in the mid-90's is to work with sectors within the Navy and defense industry to develop, prototype and test a variety of different vehicles and systems which will give the Navy warfighters better tools to perform in actual warfare situations. These unmanned systems extend the reach of our ships, and will help keep sailors and ships out of harm's way. They will help shape Tomorrow's Navy". The Center has invested millions of dollars and person hours on UUVs over the years. As a result they have in their quiver; several vehicles of widely varying sizes to use for testing and evaluation of innovative concepts. Egan and the Newport team receive their missions directly from the Navy commands. The work is often done in close collaboration with researchers within the Navy, at universities or within companies who have the where withal to contribute to a certain type of system. Eventually, the technologies are transitioned to industry for commercial production.

The team works 24/7 to improve the situational awareness of all the vehicles, lately, they are concentrating efforts on the Mid-sized Autonomous Reconfigurable Vehicle (MARV). It is considered a light weight class at 500-600 lbs.; is just 12.75-in. in girth and 158 in. in length and it runs at 2-5 knots. This vehicle is designed to be encapsulated and launched out of a submarine's torpedo tube and return with information.

(Continued on page 38)

MARV line-up of engineers; l-r: Rich Bashour, Steve Palys, Peter Licis, Nick Frade, Jennifer Olszewski, Jim Hozempai, Noah Forden. (Photo Credit: Maggie L. Merrill, MTR)



Bluefin Robotics AUV advances are

Sailing Along

By Greg Trauthwein

Born from MIT's Autonomous Underwater Vehicle Laboratory, Bluefin Robotics have carved a place among the leaders in Autonomous Underwater Vehicle (AUV) technology.

The evolution of Bluefin Robotics is not unlike that of other advanced subsea technology companies serving the defense, scientific and commercial markets.

Born from the halls of academia — in Bluefin's case the impeccable pedigree of MIT's Autonomous Underwater Vehicle Laboratory in 1989 — the company was endowed with and has steadily built upon an advanced technology foundation to develop its unique brand of Autonomous Underwater Vehicles.

But it is not uncommon for high-tech companies to trip, slip and fall, as often the process of making good bedfellows of state-of-the-art technology with sound business practice and savvy marketing proves to be an insurmountable obstacle.

Bluefin has proceeded to grow where others have not, due in part to the quality of the AUVs it produces, the vision and experience of its current chief executive, Dr. Brian Abraham, as well as an infusion of talent and reach-back capability of its corporate parent, Battelle.

When it's a Question of AUVs...

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NO OTHER COMPANY CAN PROVIDE THE SAME COMPREHENSIVE RANGE OF GEOTECHNICAL, SURVEY AND GEOSCIENCE SERVICES

Smart Start

Starting in 1989, the MIT Autonomous Underwater Vehicle Laboratory has pioneered vehicle technology. The 14-year-long progression from the SeaSquirt to the Bluefin AUVs has led to gains in capability, performance, and applicability. Capable of reaching the sea floor almost anywhere in the world and robust enough to be deployed in the Antarctic and the Labrador Sea, the Bluefin team has proven that AUVs can be reliable and affordable.

Founded in May of 1997 in Massachusetts, Bluefin Robotics was formed from a core team of the Autonomous Underwater Vehicles Laboratory at the Massachusetts Institute of Technology, and is still closely associated with it.

But as many high-tech companies across the world can attest, great ideas and products can drive the company only so far. To truly become a ubiquitous player in the international business market, it is necessary often to ally with funding to drive product and business development, as well as an individual or organization that can bring business structure and marketing savvy to help maximize a technologies' potential. In 2005, Bluefin found this in the form of Battelle and Dr. Brian Abraham. "My career has been based around the business aspect of technology,

Dr. Brian Abraham, President & CEO, Bluefin Robotics

focusing mainly on military business," Abraham said. "At the time, Battelle was seeking to expand its business, and through the normal processes we quickly found that undersea technology was an interesting match for us technologically," Abraham, who was then working at Battelle, said. "AUVs headed the short list, and what we found in the market space was a small, fragmented industry populated with small entrepreneurial companies. When evaluating the company to take over, the only company that came close (to meeting our requirements) was Bluefin, and in May 2005 we took over."

At the time of the acquisition, Stephen E. Kelly, Senior VP and GM of Battelle's National Security Division, said: "We were looking for a way to advance Battelle's capabilities in undersea systems development. Bluefin was looking to accelerate its growth in this emerging field. Both of our organizations are innovation-driven with emphasis on delivering real-world solutions for our clients."

"Bluefin, like most AUV companies, was an R&D shop that was trying to transition to full manufacturing expertise," Abraham said. “What we've done is help to transition the company — giving it the business and manufacturing infrastructure needed to meet the government's requirements to fulfill operational contracts.”

Upon initial glance, it appears the plan has worked, as the Navy placed a big bet with Bluefin in 2005 to help push the process. A $9.2 million contract for Battlespace Preparation Autonomous Undersea Vehicle (BPAUV) design and development — BPAUV is a system capable of bottom-mapping and gathering other oceanographic data — was awarded to support the Littoral Combat Ship Mine Warfare Mission Module. Subsequent to that contract Bluefin was awarded an $18 million contract in 2006 for its 12-in. vehicles under the Surface Mine Countermeasure Program. "This contract, and the subse-

While much of Bluefin's business comes from the military sector, the company and its AUVs were conceived to serve for the military, science and the offshore oil & gas markets.

quent patience of the customer, really enabled Bluefin to hit the next level," Abraham said. "Without this event, Bluefin would still be like other AUV shops."

Markets

Today, international military business is the prime target for Bluefin Robotics, but when the company was created, it was built to focus on three main business areas:

- Scientific research and technology development with advanced underwater platforms;
- Naval mine warfare and general clandestine battlespace preparation;
- Offshore oil field seafloor surveys, particularly for deep-water installations.

"The infrastructure that was here (prior to the Battelle acquisition) was perfectly fine for the R&D, ONR and the Oil & Gas industry, but the business and manufacturing processes — from top to bottom — had to be overhauled to support the military and our growth projections," Abraham said.

While the military business currently accounts for a majority of Bluefin business, Abraham admits that he would like to eventually see a more even distribution of business between academic, military and the Oil & Gas business. "The military business is feast or famine … if you have the contract, a large percentage of your business is committed here," Abraham said. The military business is critical to the entire process however, as he said, in his experience, the Oil & Gas business, for example, have been very late adopters of AUV technology, as they generally wait for the technology to be 'de-risked' before committing resources. "The military contracts go a long way towards 'de-risking' the technology for other users," Abraham said.

All for One

High-tech companies such as Bluefin Robotics, that continually raise the hypothetical bar, are compelled to keep the bar high and invest in furthering its systems. To that end, Bluefin invests a hefty double digit percentage of its revenue back into the company to ensure its position in the market. The company's guiding principle is to couple its AUV design and operational experience with the best technology developed by Bluefin, MIT AUV Laboratory,

Scripps and the Monterey Bay Aquarium Research Institution to create the most capable AUVs in the world. From the start, Bluefin has emphasized reliability and field ruggedness, while making improvements in the key areas of flexibility and performance. From the early beginnings at the MIT lab development was centered on creating a deep-water capability by finding smart solutions and not growing the vehicle in size. The company touts its modern electronics as smaller than competitive systems, resulting in a less power and a less electronic interference.

Abraham notes that the current scientific challenges in the AUV market are longer endurance and better communications, and notes that the AUVs of tomorrow will be increasingly focused on collaborative behavior work, charged to seamlessly conduct multi-missions not just with other AUVs but the UUVs, ships, and perhaps even airborne assets. To this end, at this summer's AUV Fest in Florida, Bluefin plans to demonstrate its "Autonomous Operations Future Naval Capabilities" … or AOFNC Project, whereby a master AUV paired with a pair of slave AUVs will work together on a mission, communicating with a specially equipped kayak from MIT and back to a base ship.

Seaeye Cougar

The Seaeye Cougar system is shown being recovered following operations to lift and relay an acoustic tracking range at depths of over 1,500 m.

A new electric work ROV — Seaeye Cougar-XT — was launched by Seaeye Marine. Vehicle power in the XT has been doubled by increasing the supplied voltage from 250 to 500 Volts producing a considerable improvement in performance. Developments in drive and power technology has seen vehicle thrust increased by more than 50 percent in all directions, designed to deliver a vehicle with the highest thrust to weight ratio. Subsea7's specification sought out a vehicle that could handle its 6 kW SubJet high pressure water cleaning system while working in a 1.5 knot current around structures in the Southern North Sea. To achieve this performance, Seaeye upgraded two of Subsea7's Cougar systems to what has now become the XT configuration in August last year.

Once initial teething problems were overcome in the thruster drive circuits, both of the up-rated Cougar-XTs were to prove more reliable and more capable than other embarked ROVs of a similar size. They were able to operate through measured currents of 1.4 knots with power to spare.

For more information, visit
www.seaeye.com

Benthos Stingray

The Stingray Remotely Operated Vehicle (ROV) is Teledyne Benthos' solution to the needs of inspection class ROV customers. Stingray is designed to be easily configured for numerous tasks. In addition to a large selection of tools and device options, Stingray is capable of easily interfacing with other user-provided devices via multiple RS-232, RS-485, analog, and digital interfaces. The Stingray vehicle has two built-in slide rails, designed for the easy installation of additional buoyancy, tools, cameras, lights, sensors, frames and/ or any other device that the job requires. Stingray comes standard with three optional connectors and one additional camera connector. These standard connectors make future device upgrades simple.

Stingray is a one-man deployable inspection class ROV. With an in-air weight of 70 lbs (31.75 kg), it can easily be deployed and recovered by one person from any stable platform. Benthos offers an optional lightweight portable launch and recovery system for use on solid platforms like piers.

For more information, visit
www.benthos.com

VideoRay Performs in China

VideoRay's representative in China is Beijing Ocean Seeker, and they have developed a reputation for excellence in underwater inspections in challenging conditions, particularly with hydroelectric power stations. The company received a call from a diving company working on the Manwan station a few days before the Chinese New Year.The Manwan station is located on the Lancang river, 510 km from Kunming, the capital of Yunnan province. This is the first such plant on the Lancang; construction occurred between 1986 and 1995. It has a capacity of 1.25 gigawatts, and produces 7.8 billion KWH per year.

The challenge was to determine how badly the trash racks were blocked. If too much material is caught in the racks, the result is lower water flow and reduced power production. There are five arc gates, and each has three bar-type trash racks. The deepest part of the inspection was at 60 meters. The inspection was begun at 2:00AM, and needed to be finished by daybreak. To do this inspection with divers was extremely difficult due to the conditions - particularly the bitterly cold water. The diving company was hopeful that the VideoRay could do the job more rapidly, and produce good video of the conditions at the trash racks.

The VideoRay was launched from a moveable raft, and dove down to the trash racks rapidly. Video and stills were captured on Beijing Ocean Seekers' mp4 digital capture technology, which clearly showed that the intakes were badly blocked by branches and garbage. The divers were amazed at the speed with which the VideoRay could swim around the trash racks and complete the inspection - just 20 minutes per gate. The entire inspection was completed by 4:30 a.m. Weighing eight pounds and starting at $5995, VideoRays can be equipped with sonar, positioning systems or other accessories, and are used for underwater surveys, offshore inspections, search and recovery, homeland defense, science, fish farming and a range of applications in underwater environments.

For more information, visit www.videoray.com

Perry Slingsby Systems Positioned for

Global Growth

By Greg Trauthwein

In early February Perry Slingsby Systems (PSS) was acquired by Triton Group Holdings. MTR caught up with Martin Anderson, CEO of Triton Group Holdings, to gather insights to the transaction as well as the company's future.

MTR Can you give MTR background and insights to the recent announcement that PSS was acquired by Triton Troup Holdings?

Anderson PSS has grown considerably in the last three years and has a leading market position in underwater robotics, especially vehicles. We are now at the stage where further investment is needed to take advantage of the opportunities available in the market and we felt that a corporate structure independent of Technip will best serve our objectives. Triton Group is an entity specifically established for this transaction and is backed by SCF and the management team of PSS.

MTR With the demand for PSS products/services and prospects for a continued hot market, particularly in the offshore realm, why was Technip willing to sell?

Anderson Technip understood and supported our growth plans, but have other priorities for their investment capital. The market conditions were good for Technip to get fair value for the company while allowing us to find and investment partner whose objectives were aligned with our growth plans.

MTR Why, at this time, was it deemed a wise buy?

Anderson PSS has a leading share and reputation in a market with strong fundamentals. PSS has a strong backlog and order book position with a strategy in place that, we believe, will continue to return significant growth.

MTR In your press release, it notes that "headquartering the group in Aberdeen is an important part of our growth plans." Can you expand on that?

Anderson While the North Sea is not a region with a high level of activity in remote intervention operations, Aberdeen is very much a global hub for subsea technology strategy and operations. A number of our customers center their purchase of strategic assets, such as ROVs, in Aberdeen and a number of major oil companies have established their subsea technology expertise in the city. In addition, we are a global business requiring daily communications across Asia, Europe and the Americas and Aberdeen offers an ideal location from which to manage across multiple time zones.

MTR What are the mid- and long-range plans for PSS?

Martin Anderson, CEO, Triton Group Holdings

Anderson We will continue the strategies that I established two years ago, such as the continued development of remote intervention technologies and products and a sustainable network of regional support service centers. These strategies, which are focused on delivering products that customers want with a support capability they expect, have been fundamental to the success of PSS to date and the corporate structure ensures a more sustainable investment in these strategies

MTR Technologically, what do you consider the most important developments by PSS in the last 12 to 24 months? The coming 12/24 months?

Anderson PSS has invested heavily in its new generation ROV control system which gives us the platform for advanced capabilities and features. This allows us to develop a range of ROV products that will have capabilities and features to meet the challenges of deepwater construction and survey. We have already delivered vehicles that feature station keeping and integrated simulators and we have the platform for developing systems with full dynamic positioning and real time 3D visualization.

In addition, we have developed high quality simulation products that can be applied to operator training as well as mission planning and desk top simulation. I have no doubt that we have spent our development money wisely in the last 24 months and we have established a great basis for deepwater technology for the coming years.

MTR What do you consider the most important trends in your business to be?

Anderson Clearly, the continued trends towards deeper and deeper offshore development and the technological needs of the industry are what drive's our business. PSS has always recognized the industry demands for equipment capability and performance and providing our customers with equipment they can rely on. We believe that these fundamental requirements will become more and more important as operations are carried out in deeper and harsher environments and PSS` technology strategy is geared towards responding to these demands.

MTR When we spoke in FL last year, you indicated one of your (and the industry's) biggest challenges was attracting enough qualified engineers. Is this still the case?

Anderson Definitely, we have worked hard at attracting young talent into our business and we need to be competitive in the employment market as well as offering interesting and exciting careers. As well as attracting and developing our own talent, our simulation and training systems can also go some way to developing engineering skills to the subsea world in general. Our training programs in Houston, in association with the University of Houston, is offering subsea construction and remote intervention courses to engineering students as well as offshore operational personnel.

MTR What do you consider the top priorities — project wise — for your company in the coming 12 to 24 months?

Anderson We will deliver the first of our new generation vehicles later this year and that will be the fulfillment of an intense development program and, as mentioned above, provides the basis for our future ROV technology and business. In addition, we have opened our engineering and support center in Houston and I expect this facility to gain momentum quickly. The Houston facility will provide the template for similar support centers in Aberdeen and Singapore, providing our customers with the best infrastructure for the supply and support of reliable, high performance equipment and service

MTR What is you vision for PSS for the coming decade?

Anderson My vision for PSS is that it will continue to develop and supply the most reliable remote intervention equipment that is supported by the best regional infrastructure. PSS will form the core of the Triton Group and provide the basis for an international group that is capable of designing, building and supporting a wide range of remote intervention technologies.

MTR PSS recently opened a new facility in Houston. Can you describe the products and services that will be offered from this location.

Anderson Our initiatives in our new Houston office focus on providing service to the deepwater markets. We are servicing our current customers with spare parts, ROV training and simulation, tooling sales and rentals and engineering services, and we are expanding our view and offering services to the deepwater community in general. PSS is a deepwater technology company and Houston is an ideal area for us to pursue this market.

MTR Houston is obviously the hub for GOM offshore operations, and just as obvious is the cyclical nature of this business. What are your projections for short- and mid-term business prospects in the oil patch?

Anderson The global subsea market has visible growth through 2011 with a substantial increase in the number of subsea wells and subsea developments. The GOM is forecast to maintain a steady level of activity through this period. All of the principal growth regions are deepwater with a growing demand for advanced tech-

PSS' new facility in Houston is focused on providing service to the deepwater market.

(Continued from page 26)

An innovative ROV-assisted recovery concept is now being prototyped that could be applied to multiple UUV size classes.

The MARV has an open-system architecture and advanced autonomous control, and is equipped with a Reson forward looking sonar for bathymetry and obstacle avoidance. It has a reconfigurable payload section, including an Edgetech side scan sonar installed to provide bathymetric and bottom-imaging information. The team has installed innovative forward and aft thruster sections to enable the vehicle to move up and down, sideways, and hover. Most UUVs are propelled with a propeller aft. Adding ROV-like thrusters is a unique feature, but with the thrusters come added power needs. The team is experimenting with new lithium ion batteries to extend the endurance of the vehicle to 20-30 hrs. The thrusters are used only intermittently when the vehicle arrives at its prescribed station. To sense chemical changes in the water, MARV is also equipped with a chemical analyzer provided by SubChem, Inc. First fielded in 2004, MARV has recently been successfully launched from the torpedo tube facility at the base in Newport and is scheduled for field tests this spring to demonstrate its upgraded capabilities.

Much of the work encompassed in these vehicles is being done for force protection and enhanced operations, but there is also a dual mission approach to vehicle development. That is why universities and companies are included from the beginning of many projects. The Center can work out all the bugs of these advanced systems and then hand them over to industry to commercialize. According to Chris Egan, "UUVs are not main stream yet. We are getting closer. We'll see their usage come in waves." He will consider UUVs to be main stream when warfighters have confidence in their use, and when college students use them regularly in their research. "They need to be simplified and made to be more reliable. In the next 10 years there will much more progress." Eventually, UUVs will be weaponized such as the airborn drones have been and they will be deployed in small fleets to collaboratively survey a large area for threats as well as for environmental monitoring tasks.

C&C Technologies' Sea Survey AUV returning to ship after survey.

Denise Crimmins is leading the effort at NUWC to investigate the use of a solar powered AUV for shallow water, long endurance missions. (Photo Credit: Maggie L. Merrill, MTR)

Another vehicle that is being tested in the new NUWC building is the Solar Powered Autonomous Underwater Vehicle (SAUV), originally developed by the Institute of Marine Technology Problems in Vladivostok, Russia with the New Hampshire based, Autonomous Underwater Systems Institute (AUSI). It is being used by NUWC to test long endurance monitoring missions. In partnership with EPA, Rhode Island Department of Environmental Management (DEM), and AUSI, Denise Crimmins has used it successfully to demonstrate its utility to monitor hypoxia in Narragansett Bay. She has also used the SAUV to conduct operation awareness missions using real time video and to test different sensors for NOAA. Using this unconventionally shaped vehicle to do deep and shallow water long endurance work is providing critical feedback about the use of solar panels, what the effect of biofouling is on the panels; how much information the vehicle can

Hafmynd Logs Military Sales for Gavia AUV

Hafmynd sold two GAVIA vehicles to two undisclosed military buyers. One is the defense research agency of a non-European country, the other is a navy of a European state. The GAVIA vehicles will be delivered in March and August respectively. "We have demonstrated GAVIA to potential clients around the world during the last 12 months, for use in commercial, military, security and research missions" says Torfi Thorhallsson general manager of Hafmynd. "Receiving the Frost & Sullivan homeland security award and closing sales to two significant military buyers is confirmation of how well GAVIA is being received in this rapidly growing market. We expect to see further sales in the coming year to security and defense customers who appreciate GAVIA's unique combination of multi-mission capabilities and affordability." The U.S. Navy (The Space and Naval Warfare Systems Centre (SPAWAR)), University of British Columbia and the National Research Council of Canada have earlier procured GAVIA underwater autonomous vehicles.

GAVIA is designed to be easily deployable from the shore, light craft or vessels of opportunity and can be rapidly reconfigured for a broad range of surveying and monitoring operations. The system is man-portable and can be field assembled in minutes. It is capable of being fitted with a variety of sophisticated sensors and the integration of new hardware and software modules is possible with minimum effort. The changeable modules are assembled using GAVIA's unique QuickLock system, allowing fast reconfiguration and battery replacement. GAVIA's mission capabilities enable customers to supplement or replace manned diving operations at a low cost with automated surveys of large areas of both littoral and deep water with fast in-the-water time and rapid search results. GPS/INS navigation and 3-D side-scan sonar allow advanced surveying and precise positioning.

For more information, Email: sales@gavia.is

MANTA is a large scale test vehicle which was developed to deal with large payloads and untraditional Concepts of Operations (CONOPS). It is over 34 feet long and displaces nearly 32,000 pounds of water. It can carry up to 5000 pounds of payload and it is modular and reconfigurable to conduct many different types of experiments. (Photo Credit: Maggie L. Merrill, MTR)

gather and transmit via the RF surface link and more. Using the vehicle to demonstrate how a UUV can conduct pre-programmed environmental sampling protocols and working out all the bugs has huge implications for using the same technology for conducting harbor security operations, thus the Navy's interest and support. In addition, AUSI has purchased 4 SAUVs from Falmouth Scientific, Inc. to conduct multi-vehicle operations. AUSI and NUWC work together under a Cooperative Research and Development Agreement to develop technologies that will enable multiple cooperative vehicles to survey an area effectively over an extended period of time. AUSI, NUWC and other researchers at Technology Systems Inc., Rensselaer Polytechnic Institute, and the University of New Hampshire, conduct field experiment each year to advance the underlying technology. The team plans to put all five SAUVs in the water at the same time to experiment with multi-vehicle operations later this year. FSI, has built all five SAUVs in existence. According to Rick Babicz, Marketing Director, the SAUVs fit a niche where the customer needs a long endurance vehicle that can be extremely flexible in terms of payload. The SAUV — priced at $150,000 — can carry large payloads and it can recharge during the day, which enables it to stay out for one to two weeks. FSI is in Phase 2 of an Small Business Innovation Research (SBIR) contract to adapt technology developed in the SAUV into a self propelled station keeping spar bouy that will send data from bottom arrays via RF and or Iridium satellite transmission. It is powered with the solar panels and it has a specially designed hydrogen fuel cell to add to its power bank.

NUWC's Jim Spressor holding the Lockheed Martin EMATT Submarine Target Practice AUV, the smallest of the UUV fleet. (Photo Credit: Maggie L. Merrill, MTR)

Gliders

There are gliders out there too that are self-propelled, that don't use batteries for power, but they function com-

pletely autonomously, using very low power and extending their operational range.

Principle manufacturers of these gliders include Webb Research in Falmouth, Mass., and now Bluefin Robotics of Cambridge, Mass., which licensed the technology to produce the Spray glider from Scripps Institution of Oceanography. Professor Mary Jane Perry of University of Maine Darling Marine Center deployed a Webb Slocum glider this summer to examine the relationship between salinity, dissolved organic matter and phytoplankton in the water column in the gulf of Maine. It is Perry's goal to have two or more gliders operating continuously to provide a constant data stream. The reason gliders are hot right now is that they use little power, require low maintenance and have been extremely reliable.

Future Developments

AUV developers envision using AUVs in swarms working together to cover a wide swath of ocean and melding the data into comprehensive models. NOAA, and different commands within the Navy have expressed interest in applying such a capability. These discussions would not be happening if communications, propulsion and power technologies were not reaching a point where they are dependable.

Justin Manley, an ocean engineer at Battelle in Duxbury, Mass. is seeing an important shift in the AUV field from prototypes to systems that are fully operational and dependable. "I am lucky to be located near many of the AUV developers at WHOI, MIT, UNH, AUSI, URI, and NUWC; as well as the leading AUV manufacturers in the region. This allows me to stay informed on the latest developments and develop partnerships for my colleagues and clients."

Another sign that AUVs are becoming more mainstream is the fact that developers are discussing how to standardize communications between vehicles; data formats; payload interfaces, and command and control architectures. The American Society for Testing and Materials (ASTM) has formed a committee to develop such standards and is currently considering the inclusion of surface and semi submersible vehicles to be included in standards for unmanned maritime systems.

Finally, yet another sign of acceptance is the AUV design competition being held by the Association for Unmanned Vehicle Systems International (AUVSI).

The competition this year will be held in San Diego in July and provides an entry point for students interested in AUV careers.

Hydroacoustic's New Line Of ROVs

At Underwater Intervention in New Orleans Hydroacoustic Inc. (HAI), introduced its line of Remotely Operated Vehicles (ROVs), the new Proteus Series, which includes the Proteus 1000 and Proteus 500. "We spent a great deal of time studying the ROV market, seeing what was out their, and listening to what customers are looking for," said George Gazarek, HAI President. "We then tried to come up with a line of vehicles to meet the ever-changing needs of the users, whether it be for industry and science or national defense. With the Proteus Series, we think we have done it."

"We focused on five main elements when designing the Proteus," said HAI's VP of Operations Michael Czora. "It had to be durable. It had to be compact and maneuverable. It had to be safe. And, above all, it had to be affordably priced."

A key feature of the Proteus line is its power supply. Rather than requiring power generated from above water, Proteus are equipped with its own rechargeable, battery pack power supply on board the unit, helping to create a number of advantages. First, it eliminates the need to carry electricity through the tether, thereby eliminating any shock hazard to divers should they be present. Second, by eliminating the need for a generator, launching and operation in remote locations is much easier. The battery power pack is designed to provide up to eight hours of normal operation before recharging is required. The on-board power pack also enabled HAI to reduce the diameter of the tether. Both the Proteus 1000 and Proteus 500 have tether diameters of only 3 mm, yet offer a tether strength of 800 pounds. The smaller diameter, in turn, reduces the amount of drag that can hinder the movement of ROVs and significantly improves the maneuverability of the Proteus ROVs, particularly in tight spaces. The Proteus vehicles are powered by four thrusters; two forward, one vertical and one horizontal. The Proteus 1000 has a maximum forward speed of 3 knots, while the Proteus 500 has a maximum speed of 1.5 knots.

Both models measure 23 x 15 x 13 in. in and weigh approximately 60 pounds. The Proteus 1000 has a depth rating of 1000 feet. The Proteus 500 has a depth rating of 500 feet. Dan Scoville, one of the engineers at HAI, was one of the key people in creating the Proteus design and was intimately involved in the development and field-testing of the first Proteus prototype. Scoville, a scuba diver on weekends, became involved some years ago, along with other diving enthusiasts, in searching for underwater shipwrecks in nearby Lake Ontario. Their most recent shipwreck discovery was what they believe to be the Milan, a 93-foot, two-masted schooner that sank in over 200 feet of water in Lake Ontario in 1849. Scoville and his diving partners, however, didn't make the dive themselves. Instead they used an ROV, the ROV that was to become the Proteus prototype.

"It was almost as good as being there," said Scoville. "But we were able to observe and record the images of the ship for about an hour and a half, meanwhile staying warm and dry."

The name Proteus is the brainchild of Gazarek. A reader of Greek mythology, he discovered that Proteus was an early Greek sea-god who, among other things, could foretell the future, but would change his shape to avoid having to. A derivative of proteus is the word "protean", an adjective that carries the general meanings of being flexible, versatile and adaptable.

Perhaps the Proteus will be able to foretell the future for HAI. The company plans to roll out both models as well as Proteus customized units throughout 2007.

HAI maintains a 45,000 sq. ft. facility in Henrietta, NY, which includes a 12,000 sq. ft. laboratory specifically dedicated to the assembly and testing of all of its underwater acoustic sources and ROVs.

For more information visit
www.hydroacousticsinc.com

2006: A Record Year for Seabotix

SeaBotix announced a record year in 2006. During the year SeaBotix delivered 111 LBV systems ranging from the basic LBV150BE to the deep water rapid response system LBV600XL. The current year looks promising as well, the company reports, with more than 30 systems on order. Adding to the growth for 2007 will be the production release of the LBC, which is already been ordered by a few agencies.

LBC

LBC SeaBotix combines the technology and performance of its LBV with the ability to strongly adhere to any hard surface in any orientation. Once attached to the hard surface the LBC utilizes four-wheel drive and large knobby tires. The initial LBC was an all in one ROV/Crawler. Extensive testing, demonstrations and feedback have resulted in a Convertible type system. In its standard form the LBC is a fully capable MiniROV system offering all the capabilities of the LBV type systems. When conditions exceed the capability of ROV mode or more precise control is required simply attach the crawler skid and adhere to the hard surface. This combination of ROV and Crawler capability is designed to make LBC a well rounded and capable system. On ship hull inspections, for example, unless conditions are ideal, the task can be challenging.

For more information, Email
info@seabotix.com

Centurion QX Work Class ROV Systems

SMD Hydrovision (SMDH) secured a contract for a substantial number of additional Centurion QX Work Class ROV systems. The 125 hp Centurion QX uses SMDH Curvetech hydraulic components and the DVECS control throughout. 2000m and 3000m rated systems will be delivered, including SMDH designed Launch and Recovery systems, Winches, Tether Management Systems and associated control and workshop cabins. This contract will also see the debut of SMDH's new deepwater Garage TMS designed to accept small to medium size work class ROVs. In the two years since the launch of the range, 20 SMDH Q-Series ROV systems have been delivered or are under construction. The Q-Series range includes the Quantum, Quasar, Quasar Compact, Quark and Centurion QX ROVs.

For more information, Email mark.collins@smdhydrovision.com

Acergy Inks Order for Four More ROVs

Schilling Robotics received an order from Acergy for four ultraheavy-duty ROV systems.

These systems, from Schilling's Acergy Core Vehicle (ACV) line, are the product of close collaboration with Acergy, a seabed-to-surface engineering and construction contractor for the offshore oil and gas industry. Schilling was selected by Acergy in 2006 to produce the standard ROV system for the company's next-generation remote intervention fleet. The ACV is based on Schilling's standard ultraheavy-duty UHD system. The four ACV vehicles have 150 hsp power packs. They are rated for 3000 m operation, and can be upgraded for 4000 m depth ratings. The systems feature eight thrusters; four vertical and four horizontal, for extra stability. The ACVs are equipped with Schilling's StationKeep dynamic positioning system. The ROVs also use Schilling's Digital Telemetry System, which includes advanced capabilities such as HDTV. ACV systems 04 and 05 will be delivered in June to operate from the Sapura 3000, a new-build heavy- lift and pipelay vessel that will perform deepwater construction and pipelay in the Asia Pacific region. ACV systems 06 and 07 will be configured similarly to ACV 04 and 05, and will include XE TMS units. Both systems will oper-

ISE AUV Passes Sea Trials

ISE Ltd. and IFREMER recently concluded sea acceptance tests of IFREMER's second 3,000-m autonomous underwater vehicle (AUV) built by ISE. Following Factory Acceptance Tests in Vancouver, the vehicle was shipped to IFREMER's Mediterranean facility in Seyne-sur-mer. Sea acceptance testing took 6 days and concluded with a dive to 2,450 m off Saint Tropez. "With this AUV having successfully completed acceptance trials in deep water, Ifremer now has two vehicles, which will be used with various scientific payloads covering geo-physical, physical, and fisheries applications," said Jan Opderbecke, Project Manager, AUVs for IFREMER. "The Explorer AUV 'AsterX', is an efficient and reliable system that has proven it's capabilities for the operational oceanographic service."

IFREMER took its first Explorer AUV in 2004. This latest delivery is the fourth of the class, and a fifth is currently in production for the University of Bremen, Germany. The Explorer vehicle was designed to operate from small vessels of opportunity, and has a level of modularity that allows it to be fitted with a wide variety of payload instrumentation.

For more information Email info@ise.bc.ca

ate from the heavy construction vessel Skandi Acergy.

They will be delivered in November 2007.

Phoenix Receives Schilling ROVs

Phoenix International took delivery of two ultra-heavy duty (UHD) work-class Remotely Operated Vehicles (ROVs) from Schilling Robotics. UHD units 005 and 006 were delivered to Phoenix's Bayou Vista, La., facility. The ROVs will be used by the company's Houston based Subsea Projects Group for deepwater construction support. The Houston office provides project management and engineering services for light to medium subsea construction projects. Phoenix's Bayou Vista, LA office will provide at-sea operators and logistics for UHD operations.

C&C Technologies Purchases HUGIN AUV

For C&C Technologies, the HUGIN Semi-Submersible autonomous underwater vehicle has been useful for all types of survey work. About six years ago, the company put its own proprietary technology on the back burner and decided to work with Kongsberg Maritime to develop the HUGIN AUV 3000 (Autonomous Underwater Vehicle). C&C Technologies are currently buying its third HUGIN Semi-Submersible AUV, to expand their surveying capabilities to reach 4500 m.

C & C Technologies cooperated with Kongsberg Maritime on the development of the HUGIN 4500. Pete and Dave Alleman, C&C principals, visited Horten, Norway this past fall to test and pick up C&C's third HUGIN. Not only can the new HUGIN AUV 4500 dive, 1.5 km further down to survey the seabed at a depth of 4,500 m, the technology has also been improved. Battery capacity has been extended by 30 percent and the vehicle can carry more advanced sonar and echo sounder systems that feature higher resolution and more precise measurements.

C&C Technologies has used HUGIN to chart the seabed for oil companies that operate in West Africa, the Gulf of Mexico, Brazil, the Mediterranean and Australia. In addition to significantly more accurate mapping facilities, the autonomous vehicle operates considerably faster. "What it used to take two to three weeks to survey, we do in five days with HUGIN," said, Alleman.

For more information visit
www.kongsberg.com

Bluefin to Build Four Spray Gliders for WHOI

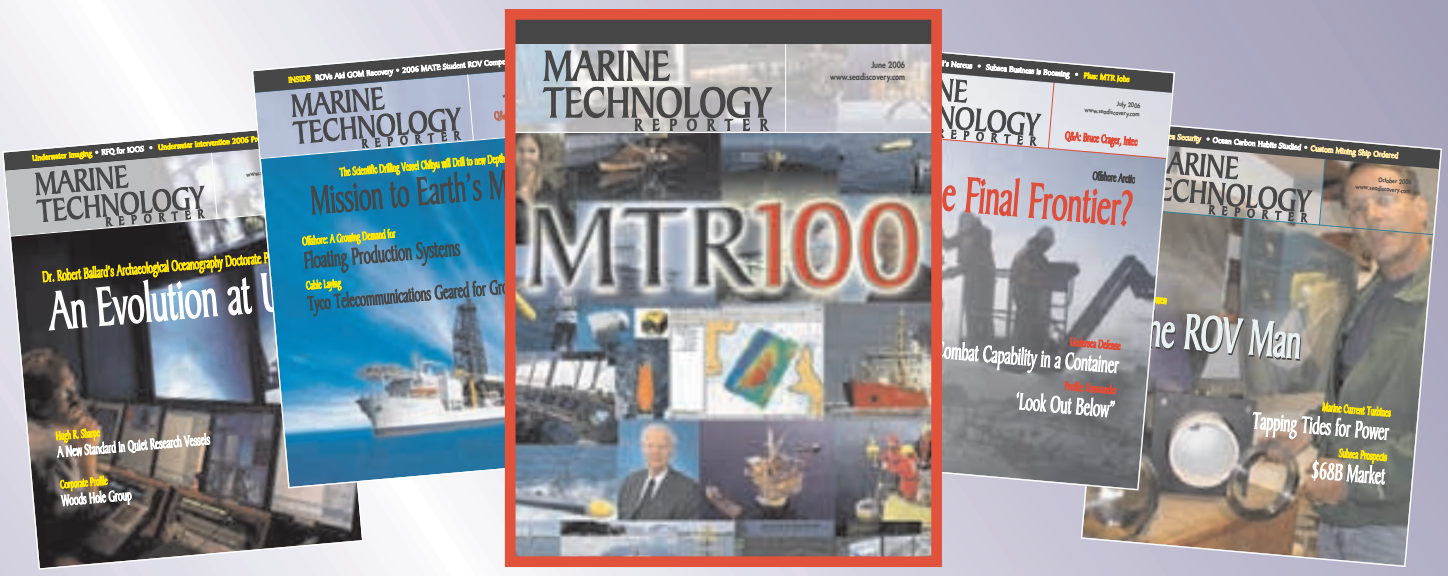
Bluefin Robotics won a contract from the Woods Hole Oceanographic Institution (WHOI) to build four Bluefin Spray Glider vehicles. Bluefin licensed the glider technology from Scripps Institution of Oceanography in 2003 and has leveraged its 15 years of experience in autonomous underwater vehicles to bring the Spray to the commercial market.

The buoyancy-driven vehicle uses a battery-powered hydraulic pump to vary volume and glide through the water in a saw-tooth pattern for durations of up to four to six months. Data on the profile of the water column are collected through a variety of oceanographic sensors measuring conductivity, temperature, depth, fluorescence, turbidity, dissolved oxygen, and altitude. The Spray Glider measures 200 cm in length, 20 cm in diameter, weighs 51.8 kg and typically operates between 200 and 1000 m in depth. Delivery is scheduled for November of this year.

Alistar 3000 Engineering Inspection AUV

Further to a series of demonstrations conducted offshore Toulon, France, in December 2005 and March 2006, ECA has just successfully completed 10-day deep water trials of Alistar 3000 AUV in GoM (Gulf of Mexico) for BP America Production Company. This trial was carried out as part of the BP Exploration and Production Technology Group Alistar 3000 is an Autonomous Underwater Vehicle (AUV) able to carry out pre-programmed inspection missions in deep water without physical link to the surface. The deep water trials took place with the local support of ECA's partner in the USA, Harvey Lynch Inc. The vehicle was launched from an Oceaneering vessel hired by BP. Between the 6th and the 15th of July, ALISTAR 3000 executed numerous missions at 4450 ft on a 9" x 13" pipe-in-pipe flowline around BP's King Field.

For more information, visit
www.eca.fr



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the 2007 MTR 100

The July 2007 Edition of *Marine Technology Reporter* will profile the leading 100 companies currently serving the marine technology market. This exclusive editorial product will be distributed to MTR's total qualified circulation of 22,231, and will serve as an invaluable guide for companies, government agencies, municipalities, research institutions and universities seeking product and service providers throughout the year.

To have your company considered for inclusion, you must apply. Simply complete and return this application to MTR's editorial offices by May 15, 2007. Alternately, you can e-mail required information and images to **gtrauthwein@marinelink.com**.

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

Company Name _____

Contact Person/Title _____

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Country _____ Postal Code _____

Tel _____ Fax _____

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Sea Discovery
EXECUTIVE OF THE YEAR Nomination

In July 2007 Marine Technology Reporter will name its **EXECUTIVE OF THE YEAR**. To be considered for this award, all applicants/nominees must provide verifiable company Financial and Performance information. Award Presentation will be at the **OCEAN TECH EXPO (OTEC)**, October 2-4,2007 in Providence, RI (www.oceantechexpo.com).

Executive Name/Title: _____

Please provide a short synopsis of why this person should be considered for EXECUTIVE OF THE YEAR honors, including details of significant economic and/or technological performance over the past 18 months.
The following is intended to gather information for editorial follow-up, interview and selection. Feel free to submit additional materials via e-mail

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TECHNOLOGY OF THE YEAR Nomination

In July 2007, Marine Technology Reporter will name the **TECHNOLOGICAL INNOVATION OF THE YEAR**. To be considered for this award, please complete and return the below information. Award Presentation will be at the ***OCEAN TECH EXPO* (OTEC)**, October 2-4,2007 in Providence, RI (www.oceantechexpo.com).

TECHNOLOGY/PRODUCT/SYSTEM NAME: _____

Please provide a short synopsis of why this technology should be considered for TECHNOLOGICAL INNOVATION OF THE YEAR. ALL MATERIAL WILL REMAIN CONFIDENTIAL, and the following is intended to gather information for editorial follow-up, interview and selection:

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NOTE:
EXECUTIVE OF THE YEAR & TECHNOLOGY OF THE YEAR NOMINATIONS: Please feel free to send additional information supporting a nomination — as well as any other editorial inquiries — to:

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fax: 1 832-668-2388
email:saleshouston@cprk.com
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Descr: CapRock Communications is a leading satellite communications provider for remote locations.
The company provides managed telecommunications services to remote operations around the globe. These services include, but are not limited to, basic telephony, IP telephony.

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Fax: 603-883-3266
Email: Sales@cepoint.net
URL: www.cepoint.net
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tel: 954-922-9585
fax: 954-925-1033
email:Richard@GEOSatSolutions.com
URL: www.GEOSatSolutions.com
Descr: GEOSat Solutions is a systems developer and integrator for the marine industry, specializing in voice and data communications. Syrens On-Board & Marina WiFi, SeaTrac and MSAT Satellite Services.

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Phone: 954-429-1110
Fax: 954-429-1130
Email: sales@hosemccann.com
URL: www.hosemccann.com
Product: Hose-McCann innovated and developed the first safe, reliable and rugged sound powered communication system for marine use. The system was adopted by the US Military and proved to be virtually indestructible. With the purchase of United Marine, Canada's premier communication specialists in 1999, Hose-McCann became the world's first Maritime Communications SuperStore. In 2006 the company introduced its first true end-to-end digital integrated communications platform, HMC-ICP. An IP-based platform using standard protocol, ICP allows for virtually limitless expansion.

Jeppesen Marine
Phone: 303-328-6105
Fax: 303-328-4160
Email: valerie.krumholz@jeppesen.com
URL: www.jeppesenmarine.com
Product: Jeppesen Marine, a subsidiary of Boeing, provides software which integrates navigation, tidal prediction, weather, radar and critical positioning information with onboard data and enable as-needed, real-time shore-to-ship updates for both deep sea and inland water vessels.

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URL: www.mtnsat.com
Descr: VSAT Communications Providers.

PetroCom, LLC
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fax: 504.734.6100
email:sales@petrocom.com
URL: www.petrocom.com
Descr: A turnkey provider of communication solutions to the marine and oil and gas industries
Products: VSAT, GSM and Analog voice, fax and data communication services.

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fax: +31 10 4281498
email:info@radioholland.nl
URL: www.radioholland.nl
Products: Communication, Satellite Communication, Navigation, Observation, etc.,

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Fax: 803 419-3099
Email: dhenry@shakespeare-ce.com
URL: www.shakespeare-marine.com
Product: Military & Marine antennas and accessories

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Product: ShipServ was founded in 1999 and maritime maritime e-commerce solutions via the TradeNet e-commerce trading platform and ShipServ Pages, the online sourcing tool for the maritime industry.

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Email: tt@smartcomsoftware.com
URL: www.smartcomsoftware.com
Product: PC SatC - INMARSAT C terminal software SmartCom - mobile and satellite communications connectivity TideWizard - worldwide tidal predictions PC Navtex - NAVTEX on your PC WinAstro - celestial navigation software.

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URL: www.telenor.com/satellite
Descr: Telenor Satellite Services is a subsidiary of Telenor of Norway and is the world`s preferred provider of global communications solutions via satellite for customers at sea. Telenor offers services via multiple global and regional satellite systems. Securable broadband data & voice communications for the maritime industry offering a full array of products and services via multiple satellite systems.

Werum Software & Systems
Phone: +49 4131 8900 123
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Email: carsten.stein@werum.com
URL: www.marine.werum.com
Product: Werum provides software for marine research. DAVIS-MAIL is a mail system for ship-to-shore communication by eMail. This system is able to prioritize eMail messages, to determine the registered users' whereabouts and to initialize the sending of large eMails on explicit user confirmation only. As there are some regions in the world where communication can only be established through special service providers, various communication links are available to set up Internet connections.

SeaEye Grows

James Douglas

With growing world demand and record sales for Seaeye's range of electric ROVs the company has announced two key appointments.

Joining the company as its new Sales Manager is James Douglas. He is responsible for building further system sales across all UK and international markets, and will work with the company's worldwide network of distributors. Douglas comes from a marine engineering background with sales experience across international markets. He is expected to develop and expand the range of markets in which Seaeye vehicles are used that include oil and gas, military, marine science, undersea tourism and civil engineering.

Seaeye has also appointed Nik Pyle as Technical Services Manager in recognition of the vital role technical support plays in international ROV operations. In addition to technical support, Pyle will be responsible for a new dedicated repair department tasked to provide the very best support for Seaeye's customers with a faster turn-round. Pyle has been with Seaeye for 10 years and has supervised customer service both at the factory and in the field, including commissioning of newly delivered systems around the world.

Triton Group Holdings Acquires PSS

On February 2, 2007, Triton Group Holdings acquired Perry Slingsby Systems Ltd. and Perry Slingsby Systems Inc (PSS) from Technip (See related story, page 34 of this edition). The transfer and ownership of PSS to Triton Group Holdings is immediate. Triton Group Holdings is a new entity, established specifically for this transaction with the principal shareholder being SCF Partners, a Houston based private equity company. The management team of PSS are investors in Triton Group Holdings along with SCF. Martin Anderson will become CEO of Triton Group Holdings. Triton Group Holdings is headquartered in Aberdeen.

Martin Anderson

Technip Appoints Pilenko as Chairman, CEO

The Board of Directors of Technip appointed Thierry Pilenko to succeed Daniel Valot as Chairman and CEO at the close of the Annual Shareholder's Meeting on April 27, 2007, during which he should be appointed to Technip's Board of Directors. In order to ensure a smooth and efficient transition, and as proposed by Valot, Pilenko has been named Deputy General Manager of Technip as of January 15, 2007. Born in Lyon in 1957, Pilenko received degrees from The Ecole Nationale Supérieure de Géologie in Nancy and the Ecole du Pétrole et des Moteurs. He spent most of his career (1984-2004), within the Schlumberger Group, where he gained vast oil and gas engineering and international experience in countries throughout the world. In March 2004 he became Chairman and CEO of Veritas DGC, a geophysical services company based in Houston, which recently merged with Compagnie Générale de Géophysique.

Aasheim Moves to Integration Planning

Hilde Merete Aasheim left Hydro's Corporate Management Board to concentrate on leading the planning of the integration of the company's oil and gas activities with Statoil. Aasheim, who has been in charge of Leadership and Culture in Hydro since 2005, will lead the merger integration planning team. Following the completion of the merger, which is expected during the third quarter

2007, Aasheim will join the Corporate Management Board of the new company as head of Group Functions.

Until her successor in Hydro is appointed, the functions reporting to Aasheim will report directly to Eivind Reiten, President and Chief Executive Officer. This includes Human Resources, Health, Environment and Safety and Corporate Social Responsibility.

All Systems Go for OSIL with New MD

Richard Williams

OSIL (Ocean Scientific International Ltd.) announced that Dr. Richard Williams, previously Sales Director for the company, has taken over as Managing Director. In recent years, substantial contracts have lead to OSIL's record year with a turnover in excess of $5 million. OSIL's Chairman and founder, Paul Ridout, said, "Richard has contributed to the growth and success of OSIL and I look forward to continued expansion in the future." Following Richard's appointment, Paul Ridout will be continuing his existing role as Chairman of OSIL and Managing Director of OSIL's subsidiary OceanPure.

Richard's initial plans for the company include the expansion of OSIL's instrument calibration facility with the launch of Cal-Check, a new service providing interim calibration checks for instrument manufacturers and users alike.

Gilman Takes MTS Helm

Bruce C. Gilman, P.E.

Bruce C. Gilman, P.E., took over the presidency of the Marine Technology Society (MTS) on January 1, 2007, for a two-year term after serving as president-elect for the past two years. The Marine Technology Society is an international, professional society comprising ocean technologists, engineers, scientists, business leaders and educators.

Gilman, who provides technical and business-management consulting services to the offshore industry, has been involved in the marine and offshore industry for over 45 years, with an emphasis on engineering, operations and business management.

A graduate of Polytechnic University, Brooklyn, N.Y., he earned a degree in aeronautical engineering and began his career as a U.S. Army diving officer and then commanding officer of a U.S. Army Port Construction Unit. He has since held senior executive positions in the offshore industry, including as president at Ocean Systems, Inc.; Perry Offshore, Inc.; Sonat Subsea Services, Inc., (which he founded); and Sonsub, Inc., from which he retired after serving as president, chief executive officer and director.

A registered professional engineer and fellow of the Marine Technology Society, he is also a director on the board of the Monterey Bay Aquarium Research Institute and serves as chairman of the board of Deep Marine Technology, Inc. Gilman has served on the National Oceanic and Atmospheric Administration's peer-review panels, as well as National Academy of Science, National Research Council committees. He is currently a member of NOAA's Ocean Exploration Advisory Working Group.

IVS 3D Opens UK Office

IVS 3D, Inc., provider of the Fledermaus 3D visualization software, opened a regional headquarters in the United Kingdom to service the growing demand for the company's processing, QC and analysis software solutions in Europe, Middle East and Africa. Government agencies, commercial companies and universities in Europe have been strong adopters of the Fledermaus software in its ocean

Balmoral's New Plant Brings New Products, Jobs

Balmoral Offshore Engineering announced multi-million dollar orders for subsea buoyancy and polyurethane products destined for Angola, Brazil, China and Norway. Distributed and marine drilling riser buoyancy modules, modular subsurface buoyancy, PU bend restrictors and cable protection make up the bulk of the projects and are among the first to go through the company's new manufacturing plant in Aberdeen which has seen the creation of more than 50 jobs in less than a year. Jim Milne, chairman of Balmoral, said: "We've had an extraordinarily busy 12 months preparing our new facility. What we've achieved since March 2006 is nothing short of remarkable. From a standing start we've designed, fabricated, installed and commissioned a highly flexible manufacturing capability. Our new plant is unique in that it houses a range of polymer manufacturing techniques which allows us to produce a wide range of subsea products - from the largest volume modular buoyancy system to the smallest individual polyurethane product." Balmoral Offshore Engineering also introduced a number of new product lines including Durafloat marine drilling riser buoyancy; Duraflex dynamic riser buoyancy; Duraguard PU cable protection and the Oceanus range of small deepwater floats. Further investment was made in upgrading the company's test facilities and it now offers the largest commercially available hydrostatic vessel in Europe. Additional vessels, software and procedures have been put in place offering independent testing for all types of subsea equipment to 6000msw equivalent, including hydrostatic compression, uniaxial strength and creep, density and water absorption.

Buoys to Brazil. Balmoral's Jim Milne and Jim Hamilton discuss the load-out.

A multi purpose load rig, capable of performing axial slip loads, lateral and static loading, three-point bending and clamp overload tests has also been installed.

mapping analysis and processing solutions. Fledermaus has proven to be critical for improving efficiency and reliability in the quality control and automated processing of high-resolution multibeam sonar data.

Lindsay Gee

"We have seen a significant growth in our customer base and level of interest in the Fledermaus products across the ocean mapping industry" said Lindsay Gee, CEO of IVS 3D, Inc. "Our customers have made a commitment to our products, and to support their efforts we are expanding our local European resources. The UK office will allow us to deliver superior sales and support to our customers in Europe, the Middle East and Africa." Duncan Mallace, Managing Director of the IVS 3D Ltd. UK office said, "I am very excited to be working even more closely with IVS 3D and establishing Fledermaus as not only the market leader in 3D visualization, but also to see it become the standard in visualization worldwide." For more information, E-mail

info@ivs3d.co.uk

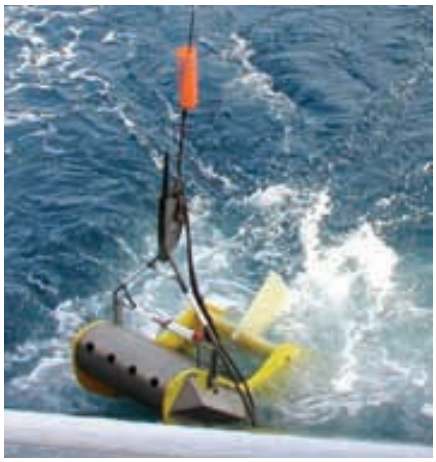
Deep Down Executes LOI to Acquire ElectroWave

Deep Down, Inc. signed a letter of intent (LOI) to acquire ElectroWave USA, an electronic monitoring/control system designer and manufacturer serving the energy, military, and

commercial sectors, located in Houston, Texas. "The electronic monitoring and control expertise provided by the acquisition of ElectroWave is a perfect addition to Deep Down's range of products and services, and complements our business plan of consolidating service providers within the offshore oil and gas industry," said Ron Smith, Deep Down's CEO. "Added to Deep Down's spectrum of innovative pneumatic and hydraulic system products and services, ElectroWave's electronic monitoring/control capabilities greatly expands the breadth of products and services we offer. This acquisition is a key ingredient of Deep Down's plan to offer a 'one-stop- shop' to the offshore oil and gas support industry."

CTG Offers Free Training at OB '07

Chelsea Technologies Group (CTG) will provide in-classroom and on-water demonstrations of its products at Ocean Business 2007, scheduled for March 27-29 at the National Oceanography Center, Southampton. CTG will be holding three one-hour classroom sessions as follows:



- Towed Undulating Vehicles, with a practical emphasis on deployment and operation of AQUAshuttle, Nu-shuttle and SeaSoar towed vehicles;
- AquaLine FerryBox, an autonomous environmental measurement system designed for use on commercial ferries. The classroom session will focus on setting up and operation;
- Fast Repetition Rate Fluorimeter (FASTtracka II), an introduction to the impressive performance and applications of the new Fastracka instrument.

Thirty delegates will also have the opportunity to join a two-hour at sea demonstration of the Nu-Shuttle towed undulating vehicle from RV CALISTA in Southampton Waters during the morning of Wednesday March 28. For information, E-mail **ekeegan@chelsea.co.uk.**

Divex Asia Pacific Wins Contracts

Divex Asia Pacific has won new international contracts to supply deep saturation diving systems and re-breather technology to three countries. Divex has begun work on a nine-man saturation diving system for Sea Mec in India, as well as a 12-man saturation diving system for Geo Subsea in Singapore. It is also refurbishing a pressure vessel to construct a decompression chamber for Technip Offshore in Scotland.

The company has also built 80 re-breathers for the Australian Defense forces, and is currently designing a hyperbaric reception facility for Geo Subsea.

Technip-Subsea7 JV Wins Contract

The Technip-Subsea 7 Joint Venture won a contract by New Zealand Overseas Petroleum Limited for the Tui Area development, located approximately 30 miles off the Taranaki coastline, New Zealand, in a water depth of 125 m. The joint venture contract, valued around $30 million, includes the project management, engineering, transportation, installation and pre-commissioning of approximately: 15 km of flexible flowlines, flexible risers and associated mid water arch systems; 15 km of coiled tubing gas lift pipeline, spool-pieces, diverless connectors; and 15 kilometers of electro hydraulic umbilicals and various associated components. The contract will be executed by the joint venture teams based in Singapore and Perth, Australia and Technip's operations and engineering center in Houston, Texas. The flexible flowlines and risers will be fabricated by Flexi France, one of Technip's flexible pipe plants located in Le Trait, France, under a separate supply contract.

IVS 3D to Hold Workshop in Florida

IVS 3D is offering a Fledermaus Training Workshop at the University of South Florida in St. Petersburg from March 26- 30, 2007.

Attending the workshop will help improve decision making through

our Area Based Editing tool, allowing one to see all data in a certain area, not just a subset. It will enable one to automate and reduce processing through its CUBE implementation (Combined Uncertainty and Bathymetry Estimator) by using statistics to calculate depths at any point on the surface. To obtain more information and to register go to www.IVS3D.com.

WHG Celebrates 20th

For the past 20 years, from shore protection programs to ocean monitoring systems to wetland restoration and contamination clean-up, Woods Hole Group — headquartered in Falmouth, Mass. since 1986 - has provided environmental solutions that make sense. Founded in 1986 as Aubrey Consultants, Inc., Dr. David Aubrey developed the company from a boutique consulting shop, incorporated to help local communities manage coastal erosion. The company now consults with towns, governments and companies worldwide - from Falmouth to Houston and from the Black Sea to Saudi Arabia and the Far East.

WHG has expanded services to meet the needs of their clients. Additionally, WHG have worked with the Navy providing real-time oceanographic monitoring systems that enable better, more precise environmental protection, tide monitoring and navigation. Perhaps some of the most challenging and rewarding work was in the Black Sea, where WHG facilitated one of the world's first five-country environmental partnership in the post-Soviet era. As a result, the entire Black Sea basin was studied completely using scientifically advanced techniques, and put in place a long-term protection plan. The 1990 Cooperative Marine Science Program for the Black Sea (CoMSBlack) jumpstarted Woods Hole Group's international reputation for providing trans-boundary environmental assessment, planning, and policy services, and led to string of UN and World Bank contracts worldwide.

For more information visit www.whg.com

Tyco Telecommunications (US) Inc. to Install a Fiber Optic Network

Tyco Telecommunications strengthened its relationship with Telefonica de España, winning a contract to install 145 km of cable between the Canary Islands of La Gomera and El Hierro. Telefonica de España S.A.U. will support the growth of voice and information telecom traffic between the islands and extend the broadband services to the entire insular territory. The subsea system will incorporate El Hierro as a national node into the existing network, and reinforce the role of La Gomera as an inter-island node. The commissioning of this project showcases Telefonica's commitment to the Canary Islands as a natural bridge of intercontinental communications between Europe, Africa and America.

The El Hierro and La Gomera terminal stations will be comprised of four fibers, approximately 130m of cable, with installation performed by Tyco Telecommunications' Reliance Class cable ship, Teneo. The system, utilizing DWDM, the most advanced transmission technology, will be initially equipped to support a 10Gbit/s wavelength, allowing the equivalent voice traffic of 245,760 simultaneous telephone conversations. The technology will enable the system to reach a maximum design capacity equivalent to 2,949,120 simultaneous basic telephone circuits.

Nautilus Appoints Project Director

Nautilus Minerals appointed Stephen Rogers to the position of Project Director to manage the company's engineering and project development, specifically the development of the Solwara 1 Project in Papua New Guinea. Rogers joins Nautilus from Clough Limited, one of Australia's largest multidisciplinary engineering firms, where he has been CEO for oil and gas for the last 18 months. He has 30 years of experience in project and corporate management and has extensive deepwater offshore and onshore project development experience.

Prior to June 2003, he was Regional Managing Director of Oceania based in Australia for Technip, a leading oil and gas services group. Technip acquired Coflexip Stena Offshore in early 2002 and Steve had at that time been the Managing Director and Executive Vice President for the Middle East and Asia Pacific operations of Coflexip a leading innovative subsea and deepwater technology

group. Over the last 15 years Rogers has worked at the Steering Committee and Project Director level on capital intensive projects with values in excess of $1 billion.

Edgetech Appoints International Industries

International Industries has been appointed as Manufacturers Agent and Distributor of its total product line by Edgetech Marine of West Wareham, Mass. Edgetech Marine manufactures commercial Side Scan Sonar, Sub-bottom Profilers and underwater integrated systems for towed, hull mounted, ROV and AUV applications. Chic Ransone of International Industries said, "We are very pleased to represent Edgetech Marine as we believe that the companys' continuing aggressive advances in engineering and product development should lead the field for years into the future."

For more information, visit www.internationalindistries.net

Hafmynd Wins Homeland Security Award

The 2006 Frost and Sullivan Disruptive Solution in Homeland Security Award was conferred on Hafmynd Ltd. for its GAVIA autonomous underwater vehicle (AUV) solution. "In a market where security options for seaports and critical off-shore infrastructure have remained static labor-intensive solutions for over two decades, or have been expensive AUV development programs carrying inherent risk, the GAVIA solution fills an important gap in the market," said Frost & Sullivan European Aerospace & Defence Program Manager Manuel Magalhães. "It is not only disrupting the competitive position of other suppliers, but is also generating a real demand-pull due to its mission capabilities and affordability."The GAVIA AUV is an advanced fully modular, man-portable solution with multi-mission capabilities, capable of operating in depths up to 2000 meters with impressive navigation accuracy. The Frost & Sullivan Award for Disruptive Solution is presented each year to the company that has best demonstrated the ability to develop and/or advance products with distinct innovative capabilities (at a fraction of the cost) than competing vendors and products. Such innovation is expected to significantly contribute to the industry in terms of, demand pull, cost decrease, product performance and degree/rate of technical change.

New Marine ROV Simulator Launched

Marine Simulation debuted ROVsim, a ROV simulator. Using technologies originally developed for the video game industry, ROVsim is optimized to simulate a wide range of mission variables: from changing currents and visibility, tether and collision problems, to electronics and gear failures. Potential simulated missions include: harbor security, hull inspections, dam and bridge inspections, deep water drilling and cable work, law enforcement, scientific data collection, pipeline inspections, etc. ROVsim is designed to operate on low-cost personal computers and is available for both Microsoft Windows and Apple OS X operating systems. For more information, Email **info@marinesimulation.com**

Kongsberg Maritime Buys Sense Intellifield

Kongsberg Maritime has acquired 100 percent of the technology enterprise Sense Intellifield AS for approximately $47.4 million on a debt-free basis. The purchase price may increase, depending on the company`s profit trend in 2007 and 2008. Sense Intellifield delivers products and services in the field of Integrated Operations, or e-field, for the international oil and gas market. It is engaged in the development, marketing and sale of highly advanced products, systems and solutions for real-time remote operation of drilling operations and production optimization. Among other products, it has developed software to retrieve, transmit, store and display data about well and drilling services on rigs.

Long-range Acoustic Current Profiler

Following the release of its FlowQuest 300 and 600 acoustic current profilers, LinkQuest Inc. debuted the long-range FlowQuest 150 current profiler, extending the same acoustic Doppler technology to lower operating frequency with higher power transmission. The FlowQuest 150 acoustic current profiler is designed to reach up to 500 m in range with an accuracy of 1% +/- 5

mm/s. The standard depth rating of the system is 800 m with options for 1,500, 3,000 and 6,000 m. With its capability for significantly longer range, significantly reduced cost to end users and the Data Fusion function for interfacing to multiple third-party sensors, the FlowQuest system is an ideal system for deepwater current and flow monitoring.

For more information, E-mail sales@link-quest.com

Marking Buoys for Offshore Pipelines

Abandonment and recovery buoys from Trelleborg CRP enable localization of pipelines several kilometers below the sea surface. Over the past 30 years, the offshore industry has boomed, and so have rig construction

These yellow buoys, produced by Trelleborg CRP, guarantee that seabed pipelines can always be found and recovered.

and the installation of seabed pipeline networks. Heerema Marine Contractors' three semi-submersible crane vessels are in constant demand all around the world. The largest, Thialf, has a lifting capacity of more than 14,000 metric tons. When a gas field is constructed on the seabed, a network of pipelines is laid out. Later, these are connected to facilities at the surface. To facilitate this process, pipelines are "tagged" with "abandonment and recovery buoys." These basically comprise a grommet with a buoy attached, allowing pipelines to be located for lifting by crane.

For more information, E-mail crpsales@trelleborg.com

Praktek Utility Platform

The inflatable hulls and large work surface offered by the PUP (Praktek Utility Platform) from Aeré provides stability for performing a variety of maritime tasks. From surface support

for diving operations to sea floor retrieval, salvage work and relocating heavy objects, the PUP provides a stable platform. The PUP has a lifting capacity of 2,000 pounds, making it handy for lifting heavy objects off the sea floor. As a portable, lightweight floating derrick, the PUP is ideal for salvage work and heavy object relocation. When used to help rescue stranded marine wildlife, the PUP provides a means to return them to deeper water. Measuring just 16 x 8-ft. with inflatable hulls, the PUP has a total work surface of 64 square feet. It has a draft of 5-in. unloaded. It stores away easily in a 2 x 2 x 8-ft. box, but doesn't require a trailer and can be ready for use in less than 15 minutes.

For more information, e-mail info@praktek.com

PetroTrac

Based on PetroCom's GSM network covering over 100,000 sq. mi., PetroTrac is a vessel and asset reporting, monitoring and tracking solution designed to help fleet managers track their assets, increase cash flow, increase productivity and enhance customer satisfaction by accessing detailed information and reporting features immediately. PetroTrac transmits information over a GSM/GPRS network and has a Web-based secure database for tracking, mapping and reporting. The mapping element of the solution includes all Gulf of Mexico platforms, allows the user to zoom in and out of MMS grid, and has the ability to mark a specific location of interest. PetroTrac offers users

the following essential reporting features:

- **Schedule Report:** PetroTrac allows the user to instantly prepare a detailed past and present timeline report of which platforms the vessels serviced. It also provides for sorting by the name of the vessel or platform.
- **Path Report:** The user is able to track a vessel's location over a given time period and can view the path according to time, latitude, longitude, course and speed.
- **Mileage Report:** The mileage report eliminates manual tracking of the distance a vessel has traveled and generates a report for a given time - past or present.
- **Idle Time Report:** View the idle time of a fleet and further improve fleet efficiency by analyzing the current and previous idle time reports.
- **Location Report:** The location report enables the user to make more informed decisions based on a real-time overview of the fleet's locations and activities.
- **Speed Report:** This report enables operators to view the average and maximum speeds of a fleet for a given period of time to help them lower maintenance costs.
- **Audit Report:** The audit report feature saves the user valuable time by offering easy access to historical reports instead of having to track down cumbersome paperwork.

For more information, e-mail sales@petrocom.com

New Data Base Management System

CARIS released the Bathy DataBASE 2.0 for the creation and management of bathymetric surfaces. Bathy DataBASE was developed to allow hydrographers to overcome obstacles of large bathymetric data sets and data sources. The software allows users to validate, prepare and compile bathymetric data from multiple formats and sources to create products.

Among some of the features of Version 2.0 are new source data management and storage tools, Subset Editor for point editing, redesigned 3D graphics display and navigation tools, and true position contouring.

With ever expanding volumes of raw multibeam survey data and large numbers of archived historical data sources, a data management system for source bathymetry is essential. The management of high-density bathymetry is essential for product creation where safety of navigation is applicable. The goal then is not to manage bathymetry at survey density but at a useful and significant resolution. Bathy DataBASE covers this crucial need allowing users to focus the management of bathymetry data at the "optimal" density for the most functional and practical solution.

For more information, visit www.caris.com

Offshore Industry Uses TrackLink

LinkQuest's TrackLink Ultra Short Base Line (USBL) tracking systems have been used in the offshore oil and gas industry for positioning of ROVs, divers, towfish and undersea structures. LinkQuest recently delivered a TrackLink 5000HA USBL tracking system to Fugro Chance. It is the fourth TrackLink 5000HA system delivered to Fugro within a year and brings the total number of TrackLink systems purchased by Fugro companies worldwide to more than 20 units. Acergy Group has purchased a TrackLink 1500HA system for offshore applications in the Gulf of Mexico. Quest Veritas and Continental Shelf Associates Inc. have also purchased several TrackLink 1500 USBL systems for tracking towed systems, divers and ROVs.

For more information, e-mail sales@link-quest.com

Explore the Business of Ocean Technology

NEW REVISED DATES!!!

OceanTech Expo '07

September 5 - 7 2007

Providence Convention Center Providence, RI

www.oceantechexpo.com

MARINE TECHNOLOGY REPORTER

MARINE & OCEANOGRAPHIC TECHNOLOGY NETWORK

Contact:

Rob Howard • Ph: (561) 732-4368 • Howard@Marinelink.com

New Date for Ocean Tech Expo 2007

Organizers of the inaugural Ocean Tech Expo (OTE) announced that a new date has been set. The new date is September 5-7, 2007. This change was made to ensure maximum attendance and participation at OTE. "Feedback to the new date was tremendous at UI last week and everyone is looking forward to starting the "show season" in New England this year", said Rob Howard, Show Director. Mark your calendars now to attend the premier international exposition and training event in North America targeting ocean science and technology; marine environmental engineers; government agencies and commercial interests at the Providence Convention Center located in the heart of Providence, Rhode Island. Exhibit space is selling briskly. Seminars and training programs are lining up.

The 1st annual OceanTech Expo is a unique, industry-led exposition that will feature new equipment, training and live demonstrations of the most current technology available to the growing ocean technology and marine science industry in North America. OceanTech will bring exhibitors and attendees together in an interactive, "hands-on" environment to share and learn about the most current technology available from this industry.

Contact Rob Howard at: Tel: 561-732-4368;

Email: howard@marinelink.com; or visit: www.oceantechexpo.com

March 13-15

Submarines & Their Combat Systems

This course underwent major revision with updated data in July 2004. It was then formatted as an animated, full-color Power-Point Presentation. This course presents the fundamental philosophy of submarine design, construction, and stability as well as the utilization of submarines as cost-effective warships at sea. A thumbnail history of waging war by coming up from below the surface of the sea relates prior gains-and, prior setbacks.

http://www.aticourses.com/submarines_and_combat_systems.htm

March 27-29, 2007

MCE Deepwater Development 2007

Hosted by BP, the conference will be a focused oil & gas event in Europe, where executives from Operators and Contractors meet to share lessons learned, present new technology and discuss contractual and operational issues to move the industry forward.

Email: Sandra.Gregory@questoffshore.com
http://www.MCEDD.com

March 27-29, 2007

Ocean Business 2007

A hands on ocean technology exhibition incorporating in-classroom and on-water demonstrations and training sessions. Organized in partnership with the Association of Marine Scientific Industries and hosted by the National Oceanography Center, Southampton.

http://www.oceanbusiness2007.com

April 3-5, 2007

Sonar Signal Processing

This intensive short course provides an overview of sonar signal processing. Processing techniques applicable to bottom-mounted, hull-mounted, towed and sonobuoy systems will be discussed. Spectrum analysis, detection, classification, and tracking algorithms for passive and active systems will be examined and related to design factors. The impact of the ocean environment on signal processing performance will be highlighted. Advanced techniques such as high-resolution array-processing and matched field array processing, advanced signal processing techniques, and sonar automation will be covered.

http://www.aticourses.com/sonar_signal_processing.htm

April 12-13, 2007

Coastal Environmental Sensing Networks

On April 12-13, 2007, the University of Massachusetts Boston Center for Coastal Environmental Sensing Networks will hold this two-day conference on extracting, processing, and utilizing information gathered from the coastal environment using sensor networks. The deadline for abstracts is January 31, 2007.

Email: Kristin.Mallek@umb.edu

April 23-26, 2007

Underwater Acoustic Modeling & Simulation

The subject of underwater acoustic modeling deals with the translation of our physical understanding of sound

in the sea into mathematical formulas solvable by computers. This course provides a comprehensive treatment of all types of underwater acoustic models including environmental, propagation, noise, reverberation and sonar performance models. Specific examples of each type of model are discussed to illustrate model formulations, assumptions and algorithm efficiency. Students will receive a copy of Underwater Acoustic Modeling and Simulation by Paul C. Etter.

http://www.aticourses.com/underwater_acoustics_modeling.htm

May 14-17, 2007

Sonar Principles & ASW Analysis

This course provides an excellent introduction to underwater sound and highlights how sonar principles are employed in ASW analyses. The course provides a solid understanding of the sonar equation and discusses in-depth propagation loss, target strength, reverberation, arrays, array gain, and detection of signals.

http://www.aticourses.com/sonar_principles_asw_analysis.htm

May 15-17, 2007

Mechanics of Underwater Noise

The course describes the essential mechanisms of underwater noise as it relates to ship/submarine silencing applications. The fundamental principles of noise sources, water-borne and structure-borne noise propagation, and noise control methodologies are explained. Illustrative examples will be presented. The course will be geared to those desiring a basic understanding of underwater noise and ship/submarine silencing with necessary mathematics presented as gently as possible. A full set of notes will be given to participants as well as a copy of the text, Mechanics of Underwater Noise, by Donald Ross.

http://www.aticourses.com/mechanics_underwater_noise.htm

June 4-6, 2007

Geomatics Atlantic 2007

Geomatics Atlantic 2007 will take place at the Marine Institute, Memorial University St. John's, Newfoundland, June 4-6, 2007. The theme of the conference is Coastal and Marine Geomatics'. Discussions will cover: Ocean Observation, Fisheries geomatics, Coastal Zone Management, and Offshore oil & gas.

www.cig-nl.net

June 5-7, 2007

UDT Europe 2007

20th Anniversary of the world's largest undersea defense event. La Mostra d'Oltremare, Naples, Italy

http://www.udt-europe.com

June 22-24, 2007

MATE Center and MTS ROV Committee 2007 International ROV Competition

The Marine Advanced Technology Education (MATE) Center and the Marine Technology Society's (MTS) Remotely Operated Vehicle (ROV) Committee are issuing an icy challenge to students interested in underwater technology. Next June, the annual international ROV competition, sponsored and organized by the MATE Center and the MTS ROV Committee and supported by the National Science Foundation (NSF), will focus on the earth's Polar Regions. The competition will be held in the Canadian province of Newfoundland and Labrador.

http://www.marinetech.org/rov_competition/index.php

June 25-29, 2007

Underwater Acoustic Measurements: Technologies and Results

Like the successful 1st international conference on Underwater Acoustic Measurements: Technologies and Results, held in June/July 2005, the 2nd international conference will focus on underwater acoustic measurements, the applied technologies and the results obtained. As many theoretical and computational predictions are available in the field of underwater acoustics, and as several important experimental studies ranging from model scale tests in laboratories to full scale tests at sea have been performed over the past or are planned to take place in the near future, it is timely again to review the whole field of underwater acoustic measurements.

Email: info@uam2007.gr
Visit: http://www.uam2007.gr

September 5-7, 2007

OceanTech Expo

Providence Convention Center - Providence, Rhode Island USA - September 5-7, 2007

For more information, contact: Rob Howard at tel: 561-732-4368

Email: howard@marinelink.com
Visit: http://www.oceantechexpo.com

MARINE SURVEYOR

Job Location: USA, LA New Orleans

SGS, a global leader in inspection, testing, certification and verification services, has a challenging and rewarding career opportunity for Marine Surveyors in our, St. Rose (New Orleans)LA, Tampa, FL, and Mobile, AL, locations within our Minerals Services business unit. Minerals Services provides services in Energy Minerals, Trade Services and Technical Services. Visit us on the web at us.sgs.com.
We seek a self-starter with the ability to work in a fast-paced environment and build best teams.
Minimum eligibility requirements: Bachelor's degree (BS) from a four-year college or university in science, business or math; or two to four years related experience and/or training; or equivalent combination of education and experience.
Five years of training in a reputable inspection company as an Inspector or Surveyor covering all details in cargo surveying/inspection. Marine, shipboard experience or technical background including any affiliation with nautical institute is an asset. Knowledge in general office operation including compliance of reports and computer skills in Microsoft Word and Excel is required
Essential functions: The functions of this job include, but are not limited to, Vessel Draft Survey, LNG, LPG, and Ammonia Surveys, Hold Inspection/Integrity Test, On/Off Hire Surveys, Discharge or Loading Supervision, Bunker Survey, Oil Inspection.

Terry Donald-Nixon
SGS North America Inc - Minerals Services Division
1919 S. Highland Av
Suite 210-B
Lombard, IL 60148
Phone: 630-426-0151
Fax: 630-953-9755
Email: Terry.Donald-Nixon@sgs.com
WEB: http://www.us.sgs.com

CUSTOMER SUPPORT ENGINEER

Job Location: United Kingdom, Oswestry

Applanix Corporation is a division of Trimble Navigation Limited and the world's leading Aided Inertial Positioning and Orientation systems developer for clients around the globe. We are looking for a Customer Support Engineer to be based in the UK.
The successful candidate will provide advice and consultation on applications, product performance, installations and complex customizations of Applanix products to customers, internal sales personnel and product managers. Office based product support will include testing, repair and refurbishment of products, as well as the maintenance of spares inventory and demonstration equipment. International travel will be required approximately 35% of the time for field support, to include product installation, setting to work and customer training.
If you are interested and qualified for this position, please submit your resume and credentials to hr@applanix.com. For more detailed information on this position, our company and products, please visit www.applanix.com.

COST ENGINEER (SUBSEA)

Job Location: Norway, Oslo

A Cost Engineer is required for a leading consultancy working on Subsea Engineering Projects, based in either Aberdeen or Oslo. Ideally with HNC / HND in Engineering or a QS qualification, you should have experience of working on at least 3 Subsea Projects and excellent communication and IT skills.
David Green
TEK Personnel Ltd
4th Floor, Broadstone House,Broadstone Road, SK5 7DL
Stockport, United Kingdom
Phone: +44(0)161 975 0321
Email: davidgreen@tekpersonnel.co.uk
WEB: http://www.tekpersonnel.co.uk

CAPTAIN FOR A LIVE-ABOARD SCUBA DIVING VESSEL

Job Location: Turks and Caicos Islands, Providenciales

Start your adventure in the recreational dive industry! Explorer Ventures (www.explorerventures.com) seeks a qualified, experienced USCG 500T Master (or equivalent)for the SCUBA diving charter vessel Turks & Caicos Explorer II. Full STCW-95 including GMDSS required. The ideal candidate will also be certified as a divemaster or above and have great people-skills. Please email resume/CV and a cover letter detailing experience and salary history to jobs@explorerventures.com. We look forward to hearing from you soon!
Email: jobs@explorerventures.com

MARINE ENGINEER FOR LIVE-ABOARD SCUBA VESSEL

Job Location: Turks and Caicos Islands, Providenciales
Start your adventure in the dive industry! Explorer Ventures (www.explorerventures.com) seeks a qualified, experienced marine engineer for the Scuba diving charter vessel Turks & Caicos Explorer II. QMED certification and full STCW-95 preferred. Added consideration given to applicants who are SCUBA divers or willing to learn. Please email resume/CV and a cover letter detailing experience and salary history to jobs@explorerventures.com. We look forward to hearing from you soon!
Email: jobs@explorerventures.com

ENVIRONMENTAL ENGINEER

Job Location: USA, DC Washington
Design engineeirng for environmental compliance of marine systems and equipment
Uniform National Discharge standards
pollution control and prevention
system analysis and measurement
regulatory analysis and business case analysis
impact of current and upcoming national and international regulations
Jim Fernan
MSC
914 Charles Morris Ct SE
Washington, DC 20398
Phone: 202-685-5764
Email: james.b.fernan@navy.mil
WEB: http://www.msc.navy.mil

MARINE ENGINEERS

Job Location: USA, DC Washington

Seeking marine engineers for multiple job openings:
design engineering for marine propulsion and auxiliary systems
owners representative for new construction and conversion projects
project engineering
preventive / predictive maintenance engineering and management
root cause analysis
quality assurance inspections and testing
Allison Bednarek
MSC
914 Charles Morris CT SE
Washington, DC 20398
Phone: 202-685-5745
Email: allison.bednarek@navy.mil
WEB: http://www.msc.navy.mil

BENTHIC HABITAT MAPPING SPECIALIST

Job Location: USA, MD Silver Spring

Consolidated Safety Services located in Fairfax, Virginia, is seeking to fill the following position. If you are aware of an experienced candidate, please refer them to this ad. Interested candidates should send their resume to:
dnj@consolidatedsafety.com or fax to 703-691-4615. They may also contact
Dianne Janzcewski, VP Scientific Programs, directly at 703-691-4612.
Position Title: Benthic Habitat Mapping Specialist
Consolidated Safety Services Inc., an exciting and growing government contractor is seeking an experienced specialist to join our scientific programs division, working with NOAA - National Oceanic and Atmospheric Administration.

This position requires:
Degree(s) (minimum B.A./B.S.) Science field, *or* experience in hydrography
Working experience with multibeam sonar bathymetry and backscatter acquisition, processing, and applications- acquisition hardware and
software, processing software and methodology, familiarity with data quality control and quality assurance (QA/QC).
Working experience with sidescan sonar acquisition, processing, and applications-acquisition hardware and software, processing software and methodology, familiarity with data quality control and quality assurance (QA/QC).
Experience or interest in the geospatial analysis, interpretation, and modeling of benthic habitats using acoustic sonar and ground truth data.
Dianne Janzcewski
Consolidated Safety Services
Fairfax, VA
Email: dnj@consolidatedsafety.com

LIFE SUPPORT TECHNICIANS / CHAMBER OPERATORS

Job Location: Guam (USA), Tamuning
The job will be in Guam, US Territory.

Pro Marine Technology is a well established marine contractor in Guam. We are hiring two Life Support Technicians / Chamber Operators for the ocean outfall project. The project starts in May, 2007 and this is a project-specific hire.
Competitive Wages and Benefits.
Must be a US citizen or hold a valid VISA.
Email to obtain our Application Form. Email: prmarine@ite.net

ROV PILOT / TECHNICIANS

Job Location: Guam (USA), Tamuning
This job will be in Guam, US Territory.

Pro Marine Technology is a well established marine contractor in Guam. We are hiring two experienced ROV Pilot / Technicians for the ocean outfall project. The project will start in May, 2007 and this is a project-specific hire.
Competitive wages and benefits.
Must be US citizen or hold a valid VISA.
Email us to obtain Application Form. Email: prmarine@ite.net

PROJECT MANAGER/ENGINEER

Job Location: USA, WA Lynnwood

Kongsberg Underwater Technology, Inc. , a US subsidiary of Kongsberg Maritime, currently has an opening in Lynnwood, WA for a Project Manager/Engineer. Primary responsibilities will include the project management, integration and customer training for projects involving Kongsberg's wide range of maritime products including hydrographic survey systems, autonomous underwater vehicles, underwater navigation systems, and underwater surveillance systems. Successful applicants must have a strong technical background in the maritime/ocean engineering field, have project management and supervisory experience, be capable of working independently in the field, and interfacing directly with the customer. Position will report to the Engineering Manager. Bachelor degree in engineering is required. Position requires domestic and international travel and work aboard offshore vessels. <B>Must be a US citizen and capable of obtaining a US Government security clearance.
Kongsberg Underwater Technology, Inc. is an Equal Opportunity Employer.
Email resume to:
darlene.burt@kongsberg.com

HYDROGRAPHER

Job Location: USA, TX Houston

TerraSond Ltd. has immediate openings for both experienced and entry level hydrographers in our Houston, Texas office. These positions provide opportunities for surveyors, scientists and engineers who either have experience in or are interested in careers involving mapping the seafloor and its structure. Ideal candidates would have a Bachelor's or Master's degree in Geomatics, the physical sciences, Electronics or Information Technology and/or applicable experience in a related field. Duties include project setup, fieldwork, data processing, analysis of survey results, report preparation, client liaison and all other activities associated with TerraSond's survey, scientific and engineering support services.
Qualified personnel can expect competitive pay and benefits including group health insurance, group life, LTD, and ESOP, 401(k), vacation benefits and holiday pay.
TerraSond Ltd. is an industry leader with offices in Palmer, Alaska and Houston, Texas with projects located worldwide.
Interested parties, please forward your resume to jobs@terrasond.com

HYDROGRAPHIC SURVEY TECHNICIAN

Job Location: USA, CA San Francisco

REMSA Inc. seeks an experienced Hydrographic Technician to work as a Navigational Response Branch (NRB) team member to update U. S. Government National Charts for National Ocean Service (NOS). High mobility and travel principally within the Atlantic Seaboard, Pacific Coast, Great Lakes and the Gulf of Mexico. Included is shore-based field work and participation in survey activities principally outside and on the water using small vessels. Technical survey assistance includes: side scan sonar surveys; Electronic Navigation Capture; Emergency Response Surveys; Chart Comparison Coast Pilot Updates; Diving Operations; Tidal Level Monitoring and Collection.
Compensation:
o Base Salary $32K-$33K plus overtime.
o Off site living expenses (housing/meals) provided through bi-weekly reimbursements
o Full medical insurance, vacation leave

accrual, Sick and Personal Leave, long term/short term disability insurance, 401 k, direct deposit, bi-weekly payroll.
To apply: submit resume via email: recruit@remsainc.com or FAX to HR Office (757) 722-4571

HARMFUL ALGAL BLOOM TASK MANAGER

Job Location: USA, MD Silver Spring

I.M. Systems Group, Inc. (IMSG) www.imsg.com is looking to hire a Harmful Algal Bloom Task Manager to work at the NOAA Center for Sponsored Costal Ocean Research (CSCOR) in the National Centers for Coastal Ocean Science (NCCOS), National Ocean Service (NOS), in Silver Spring, Maryland
This is a four (4) month contract position and is a full performance level position providing technical and administrative assistance to the management of competitive extramural programs related to harmful algal bloom research.
To Apply: Please send your resume in word format to jobs@imsg.com with the following subject heading: NOA07006 -Harmful Algal Bloom Task Manager. Salary for this position is $26 per hr for the duration of this four (4) month project.
IMSG is an Equal Opportunity Employer.
Email: jobs@imsg.com

CORAL PROGRAM SPECIALIST

Job Location: USA, MD Silver Spring

I.M. Systems Group (www.imsg.com), a contractor to the National Oceanic and Atmospheric Administration in Silver Spring, MD, seeks an individual to serve as a Coral Program Specialist to coordinate coral reef program activities for either the Atlantic or Pacific Region. This individual will work with the National Oceanic and Atmospheric Administration's (NOAA's) Coral Reef Conservation Program (CRCP- www.coralreef.noaa.gov/) in the areas of program coordination, program development, strategic planning, partnership building, and information management.
NOAA's Coral Reef Conservation Program supports effective management and sound science to preserve, sustain and restore valuable coral reef ecosystems. This position is with the program's National Marine Fisheries Service office in Silver Spring, MD.
To Apply:
Qualified candidates may apply by e-mailing a cover letter, resume, and 3 references (MS Word format strongly preferred) to the following email: jobs@imsg.com with the subject heading: NOA07008 - Coral Program Specialist.
The vacancy announcement is open until filled. The salary for this position is commensurate with experience. IMSG is an Equal Opportunity Employer.

ELECTRO/ INSTRUMENTATION ENGINEER

Job Location: Singapore, Singapore

Areas of Responsibility / Duties/ Activities:
Execute Electrical and Instrumentation technical following up on all activities related to drilling systems for upgrading, repair or renewal or test and commissioning onboard the Drilling Vessel or at the sub contractor facility. Make sure that the related work will be delivered in accordance to stated scope and meet the agreed timeframes. Understand and secure that systems will be ready for its intended services ready to be delivered to operation. Execute tasks demanded by the project superiors on a professional manner. Issue work scope as required.
Authority: Follow up and comments on scope of work, documentation, schedules and delivery time. Report on workmanship discrepancies and propose improvement to systems. Comment on irregularities related to workmanship and protection/ preservation. Request and verify documentations from contractors / suppliers, from engineering or from operation/ projects as required. Comments on irregularities in technical documentations. Access on document filing systems. Request of material and services as required.
Qualifications: Electrical/ Instrument Engineering degree or equivalent. Experience from project related to Drilling systems. Experience from repairs, upgrading and preservation of Drilling systems. Ability in understanding of drilling processes/ systems. Knowledge of authorities' requirements related to drilling systems. Ability to work systematically and independently. Good communication skills, both verbally and written English. Knowledge of EDB-based systems.
Interested candidate please write in with your updated resume and also your: Availability; Current salary; Expected Salary; Contactable number and current location
Email: hueymeei.chan@energyskills.com.sg
WEB: http://www.energyskills.com.sg

PROJECT PLANNING ENGINEER

Job Location: United Kingdom, Aberdeen

A Project Planning Engineer is required for a leading consultancy working on Subsea Engineering Projects, based in either Aberdeen or Oslo. Ideally with ONC / HNC in Engineering, you should have experience of working on at least 3 Subsea Projects, together an excellent working knowledge of Primavera P3. Experience with SAP would be very advantageous.
Duration: 16 Months
Location: Aberdeen or Oslo
David Green
TEK Personnel Ltd
4th Floor, Broadstone House,Broadstone Road, SK5 7DL
Stockport, United Kingdom
Phone: +44(0)161 975 0321
Email: davidgreen@tekpersonnel.co.uk
WEB: http://www.tekpersonnel.co.uk

RELIABILITY ENGINEER

Job Location: USA, MD Baltimore

*Will provide support and training to the ELC Condition Based Maintenance Program for the US Coast Guard. Must be an American citizen.
Responsibilities:
*Will provide database support for making reliability survey results available in usable format electroncially to various organization.
*Generate, maintain, audit and suggest improvements to realiability processes and policies
*Provide training of processes, policies, and other subjects to ensure smooth program operation
*Provide training to personell regarding reliability engineering topics via an on-the-job method
*Evaluate current and new technologies for applicability and suggest improvements
*Liaison with stakeholders
*Review reliability assessment survey results, and other failure data for trends, recurring issues, and recommendations including:
*calculation of failure rate and age-reliability characteristics for failed parts using accepted reliability methods including weibull analysis
*Calculation of Ao based on actual failure data
*Identify improvements and predicted impact on equipment/system reliability and Ao
*Travel, as funding is available, up to 10 times per year to attend and report to working group, to observe and audit process in the field, and to publicize and present program accomplishments to various organizations.
Paula Earleywine
Knowledge Services
8275 Allison Pointe Trail, Ste 200
Indianapolis, IN 46250
Phone: 317-806-6136 or 877-256-6948 x:6136
Fax: 317-578-7600
Email: paula_earleywine@knowledge-services.com
WEB: http://www.knowledge-services.com

MARINE CONSTRUCTION SURVEYOR/ENGINEER

Job Location: USA, IL Olmsted
Do you want to work for a progressive Company that invests in you? Washington Group International, Inc. invested over $52 million in 2005 on employee training and development. We also offer aggressive compensation, comprehensive benefits on your first day of hire, and an attractive relocation package. Washington Group International Inc. is seeking a Marine Construction Surveyor/Engineerfor the Olmsted Project. This is a unique project applying "In the West" techniques to construct a navigation dam across the Ohio River at Olmsted, IL. You must enjoy a challenge and work with the project team to develop the best overall construction means and methods with an emphasis on Safety, Quality, Schedule and Performance.
Experience:
Twenty years experience in construction surveying with a minimum of 7 years in the layout and control of heavy marine projects.
Experience must include: Bearing and sheet pile, underwater precast installation, underwater as-built surveys using, sonar and other means, precast yard control, dredging and riprap, control and monitoring of large tremie pours, hydrographic surveying, dive team survey support, and Quality control.
Qualifications:
This is a senior level position with a bachelor's degree in engineering and twelve + years related experience. Under minimal supervision, performs difficult and complex duties utilizing advanced techniques and an extensive and diversified knowledge of engineering problems and methods. This position is the first level, which includes direct supervision over a group of engineers at a construction site. This level of engineer is used only on a large project and is supervised by the project engineer who has responsibility for all engineering activities at a construction site.
To apply: Log on our website at www.wgint.com/careers and apply to job post IFIL6300
Recruiter: lanni.johnson@wgint.com
Washington Group International Inc., one of ENR's Top contractors for 2005, has excellent pay and benefits. For more information please log on our website at www.wgint.com.

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1	RBR, Ltd.	www.rbr-global.com	613-233-1621
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27	Seabotix, Inc.	www.seabotix.com	619-239-5959
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SeaSPY

Marine Magnetometer

Do it all

Tough enough for any environment, SeaSPY is adaptable to a myriad of applications and is one highly versatile marine magnetometer.

Specs

- **High sensitivity:** 0.01nT/sqrt-Hz
- **Power requirement:** 3W
- **Depth range:** Up to 6000m
- **Cable lengths:** Up to 10km
- **Worldwide operation:** No restrictions/deadzone
- **Integrations:** Side scan sonars, ROV & AUV
- **Gradiometers:** Longitudinal, horizontal & vertical
- **Other sensors:** Altimeter, pressure sensor, transponder

SeaQuest

Multi-sensor Gradiometer Platform

Specs

- **High sensitivity:** 0.01nT/sqrt-Hz per sensor
- **Gradient information:** X, Y and Z in realtime
- **Power requirement:** 5W
- **Depth range:** Up to 6000m
- **Worldwide operation:** No restrictions/deadzone
- **Integrations:** Side scan sonars, deep tow platforms
- **Other sensors:** Altimeter, pressure sensor, transponder, tilt sensor

Do more

SeaQuest measures the complete 3 dimensional magnetic gradient vector, quickly, accurately and in real time.

Explorer

Mini Marine Magnetometer

Do it with less

High sensitivity, compact size and light weight make the Explorer mini marine magnetometer the ideal tool for shallow water surveys.

Specs

- **High sensitivity:** 0.02nT/sqrt-Hz
- **Ease of use:** Ready to deploy
- **Power requirement:** 2W
- **Cable lengths:** 300m
- **Worldwide operation:** No restrictions/deadzone
- **Depth range: 300m** Up to 6000m with side scan sonar
- **Gradiometers:** Horizontal & vertical
- **Integrations:** Side scan sonars, ROV & AUV
- **Other sensors:** Pressure sensor, transponder

Reliable performers that get the job done.

Marine Magnetics

True Detection Power

www.marinemagnetics.com
t: +1 905 709.3135
e: info@marinemagnetics.com

When capability, performance and reliability are mission critical

Seaeye ROVs are used worldwide in oil & gas, military, civil engineering and marine science operations.

From the lightweight and portable Falcon & Falcon DR to the greater payload of Tiger & Lynx, Seaeye ROVs perform a wide variety of observation, inspection and diver-support roles.

For a full work class capability the Seaeye Cougar & Panther Plus provide the power, payload and tooling necessary for offshore oil & gas applications, marine salvage, search and recovery, and as part of a rapid response system for submarine rescue.

Seaeye

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Seaeye House, Lower Quay Road, Fareham,
Hampshire, PO16 0RQ, United Kingdom
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e-mail: rovs@seaeye.com www.seaeye.com