$140M Subsea Ship Cool Under Pressure Exploring Oceans 390 Million Miles Away?

MARINE TECHNOLOGY REPORTER

October 2012 www.seadiscovery.com

First Person: Delivery of the
Jamie Hanna

Subsea Defense

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Contents

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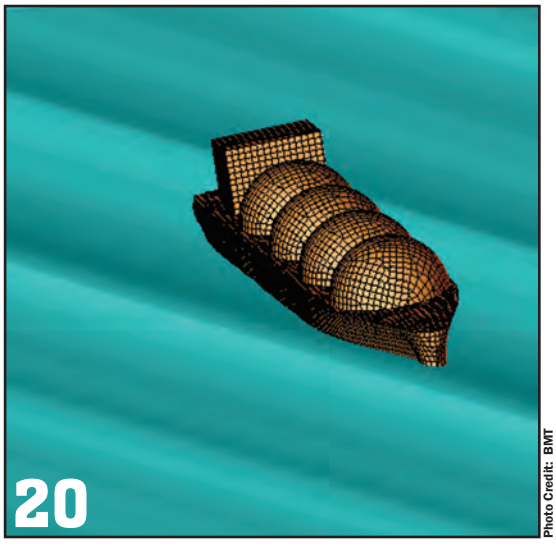

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Contents

Volume 55 • Number 8

Authors in this edition

Moniz

Rhonda Moniz is an ROV Pilot/ Engineer, Diving Safety Officer and Underwater Cinematrographer. Moniz is founder and Director of Operations for Benthic Exploration.

McGillivary

Philip A. McGillivary, US Coast Guard PACAREA, Alameda, CA Dr. McGillivary coordinates science for the US Coast Guard Pacific command and US icebreakers.

de Sousa

João Borges de Sousa, Dept. Electrical & Computer Engineering, Univ. Porto, Portugal João Borges de Sousa is with the Department of Electrical and Computer Engineering at Porto University in Portugal where he is also the head of the Underwater Systems and Technologies Laboratory.

Martins

Ricardo Martins, Underwater Systems & Technology Lab, Univ. Porto, Portugal Ricardo Martins became a researcher at Porto University's Underwater Systems and Technology Laboratory in 2005, where he is the chief software architect in charge of the software used in all of its autonomous vehicles.

Ryther

John 'Chip' Ryther is the Marine Operations Manager at CR Environmental, Inc. He has managed NOAA funded grants for the training of fishermen and outfitting their vessels and used fishing vessels for oceanographic survey operations for over 30 years.

Wright

Chris Wright is an ACSM Certified Hydrographer at CR Environmental, Inc. with 18 years of technical experience. He specializes in the interpretation and visualization of acoustic data; and ensured the Jamie Hanna was properly outfitted for multibeam bathymetric surveys.

Perrone

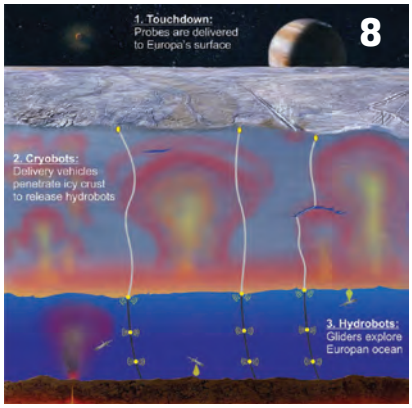
Eli Perrone is a senior technician and computer specialist at CR Environmental, Inc. with 10 years of experience in oceanographic operations. He assisted in the design and layout of the Jamie Hanna pilothouse and electronics installation for scientific studies.

Ruelas

An expert in defense and maritime solutions, Kevin Ruelas is the CEO of Channel Technologies Group, an integrated manufacturer of piezoceramic components, transducers and sonar technology.

Exploring Europa's Ocean

Talk about new frontiers: There is a project underway to create a system to explore the oceans on Europa, which lie under a thick, frozen crust, 390,400,000 miles from earth.



8

$140M Subsea Ship

What will $140m buy you these days? Plenty, if you're shopping for an ultra-modern subsea vessel.

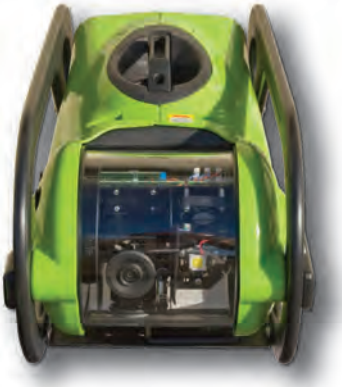

10

The Oceanographer

Rear Adm. Jonathon White assumes the title of "Oceanographer of the U.S. Navy.


51

SeaBotix



PART:

Little Benthic Vehicles

VIEW:

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

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

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

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

Contributing Editors
Capt. Edward Lundquist, USN (Ret.)
Rhonda Moniz • Claudio Paschoa

Production Manager
Irina Tabakina
tabakina@marinelink.com

Production & Graphic Design
Nicole Ventimiglia
nicole@marinelink.com

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

Sales & Event Coordinator
Michelle Howard
mhoward@marinelink.com

Manager, Accounting Services
Rhoda Morgan
morgan@marinelink.com

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

Manager, Marketing
Jocelyn Redfern
jredfern@marinelink.com

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

CIRCULATION
Kathleen Hickey
mtrcirc@marinelink.com

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

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

Mike Kozlowski
kozlowski@marinelink.com
Tel: (561) 733-2477 • Fax: (561) 732-9670

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

Gregory R. Trauthwein, Associate Publisher
& Editor of *Marine Technology Reporter.*
Email: trauthwein@marinelink.com

For an industry that is as global and technically advanced as the subsea industry *(case-in-point, kindly turn to page 8 of this edition and read about efforts underway to develop a system to explore the oceans under heavy ice cover ... on EUROPA, a satellite of the planet Jupiter sitting about 390.4 million miles from earth)* it is at the same time downright quaint, relatively speaking a 'small town' of personnel, companies, organizations and educational institutions that know each other or at one point or another have worked together.

One of my favorite (and one of the newest) features in ***MTR*** is the **"First Person,"** a feature section devoted to individuals in this field that have a unique story to tell; to be honest, I have yet to run into an individual in this field that *doesn't* have a unique story to tell.

This month we are thrilled to bring you a story from the crew at CR Environmental - **Chip Ryther**, **Eli Perrone** and **Chris Wright** - regarding the back story to the planning, construction and delivery of the 55-ft. lobster boat Jamie Hanna. A lobster boat in MTR, you ask? Read the story, starting on page 44, which describes how CR Environmental has a long and mutually beneficial working relationship, a relationship that began in 2000 when CR Environmental received a Fisherman Industry Grand from NOAA to train fishermen and to outfit their vessels for oceanographic survey work. A good story that speaks to the core of collaboration and efficient use of resources, I think you will agree.

(As a side, if you have an idea for a feature in this slot based on your own experience, I would love to hear it via email).

On the other side of the spectrum, we are pleased to offer a feature from another trio of authors, led by **Philip A. McGillivary**, U.S. Coast Guard PACAREA, regarding the "Networking of Maritime Fleets of Autonomous Systems for Science & Surveillance," specifically the benefits and challenges of the task to further develop the Integrated Ocean Observing System (IOOS). This story starts on page 32.

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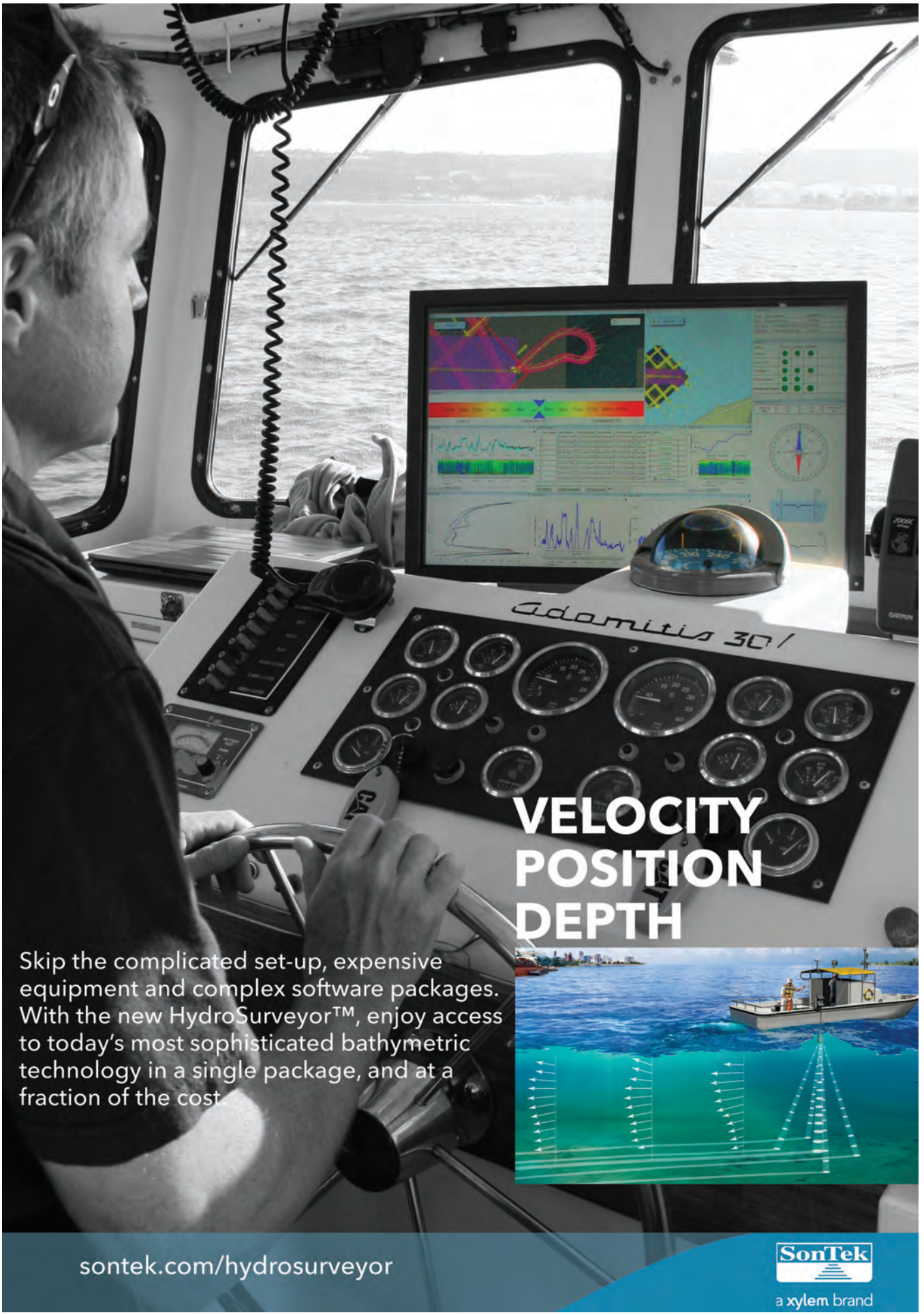

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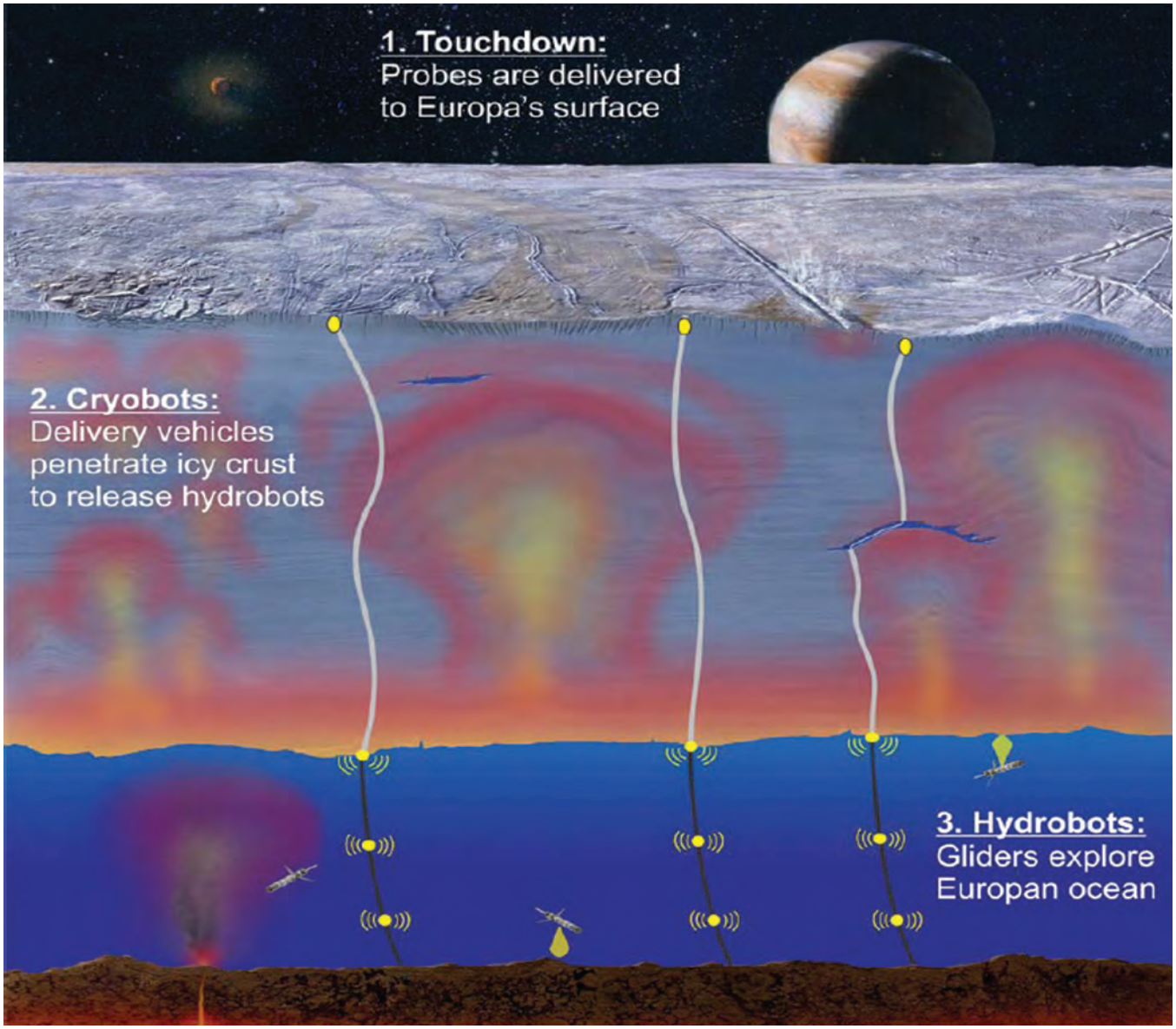
Exploring Oceans 390,400,000 Miles Away

While admittedly we have only cursory knowledge on the life, activity and interaction of our own earth's oceans, there is a academic collaboration intent on helping researchers discover the mysteries in bodies of water far, far away; more than 390 million miles away. The NASA Innovative Advanced Concepts (NIAC) project Exploration of Under-ice Regions with Ocean Profiling Agents (EUROPA) represents a joint effort by Leigh McCue, Craig Woolsey (VT) and William Moore (Hampton University) seeking to develop a technology "roadmap" that will describe what technologies need to be researched in order to successfully explore the oceans on Europa that lie beneath a thick, frozen ice crust.

The interest in Europa is robust, as its oceans represent the most likely place for life to exist in the solar system apart from Earth. The project aims to provide a stepping stone toward a mission to Europa which would use power efficient, long-duration, underwater gliders to search for signs of life under Europa's ice crust.

http://www.unmanned.vt.edu/europa



The image attached is adapted from a NASA JPL image.

H2X to Survey Vessel for Saudi Arabian University

H2X, a member of iXBlue's marine works division, won a contract to build a 43-m monohull survey vessel for a Saudi Arabian university. The vessel will be of a standard design with various modifications to meet defined operational needs. Constructed mainly from lightweight composite materials, the vessel will be propelled by two diesel and two classical shaft lines for transits, and by a pump-jet azimuthal stern thruster and have a bow thruster to ensure maximum maneuverability; it will also be fitted with a dynamic positioning capability. The vessel will be handed over to the owners complete with all the navigational, positional and survey equipment necessary to conduct scientific work from day one at water depths to over 2000m. "This is the second contract that we have agreed with this important client. The first was for a 15-m dual-hull survey vessel, which is due to be delivered in October 2012," said Charles Nissard H2X Sales Director. "We have forged an excellent relationship with the client during the work. We believe that this, together with the strength of our commercial proposal, was fundamental in securing this larger project."

H2X president Sebastien Grall, added, "The contract consolidates H2X's position in the professional workboat market.

In the past two years, we have been asked to build a total of six workboats, including three for scientific use. Before this we were absent from this market."

The vessel will be built at H2X's La Ciotat shipyard in the south of France, near Marseille. Design work is almost complete and construction of the vessel should start later this year. Delivery is scheduled for the second half of 2014. Contracts for the supply of the various onboard systems are expected to be awarded in the coming months.

The operational flexibility of the SX121 design enables the owner to operate in a wider range of market segments.

(Photo: Ulstein Group)

$140m Subsea Ship: *Cool Under Pressure*

When working in the most extreme offshore environments, crews have to be able to rely on the absolute integrity and performance of their vessels. Ulstein Group has joined forces with GC Rieber Shipping to offer the market a new standard in operational security and performance.

GC Rieber Shipping, the Norway-based harsh environment shipping specialist, has charged Ulstein with developing a high-capacity subsea vessel based on its SX121 design. This $140m ship, ordered in June 2012, alongside an option for a sister vessel, has been commissioned in response to strong market desire for offshore construction support vessels (CSVs) for deep and harsh environments.

Alongside state-of-the-art features, equipment and performance figures, the vessel will give GC Rieber Shipping maximum operational availability – a vital characteristic for both the company and those chartering the ship. Downtime should be minimized thanks to the 'operation+' feature, an evolution of GC Rieber Shipping's own 'fail-to-safe' design approach.

'Operation+' allows the vessel to con-

(Photo: Tony Hall)

(Photo: Ulstein Group)

tinue to operate even if it has experienced a significant failure. Bjørn Valberg, GC Rieber Shipping's Technical Director, explains. "Fail-to-safe means that even if a ship encounters a failure it is rendered in a safe condition. Our objective with this ship is to take that philosophy a step further."

"In the case of this vessel a single failure – such as a failure of a generator set, a single thruster or even an entire switchboard section (operating two generators and two thrusters) – will not threaten the redundant continuation of operations, giving charterers real peace of mind."

Valberg illustrates this with a real-life scenario involving subsea flex pipe laying – an operation the new vessel is optimized for – where, if a single failure was encountered, a 'standard' ship would be forced to terminate operations as redundancy would be jeopardized.

"And of course, if you are in deep waters with a substantial length of product, such as flex pipe, hanging from the ship, abandoning that operation is, well… it's quite obvious how difficult, time-consuming and expensive that is," he said. "This new vessel, thanks to 'operation+' is protected against that scenario – it could continue with its assignment. That's a hugely important characteristic of that vessel, helping the charterer meet the demanding expectations of the market."

(Continued on page 13)

Far Left Members of the technical design team: Per Arne Riksheim, Ann Katrin Barstad, Geir Sivertstøl and Terje Våge.

Left "This top-class vessel will strengthen our position in the high-end subsea segment," says Irene W. Basili, CEO in GC Rieber Shipping pictured with managing director Karsten Sævik in Ulstein Verft.

Sonardyne Tapped in Earhart Search

Following the discovery of a potential debris field at Amelia Earhart's proposed crash site offshore Nikumaroro Island in the Western Pacific, Sonardyne International Ltd is now able to reveal that it's Ranger 2 USBL tracking system together with a Lodestar GyroUSBL was the acoustic positioning technology of choice for the mission. Provided to Phoenix International, the expedition contractor, Ranger 2 was used to position both the ROV (Remotely Operated Vehicle) and AUV (Autonomous Underwater Vehicle) used in the underwater searches. The U.S. Navy's primary source of ocean search and recovery expertise, Phoenix International was contracted by The International Group for Historic Aircraft Recovery (TIGHAR).

Upon arrival at Nikumaroro Island, believed to be where Earhart crash landed, the Bluefin-designed AUV was deployed to survey the primary search area. After each session, the data from the AUV's suite of onboard sensors was reviewed by TIGHAR and Phoenix International sonar imagery experts to identify potential targets of interest. The ROV was then deployed to further investigate these targets. From onboard the Ka`imikai-o-Kanaloa (K-O-K) research vessel, Ranger 2 monitored the positions of the ROV and AUV in real time as they collected data and video imagery.

Ranger 2 is a high performance underwater target tracking system designed upon Sonardyne's latest 6G® and Wideband 2 technology platforms. The system calculates the position of a subsea target by measuring the range and bearing from a vessel-mounted transceiver to an acoustic transponder on the target, a technique known as Ultra-Short Base-Line (USBL) positioning. Multiple subsea targets over a wide area and range of water depths can be simultaneously and precisely positioned without having to deploy any additional equipment into the water. This results in fast and efficient survey operations.

Phoenix International's team onboard the K-O-K research vessel monitor the AUV's position using Ranger 2. The tracking transponder can be seen at the rear of the AUV.

Because of the short term nature of the project, Phoenix International elected to install Sonardyne's newly developed Lodestar GyroUSBL acoustic transceiver on their vessel. The instrument combines a survey grade AHRS (Attitude and Heading Reference System) and a USBL transceiver in a single unit that can be quickly installed on a vessel and requires only an initial out-the-box calibration. GyroUSBL can be subsequently moved from vessel-to-vessel without the need to perform a re-calibration, reducing delays and generating cost savings for owners.

"We are long-term users of Sonardyne technology and have found the accuracy and repeatability of Ranger 2 very impressive; we were receiving USBL hits from the AUV even though it was at the surface over 1000 metres away," said Evan Tanner, Assistant Project Manager at Phoenix International. "Working on ships of opportunity, a full system calibration is not always possible so the accuracy of GyroUSBL was just fantastic."

Ralph Gall, Technical Sales Manager at Sonardyne Inc. commented, "We're delighted that Ranger 2 with GyroUSBL has played such an important role in this historic project. Reliable and accurate tracking is of great importance during missions such as this and we knew that Phoenix International would benefit from the precision of Ranger 2, GyroUSBL and 6G despite the rocky, hostile environment they were working in."

The expedition departed on 3rd July on the 75th anniversary of Earhart's disappearance. TIGHAR's 10th expedition to the island, the mission was filmed by The Discovery Channel. You can also read TIGHAR's daily reports online.

www.sonardyne.com

$140m Subsea Ship: *Cool Under Pressure*

(Continued from page 11)

Geir Sivertstøl, principal engineer electrical systems at Ulstein, said the vessel, equipped with three main thrusters and three side thrusters (for stationkeeping during pipe laying), is fully optimized for carrying out assignments without interruption.

He notes: ”The switchboard system, propellers and diesel motors can be configured in groups of two, three or four. In case of an AUTR operation (i.e. the occurrence of a single major failure), the vessel will only lose one third of its installed power package and propulsion, and will be able to complete the operation with two-thirds of its capacity.”

“This,” he stresses, “in combination with the highest standards for dynamic positioning, DYNPOS-AUTRO, will ensure that charterers can look forward to operational standards that are custom made to tackle the world’s harshest - and potentially most resource rich - environments.”

GC Rieber Shipping’s version of the SX121 (yard number 300 at Ulstein Verft) has been equipped to meet the most diverse requirements, in the most demanding of conditions.

The 130 x 25-m vessel can accommodate a crew of 130 and cut through deep waters with a top speed of 14.5 knots, while meeting all the latest environmental standards. It is equipped with a powerful 250 ton AHC (active heave compensated) offshore crane, perfect for lifting and lowering heavy equipment to and from subsea environments.

A large cargo deck creates the optimal environment for a variety of operations, ensuring that the vessel is well placed to meet the hugely diverse demands of the offshore construction market. It also offers the ability to carry two ROVs (remotely operated vehicles) - one that will be launched from the starboard side and the other through a moon pool.

In addition, the ship has been designed with SURF (subsea umbilical riser and flowline) capabilities and is prepared for the installation of a below-deck basket/carousel with a 2500 ton capacity, as well as a 250 ton VLS (vertical lay system) for deployment through the moon pool.

It is, as Valberg stresses, a compellingly comprehensive package: “One of the main reasons for choosing the SX121 design from Ulstein was its inherent flexibility, which allows several types of operations and enables us to operate in a wider range of market segments.

The fact that we can use the 250- ton crane to the maximum of its capability both in offshore and subsea lifts on this vessel was another deciding factor.”

www.ulstein.com

For more than a decade, the American defense industry has been supporting the United States military as it engaged in active wartime missions to help protect and defend our country. We are now seeing a shift in missions and with that, new demands and needs from our key customers. At the same time, tightening budgets and the possibility of budget sequestration compound the challenges facing our warfighters and the industries that support them. While waiting for a decision on future budget realities, we must continue to deliver innovative products at the most competitive prices possible.

By Kevin Ruelas, CEO, Channel Technologies Group

Mid-size Contractors are Adapting to

New Demands

If Washington remains in gridlock and sequestration becomes a reality in 2013, the Department of Defense will see a $500-billion budget cut over the next 10 years. Even if sequestration is avoided, the defense industry is poised to experience large budgets cuts. Active troop size is being reduced as the armed forces transition from combat missions to peacekeeping and anti-terrorism activities. With this pending strategic shift, it is reasonable to assume that budgets will be similarly affected. Altogether, this spells an uncertain future from the conning tower to the manufacturing floor.

Challenging financial times provide the opportunity to broaden our market outlook and solve problems creatively. Mid-size companies, like Channel Technologies Group (CTG), can be more nimble than large contractors and can refocus their strategic vision to respond quickly to change. We already have the tools for success: expertise, affordability and quality control. The threat of sequestration is a reminder to go back to business basics and look for ways to do better. Find efficiencies, streamline operations, anticipate needs of the end user and identify new business opportunities. Companies need to weather these near-term budget uncertainties, but amid all the headlines, this is how we should be doing business all the time.

Changing Naval Needs

Today's naval military landscape is vastly different from that of the previous two decades. Previous naval operations targeting threats from global superpowers were executed in blue ocean space. Current missions in counter-terrorism and peacekeeping require a strong naval presence near coastlines. This means the majority of today's operations take place in shallow, littoral waters.

This shift in strategy demands a shift in technology. Cluttered by high levels of ambient noise and reverberation from activities such as commercial shipping, littoral waters undermine the strength of legacy naval technology optimized

Credit: U.S. Navy photo by Chief Photographer's Mate Andrew McKaskle

Current missions in counter-terrorism and peacekeeping require a strong naval presence near coastlines. This means the majority of today's operations take place in shallow, littoral waters.

for deep-water operations. The tracking and targeting abilities of sonar technology are especially affected. As a result, manufacturers must adapt to Navy, Department of Defense and government agency needs in order to stay on the cutting edge of technology.

Commitment to Innovation and Quality

Throughout America's manufacturing history, mid-sized firms like CTG have played an essential role in supporting the research and development that has powered new technology. Inherently, smaller companies can offer greater flexibility and increased low-risk options, creating a breeding ground for innovation.

Mid-sized manufacturers also add value to the larger prime contractors in the industry because of our focus, speed and specialization in technologies. In order to stay relevant to the future defense industry, whether or not budget sequestration occurs, we must dedicate ourselves to this role.

A striking example: torpedo technology, optimized for deep sea, has been slow to evolve over the last 20 years. The current littoral water battlespace for peacekeeping and anti-terrorism missions presents a harsh environment where quiet diesel submarines can operate without easy detection amidst shipping noise and the sounds of the sea floor. Mid-sized firms like CTG have the ability to take the lead and provide innovative sensor solutions essential to our Navy. However, developing those products will require a complete understanding of customer demands, translation of demands to research and development and delivery of quality products at competitive prices.

Maintaining the Competitive Advantage

The potential budget cuts threaten jobs in an already fragile economy, and more importantly, threaten the readiness of our forces. Mid-sized manufacturers like CTG will be affected. However, we must navigate economic uncertainty the same way we are confronting challenges and changes in the nature of military operations and the rapid pace of technology. The stakes are high and now is the time to focus on research and development and improve operations. Even the smallest improvements we make on our shop floor to raise quality and reliability today support the men and women who serve and protect our nation.

At CTG, we've embarked on a campaign to better understand our key customers, anticipate their needs and deliver quality products at the most affordable price point possible. The 2012 project focused on three key areas all aimed at improving our level of service for customers and strengthening the company.

1. We improved turnaround on orders. As a vertically integrated manufacturer, CTG has been able to achieve a 20 percent decrease in lead time and a 75 percent reduction in manufacturing downtime. We also cut down on overhead costs by integrating our businesses and consolidating inventory management and warehousing, thus enabling us to offer a more competitive price to end users.

2. We identified strategic partners to help grow. In 2011, CTG was acquired by private equity firm Blue Wolf Capital Partners. This has infused our business with the capital necessary to make updates at our manufacturing campus, as well as strategic advice on developing the technologies of the future.

3. We asked our customers what more we could do. Improving products for the end user requires a specific understanding of the customer and their needs. CTG has cultivated its reputation for quality with long and loyal customer relationships spanning decades in many cases. But we took this a step further and formalized a structure for customer input. In July 2012, CTG established a strategic advisory board led by three retired Navy admirals. By opening a dialogue with former end users, CTG will be in a better position to provide solutions to the current and future needs of our consumers.

Expanding Our Customers

Streamlined operations, commitment to research and development, and the recognition of an uncertain future are all keys to weathering today's budget uncertainty. In addition, companies must diversify their portfolios. This gives mid-size companies flexibility, while Washington is in budget gridlock. The ability to expand technologies and meet new market demands is the key to longevity.

American industry has a long history of developing a product in one area, then transferring its use to another area. One of the most well-known examples is technologies developed specifically for NASA, which serve as case studies for many other industries. Many NASA products that are critical to a mission's success are now used to enhance daily life and are integral to medicine, transportation, technology, recreation and public safety. Some of these include memory foam, dust busters, firefighting equipment and water purification systems. Even more notably, NASA's design of the integrated circuit, the forbearer of the microchip, was developed during the Apollo era in the mid-to late-1960s. The integrated circuit transformed the industry and is used in practically all electronic equipment today.

Mid-size companies like CTG are taking cues from organizations like NASA and venturing into new markets. Like NASA, CTG is dedicated to providing new groups of customers the quality control we provided our armed forces. The use of sonar technologies is applicable across a number of industries and now is the time to expand. CTG is producing air-bubble detectors with ultrasonic piezo transducers for a medical device that ensures liquid flows with no air or gas pockets in transfusions or dialysis. This reliable device, designed to the highest quality standards, operates in a similar to the sonar used in submarines.

Manufacturing isn't known as a laterally thinking business, but our business co-locates scientists and engineers who approach technology a bit differently. Both rely on design and discovery, but where science defines what is possible, engineering makes it possible. As CTG's material scientists explore the benefits and boundaries of single-crystal manufacturing, our engineers are applying this new material to solve practical problems with new transducers and sensors.

The oil and gas industry is another prime field available for expansion. This market continues to boom and provide opportunities for mid-size companies to play a part in America's domestic energy future. Similar to our work with the medical industry, CTG has expanded to work with oil and gas companies, providing products that assist in mapping for offshore drilling and exploration.

The technologies and products developed by mid-sized defense contractors will always be first and foremost for the use of our military. Here at CTG, we take pride in knowing that our technologies are being used by the U.S. Navy to help protect and defend our country. We will continue to serve our country in this role even if budget cuts do occur. However, by making changes on our shop floor, deepening our understanding of our key customers' needs and expanding our customer base into new areas, we are improving our bottom line and helping to protect our business.

About the Author

An expert in defense and maritime solutions, **Kevin Ruelas** is the CEO of Channel Technologies Group, an integrated manufacturer of piezoceramic components, transducers and sonar technology.

MARINE TECHNOLOGY REPORTER

2013 Editorial Calendar

January/ February — Ad Closing: Feb 1

Subsea Vehicle Report: Unmanned Underwater Systems

Market: Renewable Energy –Wind, Wave & Tidal Power Report
Product: Scientific Deck Machinery
Regional Report: Northeast USA

Bonus Distribution
Subsea Tieback
March 5-7
San Antonio, TX

March — Ad Closing: Mar 1

Instrumentation: Measurement, Processing & Analysis

Market: Sonar Systems & Seafloor Mapping
Product: Umbilicals, Cables, Connectors & Power Supply
Preview: Ocean Business 2013

Bonus Distribution
Ocean Business
April 9-11
Southampton, UK

April — Ad Closing: Apr 1

Offshore Energy Report

Market: Seismic Vessels & Systems
Product: Deepwater Positioning, Mooring & Anchoring
Report: Environmental Monitoring, Remote Sensing & Pollution Control

Bonus Distribution
OTC
May 6-9 Houston, TX

May — Ad Closing: May 7

Hydrographic Survey

Market: Salvage & Recovery
Technical: Seaflooor Mining
Product: Subsea Inspection

Bonus Distribution
Energy Ocean International
June 10-12 Warwick, RI
UDT 2013
June 18-20 Hamburg, DE

June — Ad Closing: Jun 3

AUV Operations

Market: Communications, Telemetry & Data Processing
Product : Deck Machinery, Winches, Cranes and Ropes
Report: Seafloor Engineering & Remote Operations

Submission Deadline:
Entries for the MTR 100 must be submitted to the editor by June 28

July/ August — Ad Closing: Jul 26

MTR 100

The MTR 100 is an invaluable guide for companies, government agencies, municipalities, research institutions and universities

Special Edition:
MTR 2013 Global Subsea Products & Services Directory

Bonus Distribution
AUVSI Aug 12-15
Washington DC

September — Ad Closing: Aug 28

Ocean Observation: Gliders, Buoys & Sub-Surface Monitoring Networks

Market: ROV Technology: Workclass to Micro Vehicles
Products: Underwater Imaging: Lights, Cameras, Sonar
Regional Report: Southern California
Preview: Oceans 2013

Bonus Distribution
Oceans '13
Sept 23 to 27
San Diego, CA

October — Ad Closing: Oct 4

Subsea Defense

Market: Naval Underwater Warfare Technology
Product: GPS, Gyro Compasses and MEMS Motion Tracking
Special Report: Training & Education Institutions & Facilities

Bonus Distribution
SNAME
Nov 6-8 Seattle, WA

November/ December — Ad Closing: Nov 22

Fresh Water Monitoring & Sensors

Market: Marine & Subsea Engineering & Construction
Product: Offshore Inspection, Repair & Maintenance
Preview: Underwater Intervention 2014

Special Edition:
2nd Annual Underwater Imaging Contest

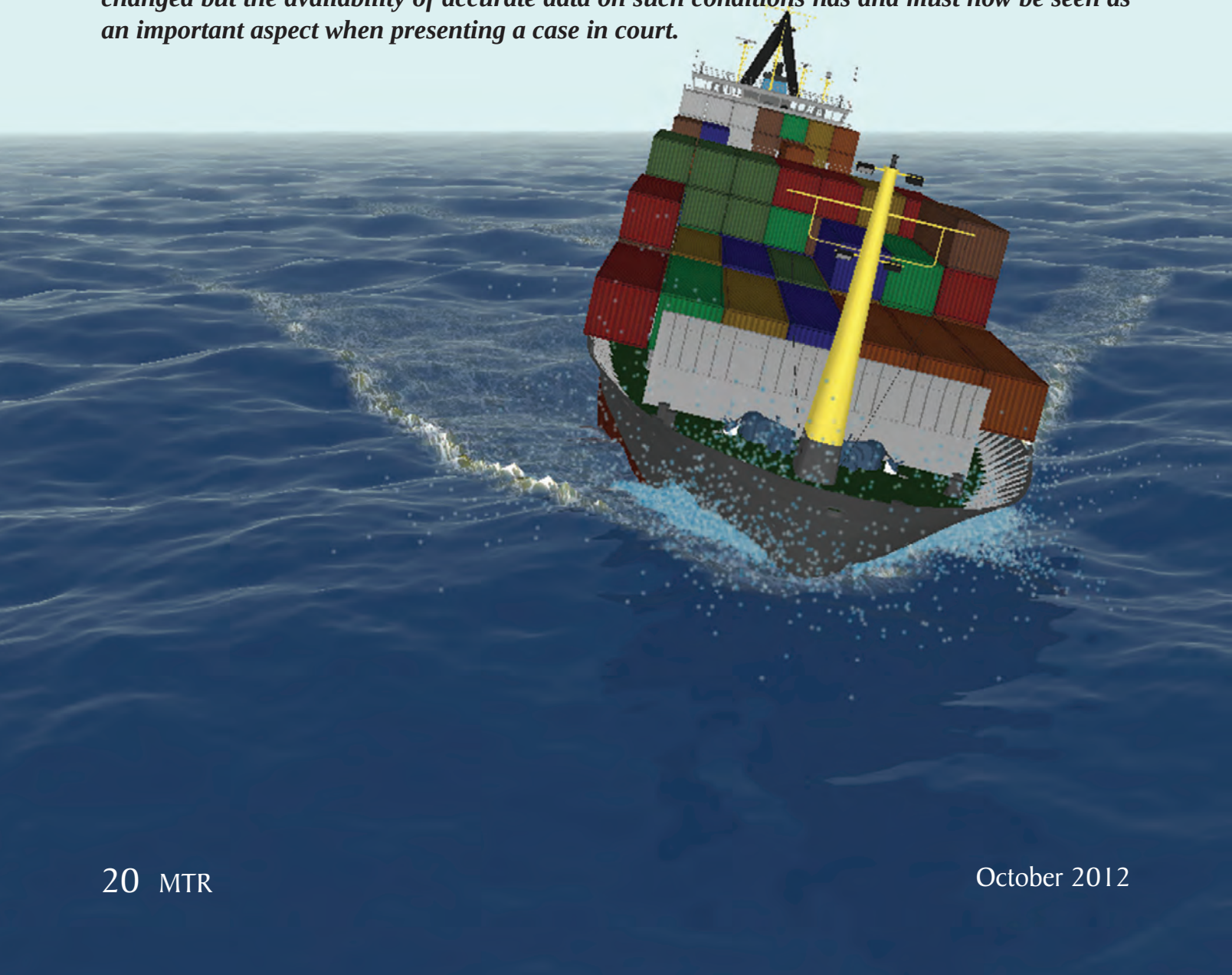
Bonus Distribution
Underwater Intervention

Please note that the publisher reserves the right to alter this calendar. All features are subject to change in light of industry trends and developments.

Photos: Mara Tuchman

Forensics of the Sea

The sheer magnitude of insurance claims year on year within the shipping industry is striking. The complexities that now come with these claims is placing increasing pressure on surveyors to employ ever more sophisticated techniques in their quest to determine the reasons behind an incident and ascertain where the liability falls. Here we explain the complexities behind marine investigations. Particularly highlighting how modern methods such as simulation techniques can allow accurate reconstruction of incidents with the ability to reduce risk and uncertainty. The authors highlight the importance of understanding the metocean (wind, wave and current) conditions at the time of the incident. Weather and sea states have always been the dominating factors of incidents occurring or revealing a weakness in a system on board a ship. This hasn't changed but the availability of accurate data on such conditions has and must now be seen as an important aspect when presenting a case in court.

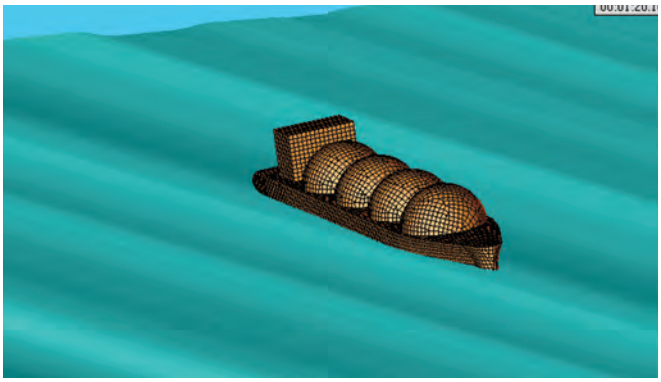


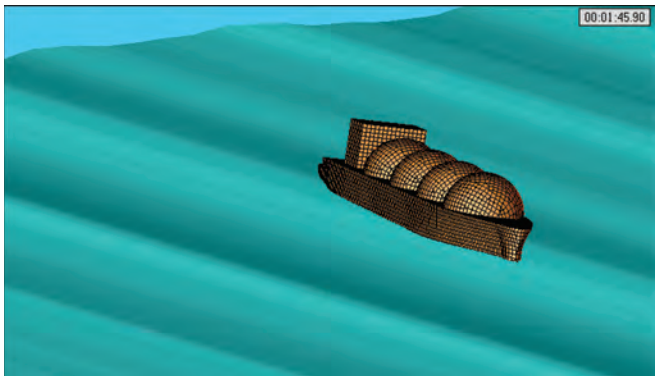
By Jeroen De Haas, MD, BMT De Beer and Han Wensink, MD, BMT ARGOSS

Without shipping, global trade, the bulk transport of raw materials and the import/export of affordable food and manufactured goods would simply not be possible. Despite the fact that ships have never been so technically advanced, carried so much cargo, or been as environmentally-friendly as they are today, accidents still happen, which in turn leads to many claims being made.

Although complex, the common reasons for these accidents occurring can include a lack of knowledge of the stringent requirements associated with cargo transportation and human error. Over the last three years in particular, where the maritime logistics supply chain has had to cope with the economic crisis and look at ways of reducing costs, there has also been a more worrying trend towards cutting corners in some areas of transportation. Lashing and securing of cargo is one such area where in the past, the approach was to invest in marine surveyors to monitor and certify the lashing and securing. The decision to reduce or avoid the costs for such expert intervention only serves to exacerbate the issue and increase the number of claims. On the other hand, the use of accurate weather forecast information can be deployed to reduce lashings in a responsible way, avoiding the costs of unnecessary "over lashing" of the cargo.

Carrying out marine investigations after an incident is no mean feat and can be extremely complex and time-consuming. Firstly, the investigators must try and provide a reconstruction of what happened. Courts always have to rely on witness statements which, by its very nature are always going to be somewhat subjective. Therefore, it's important for





courts and arbitrators to obtain an expert opinion on the cause of the incident, based on certainties rather than assumptions. This is vital to arrive at an objective and well-founded conclusion or arbitration award.

The forensic investigators must secure the necessary evidence in order to prove what they think has happened, did indeed occur. Technology can play an integral role within this phase so that robust and reliable evidence can be sourced. However, shipping is a very traditional market and there is an inherent hesitancy towards change. It is for this reason that the majority of investigations are still to this day, carried out using very basic methods such as notebooks and cameras, despite more sophisticated technologies being available.

Most importantly, it is the job of the surveyor to demonstrate to a court or arbitration panel that the evidence they are presenting is the most reliable and robust available. Although London in particular has very qualified marine arbitrators and courts, the industry is witnessing a geographical shift change

where many cases are now being presented to a judge who has little or no experience of being at sea. This lack of marine knowledge can often hinder a case, especially if the evidence being presented is technically complex, subjective, or insubstantial due to the use of basic assessment techniques.

Harnessing sophisticated technologies such as simulation and 3D animation within complex marine investigations can be the difference between winning and losing a case. Ultimately, technology can help to minimize the level of uncertainty and provide more robust evidence to courts and arbitration panels. So what are these technologies and how much of an impact can they have?

Although laboratory testing has been around for many years, the advanced quality and the level of testing is most certainly noteworthy. For example, if we are looking to detect possible chemical contaminants for a particular case, 10 years ago we would be able to measure in parts per million. Today, through cutting edge technology and equipment we are able to measure in parts per billion, therefore the level of accuracy when determining possible contaminants is far greater. The ability to evaluate ship motions by carrying out computer modelling or tank testing is also of significant advantage, providing additional assurances that the conclusions reached are indeed correct and accurate. Determining the actual ship behavior at the time of the collision or incident through innovative simulation techniques can provide the courts with a real appreciation of the conditions the ship experienced. By using the vessel's recordings, AIS data (Automatic Identification Systems) and environmental data (wind, current, sea state etc.), this information can be directly plugged into a model which simulates

The authors (left) Jeroen De Haas, MD, BMT De Beer and (right) Han Wensink, MD, BMT ARGOSS stress how modern methods such as simulation techniques can allow accurate reconstruction of incidents with the ability to reduce risk and uncertainty. They also highlight the importance of understanding the metocean (wind, wave and current) conditions at the time of the incident.

how the vessel was behaving, leading up to the time of the accident or incident. This can provide the court or arbitration panel with a much clearer and accurate picture of what actually happened.

Couple this with high quality metocean information which is backed up by satellite observation and surveyors would be able to provide much more reliable and robust evidence. A ship owner can exonerate its liability if it can prove that the weather at the time of the incident is deemed excessive and extraordinary. Never in history have insurers or owners really succeeded in providing such information unless they were armed with weather statements from other ships in the area at the time of the incident, who also experienced similar problems.

In a recent case where BMT provided surveying support, a ship lost its hatch covers in extremely heavy weather and as a result, the cargo got wet and the ship almost sunk. By providing detailed wave data that demonstrated the waves were in the region of 30 metres at the time of the accident, the insurance company succeeded in proving that this incident occurred due to extreme weather conditions and the ship owner was able to exonerate itself from liability. Cases similar to this have resulted in a considerable step change in marine surveying and insurance as this type of evidence has never been available before.

Furthermore, technology such as 3D animation can use the predictions determined by the simulation model to create a cartoon reproduction to visually appreciate the conditions and course of events at the time of the incident. This can be particularly effective for a judge who may not have any marine experience.

Trying to explain to a judge, who has no knowledge of a ship, how the ship exactly behaved at the time of the incident, would be near impossible to do on a piece of paper. 3D animation therefore, is an extremely effective way of presenting the case.

By using these sophisticated technologies, BMT is putting itself at the forefront of marine surveying. Although shipping has always been described as a traditional market, the new generation of younger people coming into the industry and their enthusiasm for new technology will certainly help to drive such modern methods forward. However, as we see less and less ex-mariners handling the cases and more who are trying to solve these cases based on a legal merit alone, we must try to educate the industry in recognizing that technological insight can be the difference between winning and losing a case.

Offshore drilling and production platforms are complex systems, with limited space and round-the-clock operations in often hostile conditions. When outfitting them for long-term production and productivity, choose carefully.

By Mark Casselton, Product Manager, TE Connectivity

Cabling Choices

Save Space, Weight and Increase Safety in Offshore Applications

Platforms continue to become more compact and more sophisticated with an ever-increasing complexity of electronic systems, sensors, communications and safety equipment. More cables are therefore required to fit into more densely populated areas. While performance is paramount, space is always at a premium and weight is always a concern. Tradeoffs in weight mean savings in one area may allow more equipment in another area. Thus, designers and operators are always looking for ways to save space and weight—without compromising mission performance or personnel safety.

Cabling is sometimes overlooked as a means of saving space and weight. But as the topside becomes more automated and the number of cable runs increase, the sum of all the cables can represent significant size and weight, providing significant impact on the construction and costs of the platform.

Lightweight cables, such as the C-Lite cable family from

TE Connectivity, represent an opportunity to reduce the size and weight of control, communication, and instrumentation cables—while offering the same or better electrical and mechanical performance than conventional cables. Consider that the cabling on an offshore platform can run to several tonnes. Lightweight cables can save 25% to 30% in a typical application. What's more, their diameter is reduced by 30% to 40%, freeing up valuable space on the platform.

The space and weight reductions of the cable mean additional savings in the cabling infrastructure. Cable trays and other supports can be smaller and lighter. The same holds true for the glands. Tighter bend radii are also a benefit of a reduced-diameter cable, which can simplify pathways and the installation and routing of cable.

With more than 475 km of cabling on a typical large offshore platform, lightweight, thin-wall cable offers potential savings of up to 105 tonnes topside. The total cabling system – including smaller cable glands, trays and transits, can lead to overall weight savings of approximately 165 tonnes and cost savings in excess of 15%.

Smaller, lighter cables are of limited benefit if they offer reduced performance. In the demanding environment of an offshore platform, cables must offer:

- ***Mechanical robustness to resist abrasion***
- ***Environmental toughness to resist temperatures, seawater, oil, solvents, and petroleum mud***
- ***Safety, which includes low toxicity, low flammability, and circuit continuity in the event of a fire***

The key to these size and weight reductions is the use of a unique thin-wall insulation used on the conductors. A typical cable used topside meets the requirements of EN60092 and has an insulation wall thickness of 0.8 mm. Thin-wall insulation, on the other hand, meets the same performance requirements while reducing the thickness to a mere 0.2 to 0.3 mm. The only difference between the traditional cable and the lightweight cable in Figure 2 is the type and thickness of the insulation. The size reduction of thin-wall insulation is dramatically apparent.

Figure 3 illustrates the cascading effects of the size reduction of a single cable by showing multiple cables in a tray. Reductions of 40% are routine—with the benefits of smaller pathways, lighter-gauge cable trays, and smaller glands and feed-throughs. In retrofit or upgrade applications, thin-wall cables allow more cables in the same existing space. As plat-

Fig. 1.
As offshore platforms become more sophisticated, the need for efficient use of space increases.

forms increase automation and monitoring, the ability to accommodate more cables grows.

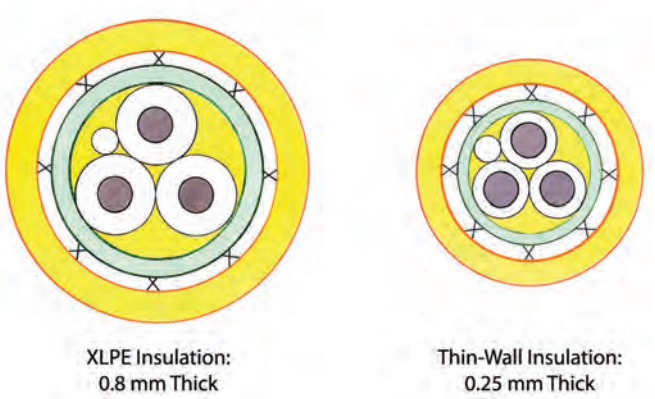
Mechanical and Environmental Toughness

Cables used in offshore platforms must meet rigorous requirements of standards issued by organizations such as ABS (American Bureau of Shipping), DNV (Det Norske Veritas), GL (Germanischer Lloyd), and the International Electrotechnical Commission (IEC).

Most topside cable will either meet IEC60092-359 SHF-1 or SHF-2 requirements for oil resistance in petroleum applications. SHF-1 is a general-purpose specification that includes resistance to common fluids. SHF-2 is more rigorous, addressing resistance to the more demanding petroleum muds used in drilling.

Lightweight cables are gaining recognition from standards-setting organizations, making it easier and more convenient to specify them in offshore applications. Of particular note, TE's C-Lite cables have gained Germanischer Lloyd certification, the first—and at present only—thin-wall lightweight cables to be certified. Such listings underscore the ability of thin-wall cables to perform in the harsh environment of offshore platforms and allow application without additional time-consuming evaluation and testing.

Fig. 2. Thin-Wall Insulations Can Significantly Reduce Cable Size and Weight



Safety

Safety, especially in a fire, is critical in offshore platforms. Cable jackets are either zero halogen or low-smoke zero halogen (LSZH). Zero-halogen materials emit reduced levels of

toxic gases when compared traditional cable materials. Toxic gases are not only a hazard to humans, but they can have a corrosive effect on equipment. Halogen-free materials protect personnel, but may still generate significant smoke that can hamper visibility. LSZH materials allow visibility to be maintained by generating very low amounts of smoke.

Conventional limited-fire-hazard cables offer low combustibility to minimize the growth and spread of a fire. They also produce varying degrees of corrosive gases, carbon monoxide, and smoke and can fail within minutes.

C-Lite FR cables offer a composite conductor insulation that combines limited-fire-hazard performance with fire resistance to allow prolonged operation during firefighting and evacuation. They are an excellent choice for alarms, emergency lighting, and controls.

Using a mica wrapping under the main insulation, these cables can continue to operate even as the jacket and insulation materials fail. Mica remains stable at very high temperatures, providing a physical barrier and an electrical insulation under pyrolysis conditions. Such operation can be critical to safety, alarm, and control systems, allowing circuit continuity and preventing short circuits for over 120 minutes at temperatures to 1000°C.

Full Range of Multiconductor Cables

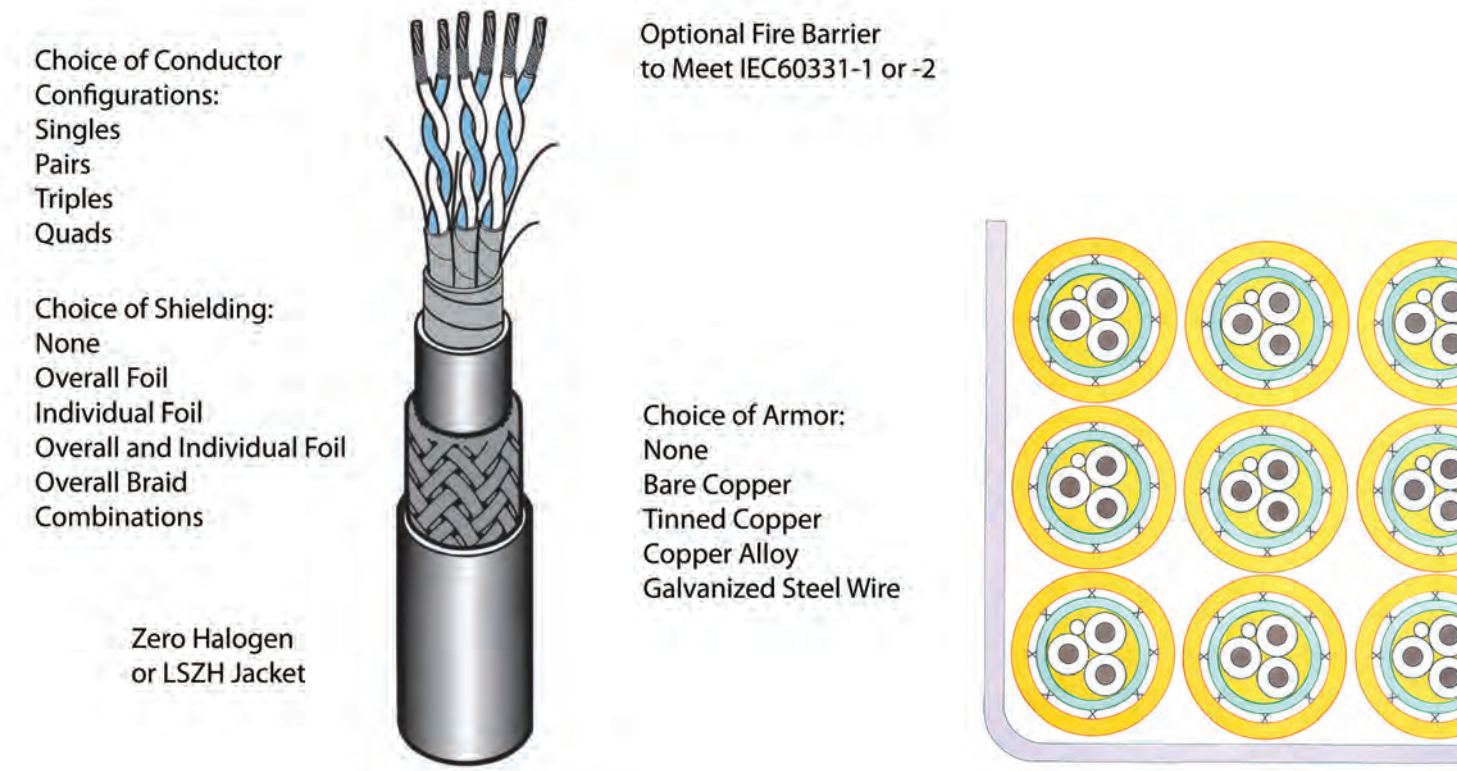
As shown in Figure 4, C-Lite cables are available in common cable configurations needed for offshore and marine use in power, lighting, communications, and instrumentation. Options include

- ***Conductor sizes from 0.50 mm2 to 10 mm2 (24 to 12 AWG) for both signal and power***
- ***Multiconductor, multipair, multitriple, and multi quad configurations***
- ***Conductor counts ranging to 50 singles, 37 pairs, or 24 triples***
- ***Stranded conductors for flexibility***
- ***Unshielded, foil shielded, braid shielded, or foil/braid shielded***
- ***Armoring***
- ***Ratings of 150/250 V or 600/1000 V***

C-Lite is also available as discrete hook-up wire.

The cables come in two main families: CL90 and CL105. CL105 cables use a cross-linked LSZH jacket and offer SHF2 resistance to oils, solvents, fuels, and mud. While most marine agencies require an operating temperature range from -15°C to +105°C, CL105 cable offers a more generous range from -30°C to +120°C.

Fig. 4. Lightweight, Thin-Wall Cables Are Available in a Wide Range of Configurations



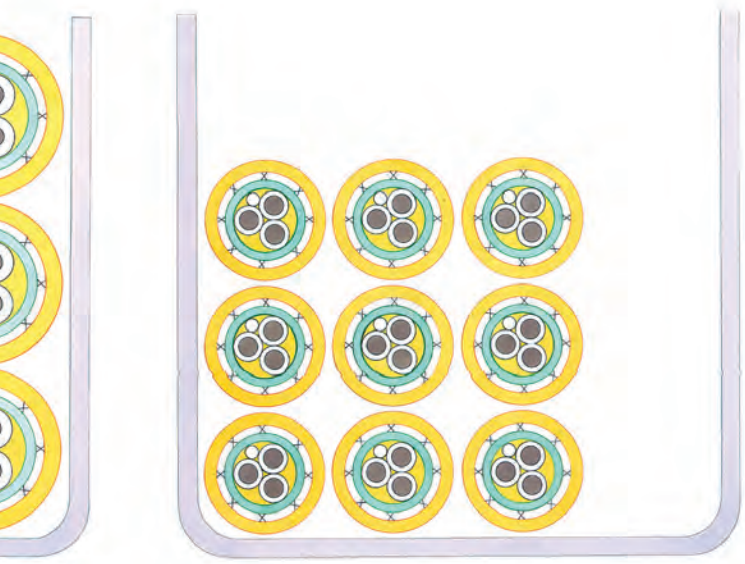
The more economical CL 90 cable meets SHF1 fluid requirements and uses a zero-halogen, low-fire-hazard jacket. Its temperature range is -25°C to +90°C.

The range of available lightweight thin-wall cables provides a comprehensive solution to communication, control, and instrumentation needs on offshore platforms. Platforms that standardize on such cables can save significant weight, reduce the space consumed by cables and cable management hardware, and provide for the safety of personnel through halogen-free and fire-retarded designs. The cable are gaining wider acceptance as platform designers and operators look for innovative ways to save.

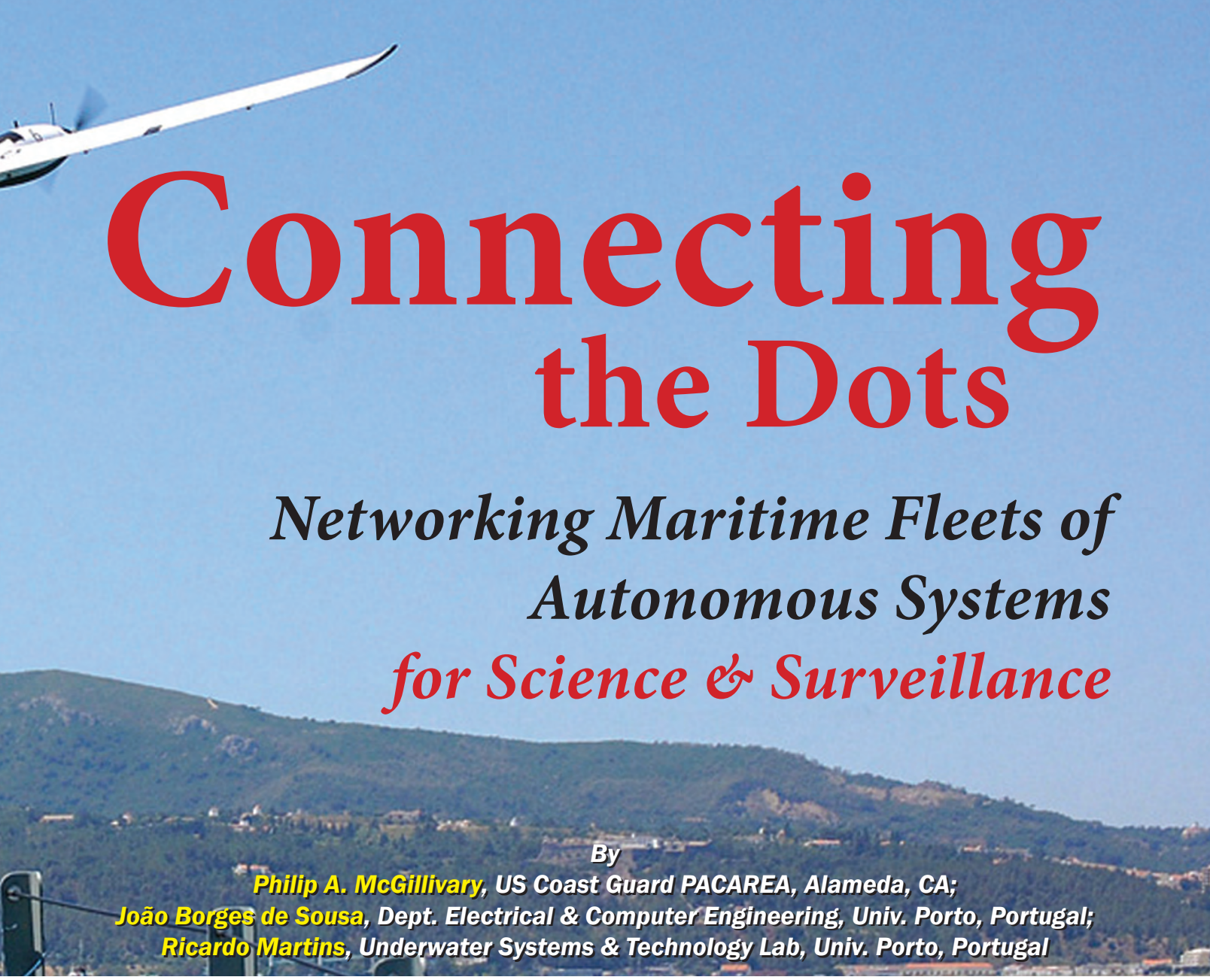
About the Author

Mark Casselton is Product Manager for Commercial Marine Wire & Cable Products within TE Connectivity, Global Aerospace, Defense & Marine. Mark has more than 23 years' experience in the marine wire and cable industry and has extensive experience in all aspects of product and market development. Email: mark.casselton@te.com

Fig. 3. A Demonstration of the Space-Saving Advantages of Lightweight, Thin-Wall Cables



A network of national observatories is being coordinated to provide ocean data for the Global Ocean Observing System (GOOS, http://www.ioc.goos.org). Many observatories are surface or seafloor moorings with sensor arrays. Where moorings are cabled to shore for power, a few observatories include buoyancy gliders as observing system components. Discussions have been underway to further develop Integrated Ocean Observing Systems (IOOS) which also include propeller-driven autonomous underwater vehicles (AUVs), autonomous surface vessels (ASVs), and autonomous or unmanned aircraft systems (UAS).



Connecting the Dots

Networking Maritime Fleets of Autonomous Systems for Science & Surveillance

By
Philip A. McGillivary, US Coast Guard PACAREA, Alameda, CA;
João Borges de Sousa, Dept. Electrical & Computer Engineering, Univ. Porto, Portugal;
Ricardo Martins, Underwater Systems & Technology Lab, Univ. Porto, Portugal

This is a logical approach for IOOS because these autonomous technologies together provide greater spatial and temporal sampling than fixed observatories and do so more cost-effectively than manned ships or aircraft. Propeller-driven AUVs and ASVs can also sample in shallow waters, at spatially limited features (like oceanographic fronts), and areas of high current velocity where buoyancy-propelled gliders have limitations. Additionally, by combining sub-surface, surface, and airborne sampling platforms, collection of data on air-sea gas, heat and moisture fluxes is possible for studies of climate dynamics and ocean acidification. Finally, autonomous system networks can be cost-effective for maritime surveillance in search and rescue (SAR) cases, to monitor illegal fishing, or to respond to ship groundings or oil spills without risks to human health and safety.

DTN Communications Enable Near Real-Time Control of Autonomous Observing Systems

In making networks of autonomous systems effective ocean observing systems (OOS) components, several capabilities are required. The first requirement for using multiple autonomous vessels in an OOS is a reliable communications system across vehicles underwater, at the surface and in the air. Delay/Disruption Tolerant Networking (DTN) communication protocols have been adopted by ocean scientists. DTN communications protocols know when links are disrupted, and resume transmitting data when the communication link is re-established. This DTN functionality is important for large file transfers in communications-challenged maritime environments.

A series of ocean field exercises coordinated by the Portuguese Navy and the University of Porto, called REP (Rapid Environmental Picture), have focused on demonstrating Delay/Disruption Tolerant Networking communications between ships, AUVs, ASVs and UAS. This has allowed near real-time control and data exchange among platforms to coordinate control and inter-vehicle interaction for an optimally-employed autonomous OOS network.

One of the future challenges in managing autonomous sampling networks is that they produce prodigious data volumes from HD video, high frequency acoustic sensors, multi-beam seafloor maps, and UAS lidar data, all with high bandwidth transmission requirements.

Figure 1 The REP-12 exercise included ships, multiple autonomous underwater vessels (AUVs), large and small autonomous surface vessels (ASVs), and several unmanned aircraft systems (UAS).

During REP-12, the communication system used underwater acoustic modems on the AUVs and ASVs, running DTN protocols. The ASV and UAS used wireless telecommunications protocols running DTN, and were tested for communications between UAS and ship. Communication with ships, manned aircraft and shore stations was also possible using a deck-mounted MANTA DTN communications hub.[1]

DTN Communications Enable Adaptive Sampling by Interactive Autonomous Systems

DTN communications enable multiple autonomous sampling network components to exchange information in near-real time despite episodic communication disruptions. This allows different autonomous components to interact and take advantage of adaptive sampling software to detect changes in ambient parameters, and respond by increasing sampling rate and initiating anomaly mapping programs. The resulting automated sampling gradually maps features such as oceanographic fronts, phytoplankton blooms, oil spills or gas plumes.[2] Adaptive sampling also allows autonomous systems to perform maritime surveillance such as by responding to acoustic detection of fishing or other vessels in restricted areas. Adaptive sampling systems have been developed for individual autonomous components, and used in short-term experiments for multiple systems of similar vehicles (e.g. gliders, surface vessels, or unmanned aircraft). However, the ability to coordinate multiple autonomous vessels of different types (underwater, surface and air) for sampling and surveillance is still a work in progress critical for future OOS operations.[3] The goals of the most recent field experiment off Portugal, REP-12, which included ships, AUVs, ASVs, and UASs, were to further develop capabilities for communications, controls and adaptive sampling of an integrated network of autonomous (and manned) OOS components.

REP-12 Goals and Results

The REP-12 experiment took place off the coast of Sesimbra, Portugal, but continued further north from the Santa Cruz airfield. It involved a Portuguese Navy ship, large and small propeller-driven ASVs, as well as the wave-propelled Wave-Glider ASV (from Liquid Robotics, Inc.). Autonomous underwater vehicles included: LAUV developed by Porto University and Gavia from Teledyne Gavia. Several LAUVs with different sensors and acoustic modems were tested in this experiment.

Several autonomous aircraft developed by the Portuguese Air Force Academy and Porto University (PITVANT collaborative UAS program) were used in these experiments, some being deployed and recovered from civilian airports under monitoring of the Portuguese Air Force, and others launched and recovered aboard the Naval vessel offshore.

UAS Specifics:

Alfa UAS -Wingspan: 2.4 m; Weight: 12 kg; Payload: video camera; Endurance: 6h.

Alfa Extended UAS - Wingspan 3.6 m; Weight: 22 kg; Payload: video camera; Endurance: 2h (electric engine).

Hand-launched UAS - Wingspan: 1.8m; Weight: 2.5Kg; Payload video camera; Endurance: 40 minutes.

UAS for ship use were hand-launched, and retrieved shipboard without incident using a recovery net. The fundamental goal of the experiment was to test optimized communications performance using DTN protocols among the OOS autonomous components, and demonstrate control and adaptive sampling capabilities.

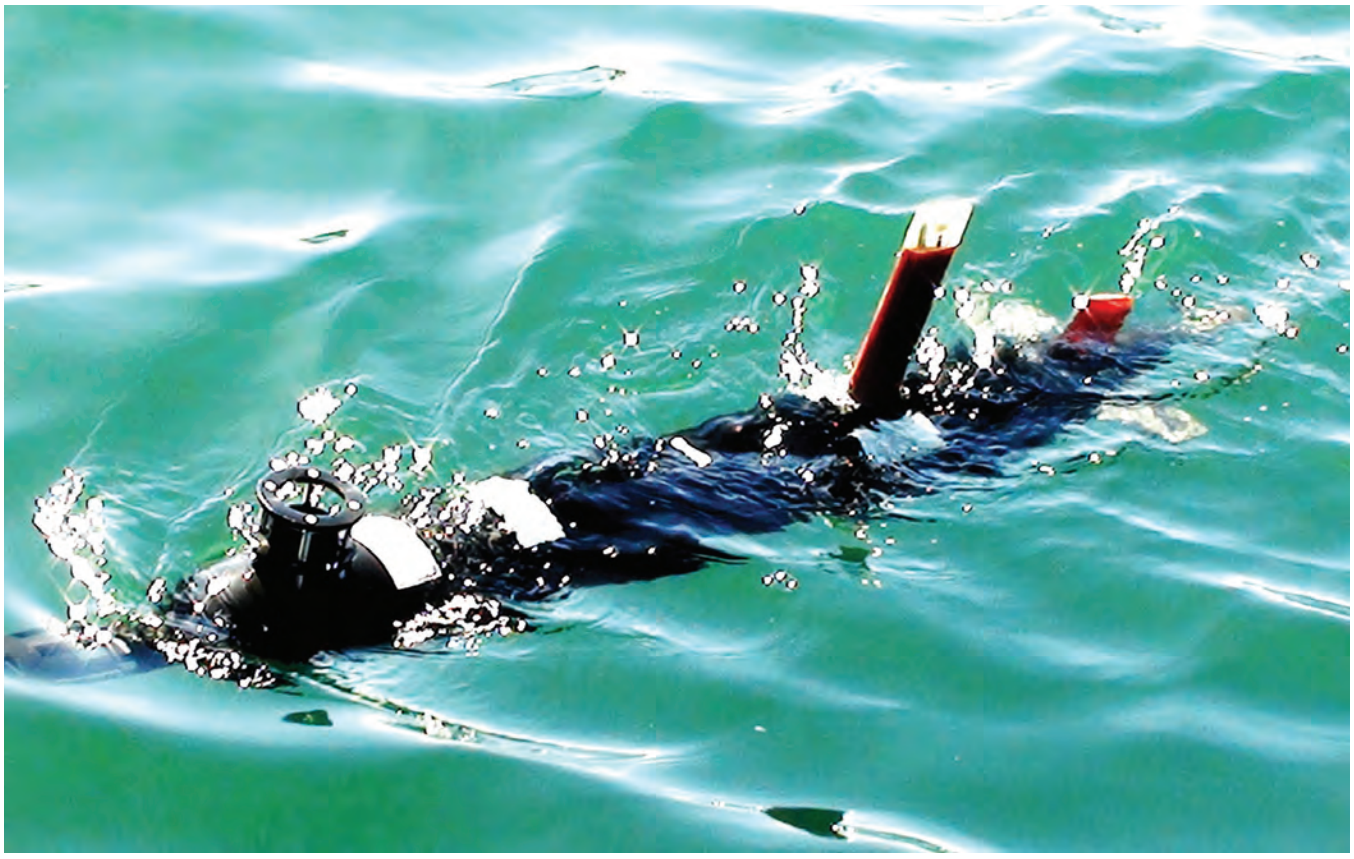
Three principal results from the REP-12 field exercise should abet future capabilities for OOS science and surveillance. The first result was that using DTN communications, humans could see data in near-real time and direct autonomous systems sampling when desired. This result linked mixed-initiative control of an AUV over acoustic modems with on-board planning. In this experiment one human operator interacted with the AUV on-board planning and control software (TREX+DUNE).[4] The operator sent high level control objectives such as "GoTo-Location," "PeriodSurface" and "Loiter" for execution by the AUV. The operator was also able to remove high level control objectives from the list of objectives to be executed by the AUV. The onboard planning and control system selected the high level objective to be executed next without any intervention from the operator. This was done in a truly autonomous manner. Another goal of REP-12 was to demonstrate capabilities of multiple autonomous components of an OOS for maritime law enforcement and environmental monitoring and response. Thus a second important REP-12 undertaking was UAS surveillance of maritime traffic in shipping lanes to monitor illegal oily water discharge and trajectory, ships in distress or adrift, and the presence of marine mammals in ship channels. In this experiment UAS were tasked to send real-time video of ships navigating in the shipping lane (approximately 20 NM from shore). The UAS were controlled to track specific ships for surveillance from the shore ground station or from another ship.

A third key result of REP-12 again involved DTN communications between AUVs and ASVs. One use of AUVs is to conduct seafloor surveys which can be effective in cases of ship groundings, mapping storm-related harbor debris in shipping channels, or other seafloor anomalies. In the REP-12 experiments seafloor side-scan surveys were conducted with a fleet of AUVs in communication with each other and ASVs over wireless and acoustic networks with DTN support. In this experiment ASVs relayed data (e.g. side-scan images) from an AUV to a remote operator and transmitted commands to the AUV to redirect survey plans. CTD data was also received at 1Hz from the AUV with the help of acoustic modems.

Improving Integration of Autonomous Systems into Ocean Observing Systems

In the REP-12 exercises communications and control among AUVs, ASVs and UAS was accomplished along with on-

Figure 2 During the REP-12 exercise autonomous underwater vessels (AUVs) (below) from several manufacturers communicated via acoustic modems using DTN communication protocols with each other and with autonomous surface vessels (ASVs) (above).



demand human take-over of the network. Several issues are critical to including the capabilities demonstrated during REP-12 into OOS. In both the US and Europe regulations are under discussion for non-military UAS operation over the ocean, typically >12 miles offshore, and for coastal access for launch and recovery. These regulations will increase UAS use in OOS. Continuing advances in maritime UAS will also increase options for their use. Quad-rotor aircraft, which require operators only to enter waypoints rather than fly the aircraft, are already making UAS more accessible to the ocean community at reasonable cost.

One of the future challenges in managing autonomous sampling networks is that they produce prodigious data volumes from HD video, high frequency acoustic sensors, multi-beam seafloor maps, and UAS lidar data, all with high bandwidth transmission requirements. Beyond the ability to ingest and archive this data, the data must also be displayed in a useful manner. Shore-based systems have been developed to monitor glider and even multiple AUV components of OOS. However incorporating UAS data for validation of satellite ice or weather imagery in order to guide ships, or to determine optimal locations for oil recovery operations, requires overlay of UAS imagery atop satellite maps with ship transit tracks. Ship systems are not currently prepared to receive, display, archive and integrate data from UAS into their command and control systems. Making full use of networked autonomous systems, including underwater, surface and UAS facilitates critical studies including air-sea flux measurements,5 but incorporating these into OOS has yet to be realized. However REP-12 achieved important results which demonstrated how communications can enable integrated autonomous observation platforms to provide both science and surveillance in future OOS to understand and protect the oceans. In the near future, as autonomous platforms, particularly UAS, become more widely used, OOS will be better able to integrate them using some of the results from the REP-12 studies, and additional work planned for next year during REP-13.

Footnotes

1 Martins, R. 2010. Disruption/delay tolerant networking with low-bandwidth underwater acoustic modems. IEEE/OES Autonomous Underwater Vehicles (AUV) Conference, Monterey, CA, Sept.1-3:1-5;

2 Das, J, F. Py, T. Maughan, T. O'Reilly, M. Messie, J. Ryan, G.S. Sukhatme, and K. Rajan. 2012. Coordinated Sampling of Dynamic Oceanographic Features with Underwater Vehicles and Drifters. Intl. J. Robotics Research 31(5):626-646.

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Figure 5 **At sea recovery of unmanned aircraft was accomplished by shipboard net capture methods.**

Figure 4 Communications among autonomous systems was accomplished by running DTN protocols via a MANTA communications hub on the deck of the coordinating ship.

the authors

Philip A. McGillivary, US Coast Guard PACAREA, Alameda, CA

Dr. McGillivary coordinates science for the US Coast Guard Pacific command and US icebreakers. He previously worked in the Office of Secretary of Defense after post-docs with NOAA and the Naval Postgraduate School in Monterey, California, and at the University of California, Santa Barbara. His University of Georgia PhD dissertation in Ecology on the Gulf Stream followed employment at NOAA's Miami, Florida Atlantic Oceanographic & Meteorological Labs.

Email: philip.a.mcgillivary@uscg.mil

João Borges de Sousa, Dept. Electrical & Computer Engineering, Univ. Porto, Portugal

João Borges de Sousa is with the Department of Electrical and Computer Engineering at Porto University in Portugal where he is also the head of the Underwater Systems and Technologies Laboratory. His research interests include unmanned vehicles, control architectures, control and coordination He has authored more than 200 publications, including 20 journal papers.

Email: jtasso@fe.up.pt

Ricardo Martins, Underwater Systems & Technology Lab, Univ. Porto, Portugal

Ricardo Martins became a researcher at Porto University's Underwater Systems and Technology Laboratory in 2005, where he is the chief software architect in charge of the software used in all of its autonomous vehicles. In cooperation with the NATO Undersea Research Centre, he also develops software to improve underwater acoustic communications and DTN. He has consulted the Portuguese Navy on autonomous vehicles since 2008.

Email: rasm@fe.up.pt

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Photo by Claus Mayer

New England

Gloucester sets its sights on subsea tech

Nestled on the North Shore of Massachusetts is the town of Gloucester. The town sits on Cape Ann and this popular summer destination is quintessential New England. It was originally founded in 1623 and is one of the earliest English settlements. In its earlier days it was an important shipbuilding center, and to this day due to its proximity to Georges Bank, it remains one of the most important fishing ports in the country. As you stroll along the waters edge you will find the iconic statue of Gorton's Fisherman leaning into the helm of his ship. The statue looks out to sea standing as a reminder of the over 10,000 men of Gloucester who gave their live to the Atlantic Ocean. Several of those men were depicted in the novel by Sebastian Junger, the Perfect Storm. Today as with many commercial fishing ports who's industry faces an unknown future, there is a movement to position the area for an influx of marine technology clusters. Marine Technology Reporter sat down with Carolyn Kirk the Mayor of Gloucester and the towns Director of Harbor Planning Sarah Garcia to see what is happening in the historical port.

By Rhonda Moniz

Can you tell us a little bit about your focus in northern New England with regard to increasing the viability and accessibility for marine technology companies?

Ms. Kirk: I took office January 1, 2008. Gloucester has 62 miles of coastline and one mile of the designated port area, which is what we consider to be our working harbor. That is the area of concentration that we have focused on. We had a series of what I call listening posts throughout the city.

Was this an effort to take the pulse of the area regarding a focus for the working harbor?

Ms. Kirk: Yes. We asked people what their vision was for the working port of the city of Gloucester. We had over 600 people attend these meetings, and the format was very simple. They got to go to a microphone and speak for up to three minutes. We had a panel of nine people that were regular citizens and that also represented a cross section of the community. With our Director of Harbor Planning, Sarah Garcia's help and support we took all the feedback and digested it and came up with a plan for the harbor area. Basically that drove everything we have

"We like to think of the area as being a maritime campus. For example there are some marine technology companies, but also R&D and science. It goes beyond technology and commercial products. On the science side we have the Ocean Alliance based here."

Carolyn Kirk, Mayor of Gloucester

(Photo Courtesy: MillisPR)

done since that time. Several things came out of that including the municipal harbor plan, which captured that vision and articulated it. The second thing that came out was an economic development plan for the harbor area and downtown area. There are three legs for the harbor economy, which emerged from the economic development plan. Those include continued support of the commercial fishing industry, diversification into the maritime sector, and visitor based or tourism economy. We have a plan in place for visitor-based economy, and we also have a plan in place for commercial fishing based economy. Diversification in the maritime sector was much less defined. In our focus in the area of marine science and technology we know we have access in the city and a port with deep-water access. We also have expertise to support this sector so what we did in November of 2011 was to pull together the new maritime port economy summit. That report is on the city of Gloucester's website. More than one hundred people participated in the sector during a day and a half long session that really zeroed in on how Gloucester fits in to the marine tech sector. We took a look at the assets and strengths that we bring to it. Then from there it triggered a set of activities around the economic development plan for this sector.

Currently what are some of the active marine tech companies operating in Gloucester?

Ms. Kirk: We like to think of the area as being a maritime campus. For example there are some marine technology companies, but also R&D and science. It goes beyond technology and commercial products. On the science side we have the Ocean Alliance based here. They are a world-renowned whale research non-profit organization. Their lead scientist is Dr. Roger Payne. Back in the 70's he discovered that whales have a song, which is pretty cool. They have the vessel the Odyssey, which is home ported here. One of the attractions for them here is that we have the shore-based support for their research vessel. We have marine repair, railways to haul the boat out, and the expertise to maintain and repair a vessel like the Odyssey. Another example is the UMASS Amherst large pelagic lab. That is an operation that tags blue fin tuna. There is a cross over with the need for technology and the science they are doing. We think there is an opportunity in having these research organizations based here. There is that draw to not only have scientists who want to work with other scientists, but that draw for the products and services that they need to do their work whether its robotics or sensors. We also have NOAA's northeast regional office here as well as the Department of Marine Fisheries, which has 60 employees. We have a concentration of experts in the science and research sector.

Ms. Garcia: We have spent the last four years looking into the needs of marine science and technology in this port. I was talking to some one recently in San Diego, talking about starting a marine technology cluster. They said, "You are 45 minutes north of Boston. You don't have to start a cluster you are in a cluster." We started to look at all these assets and we are starting to see the marine campus grow. MIT is currently using ROV's in the area, and the schools are starting to increase their marine programs.

Ms. Kirk: We are in a growing stage. Some of the companies here are high tech machine engineering companies. The parts they are creating are sophisticated and they are trying to segue into the marine area. Some of these companies here are currently supporting other sectors, but are very well suited to the marine technology sector because it is all CAD design and custom made equipment with high precision machining. Strictly by leveraging assets we can begin to string them together so that people can see this is not inventing something new this is

refocusing the image and outreach efforts from an economic development standpoint, to use Gloucester as a base.

This is happening in numerous areas with partnerships between universities and technology companies. There is much more of an air of collaboration, yet the sector seems like it is not yet clearly defined.

Ms. Kirk: Yes. One of the things we learned in our summit is that the marine tech sector is not recognized in the FIC code. For example there is a lot of self-reporting as to what business they are in or think they are in, in terms of sizing up the market. There is no uniformity. One other thing I wanted to mention is Endicott College, which is north of Boston. Endicott has been tremendously successful over the past several years. They have set up a satellite campus in Gloucester that has a focus on the maritime segment. One of the focuses is an MBA in maritime economics, which I think is a testament to what is emerging in this cutting edge field.

Ms. Garcia: I have a theory that the larger, traditional port economies have been focused around transport economy. The small working ports like ours are starting to look at what the needs are in understanding what is going on out there in the ocean. Also managing our fisheries resources and potential wind resources. Increasingly we are seeing small working ports have a new life. They are a place where companies are innovating in a very expectable way. We are no exception and are strategically located only an hour north of Boston by train.

Ms. Kirk: We are also only 12 miles from Stellwagon Bank, an area where many scientists are conducting research.

Ms. Garcia: Right. We are trying to make that visible, and make that connection between the science and research community, as well as the business community.

Ms. Kirk: Scientists will say I just want to go out and collect data. As a scientist they want to be able to get out on the boat and get the work done with out having to worry about where they are going to get the boat. That is part of leveraging the assets. This is where NOAA and the DMF come in, in leveraging the assets. How do we figure out a way to use these fishing vessels that are tied up a lot of the year and get them out there to support the science that is going on in the ocean. Some of that is happening now, but I think it is very underutilized.

I have worked in the past with scientists who are working with commercial fishermen and it was a great collaboration. It is agreat use of the commercial vessels during off-season as well.

Ms. Garcia: It is a great collaboration. The fishermen have the expertise, and they know where to go. They have a skill set that is needed and are a great value to the scientists who in a lot of cases are not Captains.

Ms. Kirk: The other thing is having boats tied up

Working Waterfront Gloucester, Mass.

(Photo Courtesy: Marylin Humphries)

I was talking to someone from San Diego and they said: "You are 45 minutes north of Boston. You don't have to start a cluster … you are in a cluster."

Sarah Garcia, Director of Harbor Planning, Gloucester

(Photo Courtesy: MillsPR)

is economically unsustainable, and unless you can have those boats working the consequence is you start to loose your infrastructure. You start to loose your working port. You loose the dockage because it has to go to the higher bidder that can pay the rent. You loose the shore side services. There is a downward spiral once you begin to loose the specific infrastructure of a working port.

Are you seeing some momentum in this area?

Ms. Kirk: I think there is momentum around the science piece of it. We are situated so favorably to the Gulf of Maine and Stellwagon bank. From a research standpoint we are seeing that for sure. Also part of that is making the connections and the partnerships. As with Endicott college, and the non-profits as well as other organizations and institutions we are leveraging those collaborations. In terms of private industry I would say that within the footprint of businesses that we have, they are doing well. We have companies that are seeing growth and in terms of new companies coming in I think that that's a matter of getting the word out and providing support as a city through the tools that we have.

Ms. Garcia: I see another avenue for us that has not quite come into fruition. When I look at how researchers look at information they look at it as in "Oh how can I find out more info about that"? From the business side you look at it as, "Can I make a product for that, can I make some money doing that?" There has been a lot of demand in our port where the researchers and scientists can interact more regularly in a more formalized way with the people who think about commercialization, and I think that's the role for small working ports. Research for research is great, but there is a lot of cooperative research going on and the more that you foster that and the more you give it a place where people can interact, that is where you are going to get the companies coming in.

Ms. Kirk: We have an example of that in Gloucester. We have Hodgkins Cove, which is where the UMASS lab is now. Prior to that there was another lab there and they were instrumental in creating one of the first patents for a product that went on to be commercialized which was a product from the company Proteus. They sprung from a research lab and are now in our industrial park in a small office. They have invented a fat blocking protein that when you fry fish it blocks the fat so the nutritional value of that fish is increased. It began in a research lab and is now a commercialized product. I just bumped into one of their partners who told me they have made the decision to go from this small space in the industrial park to take over a good portion of a building that was a fish processing plant. It is a state of the art FDA approved facility. That is the economic cycle we are trying to drive here. Another example out of a research lab here in Gloucester is Neptune's Harvest. They developed a way to take fish awful and make a world class fish fertilizer. That is a company that is vibrant and working on the waterfront.

So this location has a number of things going for it to support a marine technology cluster.

Ms. Kirk: Absolutely. Ports that are taking control of their destiny are the ones that are going to be able to make that successful transition as a working port. If your not taking charge and working toward spending money, time and energy, and out reach, and really taking the time,then your going to loose your port.

WESMACs built in Surry, Maine are the "Cadillacs" of lobster boat hulls, known for high performance while keeping the traditional down east Maine lobster boat lines.

Launching the Jamie Hanna

By John 'Chip' Ryther, Chris Wright & Eli Perrone

On August 14, 2012, more than 50 fellow lobsterman, boat workers, mechanics, family, and friends gathered to witness the launching of the 55-foot research and lobster vessel Jamie Hanna. A procession of cars made the 2 mile trip to the launching ramp at Outward Bound on Clarke Island, Maine. The lead car cleared the road to make way, as the 20 ton hydraulic trailer inched along and a crew on the pilothouse roof lifted phone lines and branches. When the boat arrived at the ramp an hour later, the tide was falling and concerns were raised about whether the boat would fit between the rocks and the floating dock. With mere inches to spare the driver expertly guided the trailer down the dock, as this was by far the largest vessel ever to be launched here. With the hull finally fully submerged and the vessel floating, the owner and captain, Josh Goodwin, could finally relax. He and his wife, Shanna, proceeded to ceremoniously christen the new million dollar boat, the Jamie Hanna, named after their daughter.

This event was over 10 years in the making.

It all began in 2000, when CR Environmental, Inc. (CR) received a Fishermen Industry Grant from NOAA to train fishermen and outfit their vessels for oceanographic survey work. A

The lead car cleared the road to make way, as the 20 ton hydraulic trailer inched along and a crew on the pilothouse roof lifted phone lines and branches.

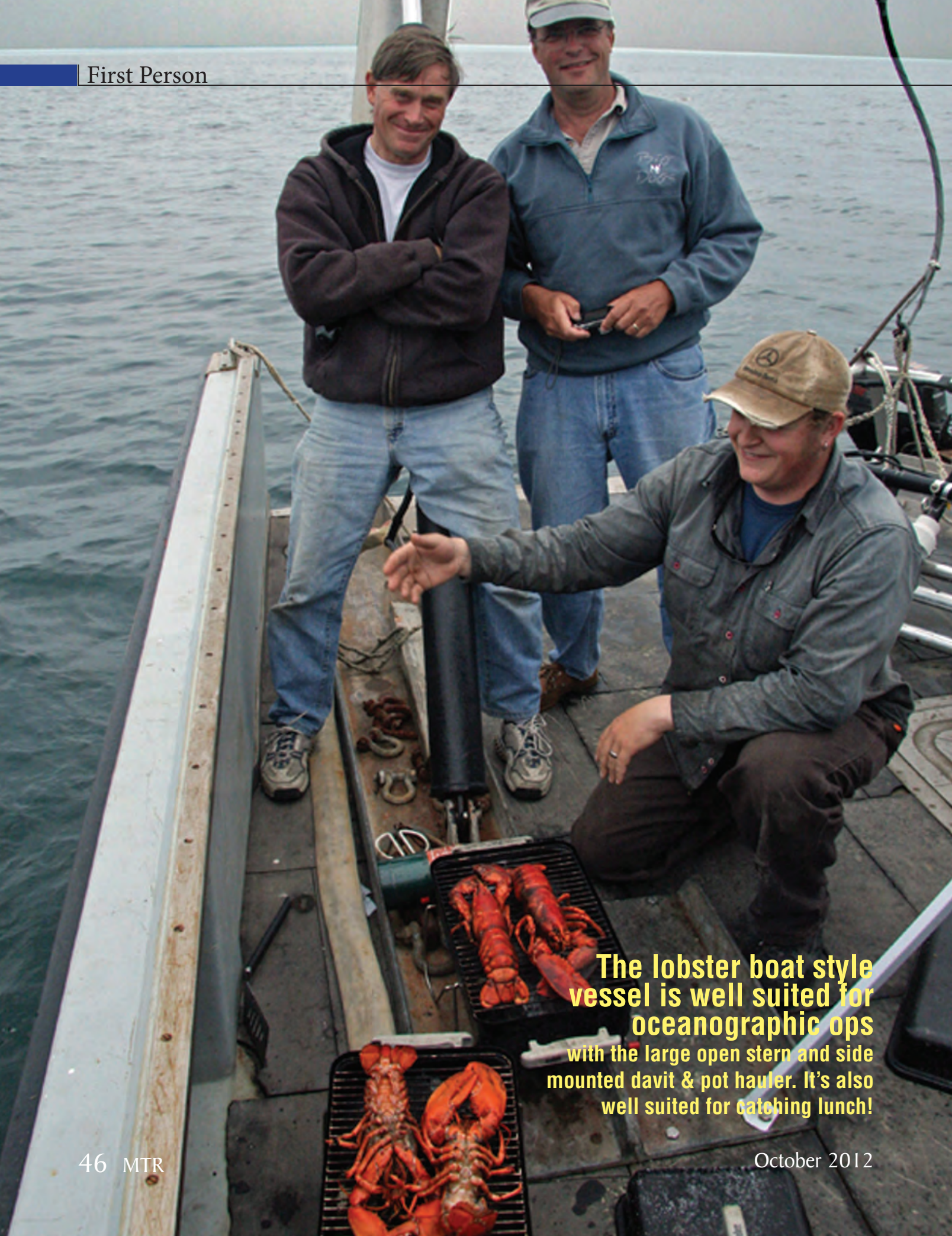
training seminar was conducted in Scituate, Mass., and members of the Hull, Mass., lobster fishing community attended. Shortly thereafter, CR began to charter Hull-based vessels for turbidity monitoring during a Boston Harbor islands cable installation, whale observations during blasting activities during the Hubline pipeline project, lobster collections for the Massachusetts Water Resource Authority (MWRA), vibracore and water sampling for the Army Corps of Engineers on Boston Harbor dredging projects, and geophysical surveys for an offshore wind turbine project off Nantasket Beach, in Hull, MA. In total, 6 vessels based in Hull began making a part time income chartering their vessels for oceanographic surveys.

Many of the lobster vessels are WESMAC hulls built in Surry, Maine. The lobster boat style vessel is well suited for oceanographic operations with the large open stern and side mounted davit and pot hauler. CR routinely uses the lobster hauler for deployment of smaller geophysical sensors, sound velocity profiling, sediment grab sampling, and anchoring for vibracore operations. With the open stern, these vessels are also ideal for deploying oceanographic equipment, performing mooring operations, and equipment testing. Many of the lobstermen's gear and vessel handling skills are also easily adapted to oceanographic survey work.

Working with CR, several of these vessels were converted to part time research vessels, as the owners began installing hydraulic winches and A-frames, over-the-side transducer booms, and benches and tables for survey electronics. At several of the early Ocean Technology Expos in Woods Hole, MA, and Newport and Warwick, RI, CR chartered the Hull vessels to demonstrate navigation, geophysical, and multibeam bathymetric systems to the oceanographic community. Clients were pleased with the vessel's unexpected stability, utility, and capabilities relative to their objectives.

In 2005 and 2006, CR enlisted Josh Goodwin and his 42-foot WESMAC in several long term offshore monitoring programs including monitoring at several dredged material disposal sites managed by the Army Corps of Engineers DAMOS program, and pre-construction and post-construction monitoring at the Neptune gas pipeline in Massachusetts Bay. In 2008 and 2009, we performed geophysical and underwater video surveys at sand borrow sites off Nantucket Island, vibracore sampling at a potential gas pipeline terminal in Fall River, MA, and conducted geophysical and multibeam bathymetric surveys at a current turbine site in Eastport, Maine. Additionally, CR Environmental and Goodwin Marine had regular charter work with Bluefin Robotics testing their AUVs.

Following these charters with CR, Josh Goodwin took this part-time research vessel work to another level. He became



The lobster boat style vessel is well suited for oceanographic ops with the large open stern and side mounted davit & pot hauler. It's also well suited for catching lunch!

proficient at running survey lines, station keeping and equipment deployment operations, developing an excellent reputation as a research vessel captain. In additional to his exceptional boat handling skills, he is capable of making quick repairs or modifications to keep an operation going. Oceanographic survey work quickly became Josh's primary mission. The only time Josh went lobstering was to catch lunch for the scientific crew. CR's grilling of lobsters on the back deck for clients became a routine occurrence.

Although Josh continued to make improvements to his 42-foot WESMAC, including installing a removable custom laboratory van, modification of the existing A-frame, and a repower with a more economical and reliable engine in 2010, he and CR saw the need for a larger more capable platform. We believed the practical stability limits had been reached with the 42-foot boats for offshore hydrographic and geophysical survey tasks, and a larger vessel was needed to maximize data quality in adverse sea conditions. CR's work typically ranges from Sandy Hook, New Jersey to Eastport, Maine, where dangerous transiting and working conditions for smaller boats occurs late in the season. For data quality, safety and client comfort, in September 2010, Josh ordered a 55-foot WESMAC hull and by December the hull was transported to Clark Island Boat Works in St. George, Maine for the engine installation and finish work.

WESMACs built in Surry, Maine are the "Cadillacs" of lobster boat hulls, known for high performance while keeping the traditional down east Maine lobster boat lines. Combining a hard chine, V-bottom, and full keel affords them excellent sea keeping ability, great maneuverability, and good speed. The WESMACs from Hull were all finished at Clark Island Boat Works owned by fellow Hull native Dan MacCaffray and his son Andrew. With Dan in his 60's and still an avid Grateful Dead fan, these boats continue to bear the instantly recognizable Grateful Dead logo. Their boats are (to quote their motto) "Built to Last". Construction of this 55-foot WESMAC was a

major undertaking. The hull had to be trailered 80 miles from Surry to St. George, Maine, and the boat shop at Clark Island was lengthened to accommodate the hull.

In this economy, it was challenging to finance the construction, but Josh, the proverbial entrepreneur, managed to find a way. In addition to the research charters and lobster fishing, he derived funding from his fleet of snow plows, sanders, waste management and boom truck services, vessel storage services, and the sale of two boats. One was the Justin Daniel (named after his son). After the BP oil spill, Josh transported this 56-foot landing craft, to the Gulf of Mexico where along with CR's former captain, Steve Harris, it assisted in the cleanup efforts. After a lucrative six-month charter, the Justin Daniel was sold in Mississippi.

During the two year construction period, CR had multiple oceanographic charters scheduled. Fellow Hull lobstermen, Chad Mahoney, stepped up and provided his 42-foot WESMAC for this interim period. Josh and Chad quickly outfitted the vessel with A-frame, winch, and lab space, and in the fall of 2010 she began her first charter on a sediment monitoring cruise at the HARS offshore dredged material remediation site off the New York/New Jersey coast.

Over the next several months, when Josh wasn't captaining the First Light, he was living in Maine at Clark Island Boat Works supervising and planning the layout and the construction of the Jamie Hanna. CR employees traveled to Maine to advise Josh on setting up the boat for scientific studies including layout of the cabin, design of the transducer boom, overseeing the survey for multibeam operations, and electronics installation.

The Jamie Hanna is 55 feet in length, with 18 feet of beam, and a draft of 7 feet. The vessel is powered by a 1000 HP Caterpillar C18-ACERT engine, and has a top speed of 21 knots and a cruising speed of 18 knots. It has a hydraulic bow

The owner and captain, Josh Goodwin and his wife Shanna proceeded to ceremoniously christen the new million dollar boat, the Jamie Hanna, named after their daughter.

thruster and a Northern Lights 12kW generator.

Unlike the 42-foot WESMAC vessels CR had previously chartered, the Jamie Hanna does not have the typical split-pilothouse lobster boat design. Instead this vessel has a large full-width pilothouse with the lobster station, davit, block, and pot hauler aft of the pilothouse on the starboard side. The pilothouse has a large semi-enclosed helm area, with an array of electronics, including a Furuno NavNet 3D suite consisting of a black box, radar, echo sounder, and multiple flatscreen monitors; an AIS, multiple VHF/loud hailers, and Sirius Satellite/Weather Radio.

To assist with navigation, is a PC plotter with NOAA charts and HYPACK survey software. Behind the helm on the starboard side, is a 4-person dinette, and on the port side a science station with a large 10-foot built-in bench with rack storage. Down below, there are 4 berths with DC power and LED lights, a galley with full sized stove, refrigerator, and microwave, and a full head with heated shower.

On deck, the Jamie Hanna has (2) 5000-lb capacity Pullmaster winches and can accommodate (2) oceanographic winches. The vessel has a rugged over-the-side transducer boom with fairing, a 5000-lb capacity 15-foot hydraulic A-frame, and nearly 500 square feet of open deck space. The hydraulic controls are located inside the pilothouse, rather than on deck. The Jamie Hanna underwent a pre-launch topographic survey per NOAA/NOS specifications to aid in the proper installation and calibration of multibeam systems and ancillary sensors. The transducer boom has a universal coupling with adaptors for RESON and Teledyne Odom multibeam systems to support CR's survey contracts.

A busy fall schedule is planned for the Jamie Hanna with demonstrations of Odom's new MB-1 multibeam system in Boston Harbor, a series of offshore RESON multibeam bathymetric and Sediment Profile Imaging camera surveys with Germano and Associates for the Army Corps of Engineers' Disposal Area Monitoring System (DAMOS) at sites in Massachusetts and Maine, and an essential fish habitat survey using side scan sonar, underwater video, and benthic sampling along a submarine cable route in northern Maine for the U.S. Navy. CR and our clients are looking forward to the expanded capabilities of the 55-foot Jamie Hanna. This larger vessel will provide better sea keeping abilities for offshore work, and the improved accommodations will allow for 24 hour operations and longer duration projects.

On that launching day in August, more than twenty of Josh's friends and family took the half hour shakedown cruise from the Outward Bound dock to Thomaston, Maine. The vessel surpassed 21 knots and still allowed for quiet conversations in the spacious pilothouse. We quickly realized that this boat was well worth the wait.

the authors

Dr. John 'Chip' Ryther

Dr. John 'Chip' Ryther is the Marine Operations Manager at CR Environmental, Inc. He has managed NOAA funded grants for the training of fishermen and outfitting their vessels and used fishing vessels for oceanographic survey operations for over 30 years. Chip continues to market the use of these vessels.

Eli Perrone

Eli Perrone is a senior technician and computer specialist at CR Environmental, Inc. with 10 years of experience in oceanographic operations. He assisted in the design and layout of the Jamie Hanna pilothouse and electronics installation for scientific studies.

Chris Wright

Chris Wright is an ACSM Certified Hydrographer at CR Environmental, Inc. with 18 years of technical experience. He specializes in the interpretation and visualization of acoustic data; and ensured the Jamie Hanna was properly outfitted for multibeam bathymetric surveys.

Navarre to Head Horton Wison

Horton Wison Deepwater appointed Gregory Navarre as President of the company and a member of the company's Board of Directors. Navarre brings with him more than 30 years of relevant industry experience to his new role having previously served as COO of the company, as well as in various executive positions with Global Marine and Horton Wison Deepwater's sister company Wison Offshore & Marine (USA), Inc. Navarre succeeds former president, Jim Maher, who recently resigned to pursue other interests.

"With the installation of the world's first Buoyant Tower in Peru, Horton Wison Deepwater is poised to lead the industry with new technological advances that dramatically cut field development costs and schedule," said Offshore pioneer and company founder, Ed Horton commented. "Greg's leadership will enable us to capitalize on this and other breakthrough technologies that we hold in our portfolio."

Mr. Navarre is a graduate of the U.S. Merchant Marine Academy, where he earned his bachelor's degree.

Halpin Strengthens UTEC US Team

UTEC announced the appointment of Sean Halpin as Global AUV Manager and US Geophysical Manager. A graduate of the Maine Maritime Academy, Sean began working with hydrographic survey equipment at the age of 18. After university, he worked with a US defense contractor which held contracts to conduct and assist with hydrographic survey work for NOAA and the US Navy. Immediately prior to joining the UTEC team based in Houston, he worked with a deepwater engineering firm where he designed and managed geoscience programs for oil and gas operators in a consultancy role.

Usher Named Director of Geoscience at Tesla

Nat Usher joined Tesla Offshore LLC as Director of Geoscience. For the past 30 years, Usher has worked for ARCO/BP. By joining Tesla Offshore, Usher returns to his passion for data acquisition. He plans to assist Tesla in optimizing use of technology in its geophysical survey ops and to further develop geohazards interpretation services.

Usher began his career specializing in data acquisition around the world, including: 2D and 3D seismic (onshore and offshore), VSP, geotechnical, metocean, aeromagnetic, geochemical, geobotany and geohazards. His primary focus then shifted to marine geohazards and high-resolution seismic surveying. Geohazards project management included survey design, contracting, quality control and the interpretation of the data for writing shallow hazard assessment reports for company drillers.

Active throughout the oil and gas industry, Usher has been recognized as an industry authority regarding marine geohazards identification and mitigation. He has served on several panels for the US Department of the Interior's Mineral Management Service - MMS (now the Bureau of Ocean Energy Management - BOEM). Usher participated in several submersible dive missions to depths as great as 2,900 meters to investigate submarine venting and chemosynthetic communities at the request of the MMS / BOEM.

Acteon Appoints Revere VP

Acteon appointed Kevin Revere as vice president. Based in Kuala Lumpur, Revere will report to Bernhard Bruggaier, executive vice president. He will initially provide support to Asia-based business CAPE as the company expands its product and service offering in the subsea pipeline sector. Revere has more than 20 years of experience in the oil and gas pipeline coating industry and joins Acteon from Wasco Energy's pipe coating division, where he was vice president of operations. Revere's professional experience covers operations in Asia Pacific, Europe and the Americas. His responsibilities have included business unit development, contract negotiation, regional strategic development and commercial and operational oversight.

McKeown Named GM at OceanWorks

OceanWorks International appointed Billy Mckeown as General Manager for Aykor Teknolojik Ürünler Sanayi ve Ticaret Anonim Sirketi (OceanWorks Aykor) in Istanbul Turkey. As GM he will manage the organisation's operations from the Istanbul location ensuring OceanWorks International and its new affiliate OceanWorks Aykor continue to deliver industry leading, high quality products and services to our customer base. He is a multi-skilled leader who is ideally suited to starting up and growing the new Turkish company.

Rear Adm. White Appointed

Oceanographer of the Navy

Rear Adm. Jonathon White has assumed the title of "Oceanographer of the U.S. Navy," replacing Rear Adm. David Titley who retired in July. Assigned to the staff of the chief of naval operations, White is now head of the Oceanography, Space and Maritime Domain Awareness directorate (OPNAV N2N6E). He also serves as head of the Navy's Positioning, Navigation and Timing directorate and he holds the title "navigator of the Navy." In addition, White serves as director of the Navy's Task Force on Climate Change, the naval deputy to the National Oceanic and Space Administration, and director of the Office of the DoD Executive Agent for Maritime Domain Awareness.

As the senior oceanographer in the Navy, White advises naval leadership on all issues related to oceanography, meteorology, hydrography, climatology, precise time, and geospatial and celestial referencing. His staff provides policy guidance and resourcing for the operational oceanography program, and he serves as the senior policy advisor for issues relating to national ocean policy and governance.

The operational oceanography program provides naval, joint, and coalition warfighters understanding of the maritime environment to ensure safety and readiness for unencumbered global operations, and it provides timing and reference information to support precision navigation, maneuvering, and targeting.

As navigator of the Navy, White provides policy and requirements guidance to ensure naval forces have state-of-the-practice positioning, navigation and timing capabilities for accurate operational maneuver and optimum weapons employment, enabling a competitive advantage across the full spectrum of naval and joint warfare.

White also assumed the oversight responsibility for the DoD and Navy's maritime domain awareness (MDA) initiatives as director, Office of the DoD Executive Agent for MDA. Under the delegated authority of the secretary of the Navy, he leads a dual-hatted organization focused on the effective understanding of anything associated with the global maritime domain that could impact the security, safety, economy, or environment of the United States.

As the director of Navy Space, White addresses the Navy's requirements for space-based capabilities and analyzes the effectiveness of various proposed or existing solutions to meet those requirements.

White is the 20th person to hold the title "Oceanographer of the U.S. Navy" since its inception in 1960. His previous assignment was as commander, Naval Meteorology and Oceanography Command (CNMOC), the operational arm of naval oceanography, headquartered at the Stennis Space Center in Mississippi. White graduated from the Florida Institute of Technology in 1981 with a Bachelor of Science degree in

oceanographic technology. After working at sea as a civilian oceanographer on board a seismic survey vessel, he was commissioned through Navy Officer Candidate School in 1983, and assigned as a surface warfare officer to USS John L. Hall (FFG 32) in Mayport, Fla.

White joined the oceanography community in 1987. Since then, he has had operational shore assignments at Jacksonville, Fla., Guam, and Stuttgart, Germany, where his joint duty included maritime operations officer for Special Operations Command Europe, and strike plans officer for U.S. European Command during Operation Allied Force in Kosovo and Serbia.

White graduated with distinction from the U.S. Naval Postgraduate School in Monterey, Calif., earning a Master of Science degree in meteorology and oceanography.

Saab Seaeye MD Grant Departs

Dave Grant left Saab Seaeye after five years as Managing Director, during which time the company's turnover grew from GBP12M to GBP24M. Agneta Kammeby, chairman of Saab Seaeye Ltd. says, "Dave Grant has made a valuable contribution in the ROV business for offshore Oil & Gas. During his time with the company it has grown substantially and has been relocated and settled into a major new manufacturing facility. Dave has now decided to leave the company to pursue other interests and we wish him well in his future endeavors."

OceanWorks Wins FORCE Deal

OceanWorks International won a contract by the Fundy Ocean Research Center for Energy (FORCE) to instrument a cable termination for a ground breaking tidal energy project in the Bay of Fundy. The project includes the design, manufacture and integration of the subsea instrumentation, shore station, and commissioning. FORCE is deploying four power cables to connect prototype instream tidal turbines to a dedicated electrical sub-station.

MacArtney Opens New Offices

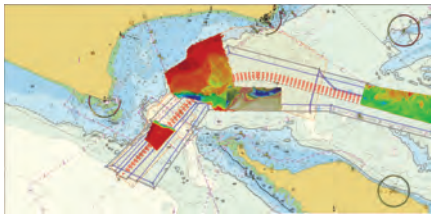
As of September 3, 2012, after a long and successful presence in Australia through its former agent, Cunard Technology, MacArtney Australia Pty Ltd is open for business. The new sales office marks MacArtney's first subsidiary in Oceania.

MacArtney Australia provides an increased sales base, offering access to larger stock and capacity. MacArtney Australia is a member of the MacArtney Group, a global supplier of underwater technology - specializing in design, manufacture, sales and services of a wide range of systems to offshore operators, surveyors, the renewable energy sector, ocean sciences, security forces and navies across the world. The endeavor is headed by Cathie Lynette Barrett who is a former Office Manager at Cunard Technology. Barrett has more than five years of experience with MacArtney products in Australia.

MacArtney Australia Pty Ltd
5/177 Bannister Rd
6155 Canning Vale, Perth, Australia

PoMC Selects CARIS

CARIS completed a project for the provision of a bathymetrical database system for the Port of Melbourne Corporation (PoMC). PoMC conducts regular bathymetric surveys as part of its statutory obligation to provide safe and effective transit of vessels through Port Waters. The project involved the integration of CARIS Bathy DataBASE and the Engineering Analysis Module into existing PoMC workflows. CARIS Bathy DataBASE is a data management system for bathymetry data, with installations in over 20 countries. Bathymetry assets from a multitude of sources can be brought together, regardless of file size or data source and managed using the latest database server technology and sophisticated client applications. In order to provide greater functionality for users in the ports and waterways environment, the Engineering Analysis Module was introduced into the Bathy DataBASE product suite. The module assists the management of ports and waterways with tools, such as reference model creation and editing, conformance analysis, shoal detection and volume calculations.



Exocetus Development Appoints Aker Ticaret Agent for Gliders

The VP of Sales and Marketing for Exocetus, Mr. Ray Mahr, Jr., announced the appointment of AKER Ticaret , as its exclusive agent in Turkey, effective immediately for the sales and marketing of the new Exocetus Coastal Gilder. The Exocetus [x-o-seat-us is the name of a flying fish] glider is designed for environmental monitoring in coastal waters. AKER Ticaret is an Istanbul/Turkey based company engaged with defense projects in general, marine research projects instrumentation in particular. AKER Ticaret main area of expertise is oceanographic, hydrographic, acoustic and navigation systems and instrumentation including ENC, MCM, VTS.

Mehmet Akif Gungor of AKER, said "We have had the pleasure of representing around 15 worldwide oceanographic hydrographic, including GIS manufacturers and developers for several years. Today we are very pleased to establish joint efforts with EXOCETUS,

through their newest high tech Coastal Glider, which I am sure it will help local ocean scientists and engineers to a better comprehensive understanding of the coastal ocean's dynamics, either for managing coastal waters or developing ocean energies in our seas."

Fugro Wins Survey Coastline of Lake Michigan Contract

Fugro, under a contract with the U.S. Army Corps of Engineers (USACE) in support of their National Coastal Mapping Program (NCMP), was awarded a task order to survey the coastline of Lake Michigan.

This multi-sensor project will cover a 1500m wide corridor, extending 500m inshore to 1000m offshore, along the coastline of Lake Michigan. The project involves the utilization of one aircraft to simultaneously collect data with four sensors: aerial RGB imagery, hyperspectral imagery, topographic LIDAR and bathymetric LIDAR over land and water.

Data acquisition will be coordinated, to ensure sufficient overlap in both the land and water, enabling the creation of a seamless dataset in a common frame of reference.

These data products provide the second cycle of the NCMP which provides recurring datasets for stakeholders who are interested in continuing coastal monitoring, pre- and post- storm coastal effects, habitat assessment and coastal development.

Ross Laboratories Wins Furuno Dealer Award

Ross Laboratories of Seattle Washington, was awarded a Furuno "Elite" Dealer status for selling the new WASSP S multi beam system in the US. The WASSP-S Multi Beam system, which has been recently released by WASSP LTD. of Auckland New Zealand. Is designed as an affordable survey grade system designed with the small business owner in mind.

Priced from just under $58k for the basic system only, for those who already own GPS and motion sensor equipment, to $95k for a complete package including Hysweep software, for a complete turnkey system.

WASSP S has been developed to bring the benefits of multibeam sonar to the survey, dredging and scientific research markets. In a versatile and cost-effective package, WASSP S provides accurate and reliable real-time seafloor and water column information in an intuitive user interface.

Email: Info@rosslaboratories.com

Ecosse Subsea Systems' Engineering Grows

Ecosse Subsea Systems, (ESS) increased the size of its engineering division in response to client demand for specialist engineering packages. Aberdeen-based ESS specializes in trenching, deepwater installation and subsea lifting technologies for the oil and gas, marine and renewable industries, and has a range of patented technologies in development. The new division will complement ESS' well established consultancy service and will be headed up by chartered engineers David Hunt and Faris Lutfy.

Hunt has extensive experience in subsea construction and operations and was previously in a senior role with Flexlife and Acergy Group. Lutfy has worked on major EPIC design, manufacture and installation projects while employed in senior roles at Subsea 7 and DOF Subsea UK Ltd.

(L to R): David Hunt, Faris Lutfy and Ecosse Subsea Systems managing director, Mike Wilson.

Fugro Helps in Hunt for Los Franklin Ships

Fugro, under contract with the Canadian Hydrographic Service (CHS), won a new task order to conduct hydrographic surveys using Airborne LiDAR Bathymetry (ALB) as part of the Canadian government's Arctic Charting and Mapping Pilot Project. The project includes seabed mapping to aid in the search for Franklin Ships Erebus and Terror. The ALB surveys are being conducted in conjunction and coordination with CHS' vessel based surveys from CCGS Sir Wilfrid Laurier. The task order, which has been issued under a three-year contract that Fugro holds with CHS, also supports their charting programs in the Canadian Arctic.

Fugro's ALB system collects data from various airborne platforms over a variety of marine and land environments such as inter-tidal zones and coastal regions. In addition to collecting simultaneous elevation/depth information over land and water, it is also capable of acquiring aerial imagery using its integrated, high-resolution digital camera for both quality control and the production of orthorectified photo mosaic products.

The ALB system achieves an efficient coverage rate of up to 70 sq. km per hour at IHO Order 1 positioning and depth accuracies. In addition to traditional bathymetry information it also derives seafloor reflectance information from the LiDAR return signals, which can be used to produce high quality seabed imagery that shows changes in homogeneous bottom type and can be used to accurately classify the seafloor environment for activities such as geologic and habitat mapping.

Naval Argentina Gets Training on Mariscope

In July, a team of the Argentinean Coast Guard (PNA, Prefectura Naval Argentina) received an onsite training on its recently purchased ROV from Mariscope Meerestechnik. This unit based on the Comander MK II model has been equipped with a series of special instruments as well as with two hydraulic manipulators provided by Hydrolek. The ROV has been specially adapted to PNA´s requirements, in order to carry out different kind of operations related to incidents in navigation and complementing diving operations.

The training was carried out through personnel of Mariscope Argentina and Mariscope Chile and a team of 11 divers from PNA.

Pharos: Completes Diverless Export Cable Repair

Pharos Offshore Group has completed cable repair and burial for the London Array Offshore Wind Farm on a section of damaged subsea export cable. Pharos delivered a work package with the rapid mobilisation of engineering, fabrication and operational teams to locate, recover, re-lay and re-bury the power cable off the Kent coast. The 800mm² HVDC export cable has a 218mm diameter and weighs over 50kg/m in water and 86 kg/m in air.

Teledyne Celebrates Milestones

Teledyne Benthos and Teledyne Webb Research celebrated their 50th and 30th anniversaries, respectively, recently at the company's North Falmouth facility. Nearly 400 people celebrated the milestones, including employees and their families, customers, vendors, and state and local officials. The gala included opening remarks by Group General Manager, Thomas Altshuler, followed by speeches from Doug Webb, the founder of Webb Research and Samuel Raymond, the founder of Teledyne Benthos.

Special guest speakers included Jim Davis, Senior Vice President and Segment General Manager of Teledyne Instruments, Therese Murray, Senate President of the Massachusetts State Senate, and Falmouth Selectman, Mary Pat Flynn.

Samuel O. Raymond started Benthos from his barn in Falmouth in 1962. The company was one of the first to supply

(Photo: Ben Allsup, Teledyne Webb Research)

commercial tools for oceanographic research. Among its many achievements, Benthos developed the underwater camera that took some of the first images of the wreck of the Titanic. The company's remotely operated vehicles (ROVs) were featured in James Cameron's film, "The Abyss", and their underwater pingers are on the black boxes of commercial airlines worldwide. "I learned a lot and made some very valuable connections at Woods Hole Oceanographic Institution (WHOI) in the early days" said Mr. Raymond. Like his father, the inventor of the first automatic door opener, Raymond was an ingenious inventor. His innovations created solutions for measuring and recording ocean depths, and transmitting data through water using acoustic signals. The first email sent to the surface from a submarine traveling at speed and depth used the company's acoustic modem technology. Benthos was acquired by Teledyne Technologies, Inc. of Thousand Oaks, California in 2006 as the second in a series of marine related acquisitions.

Webb Research, founded by Douglas C. Webb in 1982 to provide government and academic labs with oceanographic research equipment, specializes in three areas of ocean instrumentation: buoyancy driven profiling floats, autonomous underwater gliders, and moored underwater sound sources.

"More than 7000 profilers have changed the ocean from being hopelessly under sampled to badly under sampled" quipped Mr. Webb. Webb who still works at the company as Senior Director of Technology added, "we're just getting started". Webb Research became a member of the Teledyne Technologies group of companies in 2008.

Featured Product

Atlas North American SeaFox

The SeaFox mine neutralization system, delivered by ATLAS North America (ATLAS NA), a subsidiary of the German-based Atlas Elektronik GmbH, performed unmanned mine countermeasure missions, when participating in Trident Warrior 2012 U.S. Navy Fleet Experiment, earlier this summer. During the Fleet Experiment, Textron/AAI used its Fleet Class Common Unmanned Surface Vessel (CUSV) with a L-3 Klein 5000 V2 Side Scan Sonar to investigate a suspected minefield. When detecting a mine-like object, its' coordinates were input into the SeaFox to further prosecute the potential target. A second CUSV then remotely deployed the SeaFox for examining and identifying the exercise-mines, followed by a simulated mine-neutralization.

The Trident Warrior scenarios were executed in a practice minefield laid by the U.S. Navy off-shore of the Marine Corp Base at Camp Pendleton, California. SeaFox successfully performed over 15 mine hunting and neutralization missions from the Textron/AAI CUSV against both moored and bottom mines and under differing sea conditions.

The SeaFox is a one-shot mine disposal vehicle, used for semi-autonomous disposal of naval mines and other ordnance found at sea. It is able to automatically relocate previously acquired positions of underwater objects within minutes with the integrated homing sonar. Upon relocation, these objects can be further identified using the onboard CCTV camera and destroyed by the use of a built-in, large caliber shaped charge. It can easily be deployed from a wide range of platforms, including dedicated Mine Countermeasure (MCM) vessels, surface combatants, crafts of opportunity, Rhibs, helicopters, and Unmanned Surface and Subsurface Vessels. The SeaFox is currently in operation with ten different navies worldwide, including the U.S. Navy, making it the most successful mine disposal system in the world.

Atlans

ATLANS, a new georeferencing and orientation system from iXBlue, was designed for land and airborne mapping applications conducted within a limited budget. The unit is ITAR-free.

The user gets a compact, lightweight gyrocompass and motion sensor that is designed to consume little power and provides all of the required data for demanding navigation, stabilization and control applications. It is designed to be easily integrated with standard GNSS and DMI systems and combined with most commonly used flight management, satellite tracking and mobile imaging systems.

www.ixsea.com

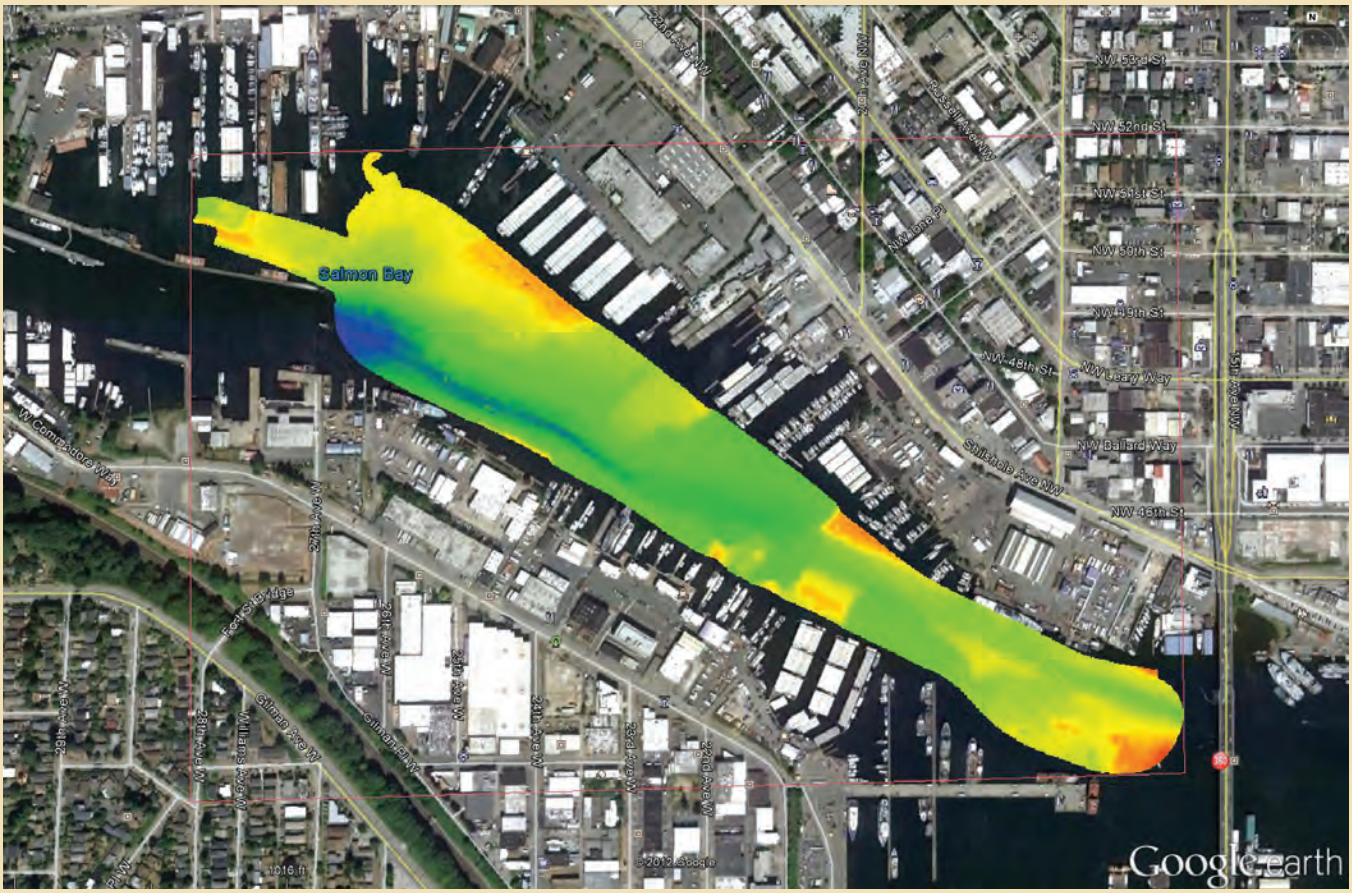
Monitoring Structural Scouring

Marine and hydraulic structures are one of the most vulnerable elements of infrastructure. Whenever the foundation of a structure is built in high water flow areas such as rivers, meandering streams, channels, intertidal zones and flood plains, scouring looms in the background. Scouring occurs as water and weather dole out harsh and unpredictable conditions: Flooding, icing, tidal extremes, and heavy currents. Add floating debris, crushing waterfalls, zero visibility, large diameter scour holes and slight-of-hand changes in the bottom material (where sand/fluff fills in leaving no visibly observable depression) and you've created an inspection nightmare for any dive team responsible for determining the degree of scour or foundation undermining. Typically counter measures to prevent scour include laying rip-rap or layers of heavy rocks. It's when underwater conditions change that we expose our vulnerabilities. The direction of the stream bed shifts. Changes occur in land use. Up-stream flow is suddenly blocked, and with an increase in velocity, waters diverted towards our prized structures. A 50 year flood hits and exponentially increases the force and volume of water on submerged foundations, and the damage to sediments leads to structural instability and ultimate failure.

Risk is forever present and those commissioned to monitor scour have always had difficulty guaranteeing which foundations are safe. It's neither easy, nor obvious and can be expensive and dangerous to send divers to inspect – particularly under treacherous conditions.

Ross Laboratories Inc., a marine electronics manufacturing company headquartered in Seattle, WA, has designed an affordable solution that is easy to implement. They've developed a reliable, wireless, 24-hour remote site monitor to detect and measure scour depth variation over extended time periods. Using Ross "Smart Sounder" technology, data is recorded at preset intervals for later retrieval using a laptop or wireless device. If scour depth reaches a user specified depth, a warning alarm sounds. This allows for precautionary action to be carried out prior to any structural compromise or failings.

www.rosslaboratories.com



Featured Product

Clever Clamp Goes Commercial

A device that is designed to speed up the task of attaching oceanographic instruments to cables has been licensed to a commercial company by the National Oceanography Center. Quick-Clamp was developed by Dave Jones, a Liverpool-based member of the National Oceanography Centre's Ocean Technology and Engineering team.

Quick-Clamp was designed to allow instrumentation – such as fluorometers, turbidity sensors, temperature, conductivity and pressure recorders - to be quickly and easily attached to, and detached, from towed (or moored) steel cables. Instruments can be fitted to the Quick-Clamp in advance and then simply fixed to the cable with a twisting motion. Removal from the cable is similarly rapid. This means that moorings can be wound on and off winches more quickly, saving time and money and with added safety.

Photo courtesy of Planet Ocean Ltd

The system incorporates a simple but robust locking mechanism operated by one hand using an easily operated, large push-button release. Clamps are supplied to fit a range of instrument sizes up to 100mm diameter, although larger instruments can be considered to special order.

Elkins will manufacture the Quick-Clamp and marketing and sales will be handled by Planet Ocean in Camberley.

http://planet-ocean.co.uk

EvoLogics' Underwater Acoustic Modem Emulator

The EvoLogics underwater acoustic modem emulator recently underwent successful beta-testing and will soon be available commercially. After releasing the WiSE (White Line Science Edition) line of underwater acoustic modems with an embedded network protocol development platform, Evologics GmbH continues to promote underwater networking technologies with a new tool that offers more flexibility for underwater network protocol developers and end-users of EvoLogics underwater acoustic modems. EvoLogics' new solution is a real-time emulator of the S2CR-series underwater acoustic modems. This tool is aimed at optimizing underwater network protocol development by taking out expensive modem hardware from the early testing stages - it emulates all features of the modem's data-link protocol layer and includes a simulator of the physical protocol layer. A network of virtual underwater acoustic modems, configured and run on EvoLogics server, can be accessed remotely and therefore provides a hardware-free framework for development and training. Any code, written and run on the modem emulator, can be later run on the actual modem hardware without any modifications, offering a time-saving solution that minimizes development costs for upper layer network protocols and simplifies integration of acoustic modems into underwater infrastructure.

www.evologics.de

High Velocity ROV Comander MK II SF

With a velocity of approximately 7 knots, Mariscope has recently launched one of the fastest observation class vehicles. The vehicle of the type Comander MK II SF (Super Fast) was tested during trials carried out with the German Customs Brigade in the city of Hamburg. In order to test the performance of the vehicle, the trials were carried out in Hamburg's harbor, located at the Elbe River. This port is the biggest river port in the world and since it is near the north Atlantic Sea, it is influenced by tidal currents, increasing additionally the flow velocity. With the aim to test the ROV in extreme conditions, the vehicle was operated during high tide and in the points of maximum current velocity. Due to a series of innovations in the propulsion system of the ROV, the vehicle showed that not only it was able to withstand the current of the river, but it was also capable of navigate against it with ease.

www.mariscope.de

PAMBuoy

Detection, Protection in the Renewable Sector

A new instrument to detect whales, dolphins and other marine mammals, and provide immediate alerts during the development of offshore wind, wave and tidal installations, recently made its debut at the University of St Andrews.

PAMBuoy was originally developed by SMRU Ltd, a marine mammal consultancy which is a commercial spin out from the world renowned Sea Mammal Research Unit at the university. PAMBuoy is a cutting edge autonomous passive acoustic monitoring system for marine mammals. It operates 24/7 to automatically detect and classify vocalizing marine mammals – whales, dolphins and porpoises, providing high resolution data that can be used to identify species present and determine temporal patterns in use.

The units are being manufactured by Marine Instrumentation Ltd, and the team has just made its first commercial sale to an engineering consultancy in Australia.

Passive Acoustic Monitoring (PAM) is the term used to describe the process of passively listening for sounds emitted by animals. The new system will not only support the offshore marine renewable energy industry, oil and gas companies, but also the regulators and academic researchers and help reduce the effects of potential operations on marine mammals. It can be placed in a buoy offshore, or placed onshore for example in a harbor application, and is clever enough to automatically recognize the species detected.

Professor Ian Boyd, Chief Scientific Advisor at DEFRA and founding director of SMRU Ltd and former director for the Sea Mammal Research Unit said: "we are delighted to see fundamental research from the University of St Andrews, producing this very practical instrument. Cracking the problem of how to detect these animals reliably has taken many years. Efforts continue to develop the statistical methods that will result in estimates of marine mammal population size from the emerging data."

Initial prototyping trials with PAMBuoy began in St Andrews Bay in May 2011 and most nights the system detected the movement of dolphins in the Bay. Night detection would have been impossible with conventional survey techniques for marine mammals which use human observation to search for animals at the water's surface, i.e. an individual with binoculars, hampered by bad weather and limited to daylight hours. A second Proof of Concept PAMBuoy unit was installed onshore, at the Lime Kiln Point State Park lighthouse on San Juan Island at Seattle in the USA. Its role was to listen for Southern Resident Killer Whales (Orcas) in the area during the late summer months. Both locations are now testing Mark II prototype PAMBuoy. You can see their data in real time on the PAMBuoy website.

The team of scientists which is developing this new Scottish product is led by Richard Baggaley, operations manager of Marine Instrumentation Ltd, together with by bio-acoustician Dr Doug Gillespie and senior software developer Andy Maginnis. They are supported by marine mammal biologists Dr Gordon Hastie and Dr Cormac Booth.

www.pambuoy.com

Coastline Surveys Takes DATEM 5000 CPT System

Coastline Surveys has taken delivery of its new Datem 5000 CPT System (C-Pen35). After a series of acceptance tests the system was delivered on-time to Scotland and has immediately commenced work on a cable route survey in the North Sea for the Renewables Sector. The DATEM 5000 unit is a coiled rod design offering the latest technology and increased push capability compared to similar CPT designs available. The C-PEN35 system is designed for performing insitu soil testing from nearshore to water depths up to 3,000m. The unit is compact enough for deployment from smaller vessels of 20-25m length making it a versatile and adaptable system for most client applications and soil types and importantly reducing overall vessel spread costs to Clients. The Cone Penetration Test concept is based on pushing a calibrated steel cone into the ground at a constant speed of 2 cm/sec, with continuous measurement of the cone end resistance, sleeve friction along the cone, and the pore water pressure. These measurements make it possible to accurately determine insitu ground condition strengths and infer stratigraphy over the penetrated depth and is often used in conjunction with vibrocoring and geophysical surveys also undertaken in house.

www.coastlinesurveys.co.uk

OceanWise

Off-the-Shelf Marine Mapping Datasets

OceanWise Ltd, has established off-the-shelf marine mapping datasets that meet the needs of the most demanding applications. These datasets include Raster Charts, Marine Themes and the recently released Marine Themes DEM. All are available on-line for immediate download from established digital mapping providers, emapsite.com and FIND Mapping. OceanWise mapping and data management products are being used widely across central and local Government, NGOs and the commercial sector. OceanWise has now added scale independent, seamless feature layers to its acclaimed vector dataset, Marine Themes.

www.oceanwise.eu

AXYS Ocean Sentinel

Supporting Wave Renewable Energy

AXYS Technologies delivered an Ocean Sentinel buoy and TRIAXYS buoy to the Northwest National Marine Renewable Energy Center, or NNMREC, at Oregon State University. The equipment is part of a mobile wave energy test facility that will be used by academic researchers and device developers to test wave energy technologies that will measure wave resources and assist in the study the energy output and other environmental issues.

The delivery of the Ocean Sentinel represents a milestone achievement by AXYS in the development of an advanced power and control monitoring buoy. AXYS engineers worked with NNMREC staff to develop this custom buoy system that interfaces with numerous custom control and monitoring devices, as well as basic meteorological and oceanographic parameters. They system also provides, real time communications that monitors all aspects of the system performance.

The Ocean Sentinel platform is based on a NOMAD 6m hull design with four large watertight compartments. Data from the buoys are collected by AXYS' onboard WatchMan500 data acquisition system and transmitted to a shore station by satellite and cell phone telemetry. In addition, this buoy also has an Automatic Information System (AIS) transmitter which transmits buoy position and environmental data to passing ships. The AXYS' Data Management System (DMS) permits remote control and configuration for the entire buoy network, down to the individual sensor. The AXYS TRIAXYS directional wave buoy will be deployed separately from the Ocean Sentinel and will provide precision wave measurements to quantify the wave resources in the test facility local. AXYS also designed and provided a custom 3 point mooring and deployment procedures for the Ocean Sentinel.

ClearSignal

Glider Completes 5-month Mission

Severn Marine Technologies (Annapolis, MD) and Scripps Institute of Oceanography (SIO) (La Jolla, CA) recently completed a 135-day mission where the Spray Glider was coated with the Clear Signal Biofouling control system. Half of the glider was coated with Clear Signal in order to qualify the coating for much larger scale use on the Spray Glider. The coated qualification occurred during a normally scheduled science mission in Monterey Bay for gathering oceanographic data.

The results showed the Clear Signal coating to be highly effective in controlling the growth of biofouling on the glider. There reportedly was no biofouling accumulation on the coated sections while the uncoated sections showed moderate to high biofouling. The coating showed no signs of wear and is designed to last for the life of the glider. As a result of its success SIO will be coating multiple Spray Gliders with the Clear Signal Biofouling Control System.

Email: info@severnmarinetech.com
www.severnmarinetech.com

MTR Marketplace

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MTR Marketplace

PRODUCT & PROFESSIONAL SERVICES DIRECTORY

VOLUNTEER WATER QUALITY MONITORING COORDINATOR

Job Location: USA, SC Conway

Coastal Carolina University is accepting applications for the following position: Volunteer Water Quality Monitoring Coordinator (Research Grant Specialist) in Coastal Carolina University's Burroughs and Chapin Center for Marine and Wetland Studies. Position is a full-time annual appointment with benefits. This position will work with the Center's Environmental Quality Laboratory which serves the coastal and inland waters of northeastern South Carolina. The primary responsibility is management of several established volunteer water quality monitoring programs.
Duties will include: field sampling and analysis, quality control procedures, data management and statistical analyses. The coordinator engages in rigorous field work, trains others in sampling and analytical techniques, and coordinates the activities of students and volunteer monitors. Opportunities are available to perform data analyses, deliver professional presentations, author publications, and develop science-to-management activities in partnership with local municipalities and NGO's.
Requirements: Bachelor's degree in science and one (1) year related job experience. Applicant will possess strong field, laboratory and computer skills. Must maintain a valid SC driver's license.
Information regarding the volunteer monitoring programs is provided at http://www.coastal.edu/wwa/vm/. For details on the University's benefits, see http://www.coastal.edu/hreo/employment/benefits.html.
Application Process: Applicants should complete an on-line application at: https://jobs.coastal.edu, which will include submitting a cover letter, resume and the names and contact information for three (3) professional references. Review of applications will begin immediately and continue until the position is filled.
Coastal Carolina University is an EO/AA employer.

Susan Libes
Coastal Carolina University
290 Allied Drive
Conway, SC 29526
USA
Phone: 843 349-4028
Email: susan@coastal.edu
WEB: http://www.coastal.edu/wwa/vm

AMSEC MASTER TRADESPERSON 3 (1276BR)

Job Location: USA, VA Newport News

Position Specifics: Seasoned Marine Electrician. Able to work with little to no supervision, excellent troubleshoot skills, able to read technical drawings and manuals. Experienced with new installations and programmable logic controllers.

Education: HS education or Trade School + 10 years of related experience. Prefer technical/professional certifications.

Must be able to lift, carry and transport heavy equipment and boxes. The exact weight requirements will be determined by the specific job, but no less than 30 lbs. Able to work on and climb ladders, work in extreme temperature environments, aboard ships, in shipyards, under industrial conditions and in confined spaces. Able to perform other duties as required which may involve high heat, humidity, noise and dirty conditions, working aloft or over the sides of vessels. May ride ships at sea for extended periods. May require wearing a respirator. Travel may be required within and outside of the continental United States.

Supervises others and manages one or more multiple jobs. Applies comprehensive understanding of production and processes toward completion of assignments. Responsible for interfacing with customers, managing subcontractors and ability to provide work direction to others. Performs a variety of complicated and non routine tasks. Develops and uses technical documents including controlled work packages, formal work processes and procedures, test documents, reports and task or trip reports. Schedules, reports and briefs customers and senior management. Performs duties outside of specialty in order to complete installation or work assignment.

To view the full job description and to apply online, please visit www.amsec.com and reference Requisition ID #1276BR.

AMSEC is a subsidiary of Huntington Ingalls Industries (HII). Huntington Ingalls Industries (HII) designs, builds and maintains a variety of nuclear and non-nuclear ships for the U.S. Navy and builds high-endurance cutters for the U.S. Coast Guard. In addition, HII provides aftermarket services for military ships around the globe. For more than a century, HII has been building more ships, in more ship classes, than any other U.S. naval shipbuilder. Employing nearly 38,000 shipbuilders in Virginia, Mississippi, Louisiana and California, Huntington Ingalls Industries' primary business divisions are Newport News Shipbuilding and Ingalls Shipbuilding.

Huntington Ingalls Industries is an Equal Opportunity Employer committed to hiring and retaining a diverse workforce. U.S. Citizenship is required for most positions.

Cameron Johnson
AMSEC
Fax: (757) 631-2376
Email: Cameron.L.Johnson@hii-amsec.com
WEB: http://https://sjobs.brassring.com/TGWebHost/home.aspx?partnerid=25477&siteid=5548

OCEANOGRAPHIC ELECTRONICS/ELECTRICAL TECHNICIAN

Job Location: New Zealand, Wellington

NIWA is a leading environmental research institute and key provider of marine, freshwater and atmospheric research in New Zealand. The primary purpose of this position is to provide technical and electronics support for oceanographic projects and research vessel maintenance. This involves the maintenance and development of a wide range of maritime scientific instrument systems and the operation of these systems at sea on NIWA's research vessels. The position involves a substantial component of field work, essentially carried out at sea, hence, requires that the successful applicant be able to spend periods of time away from home. We are looking for someone with a minimum of NZCE or similar relevant qualification with a good level of electrical and mechanical experience and aptitude. We would prefer a registered electrical service technician. Applicant should also be amenable to learning in a broad field of scientific instrument systems. You must possess strong organisational skills with the ability to prioritise workloads and show high levels of judgement and adaptability, while working in a team environment.The job description, online applications and further information about NIWA can be found at www.niwa.co.nz/careers Applications close Friday, 14 September 2012.

Fiona Pollock
NIWA
New Zealand
Email: sharonpohatu@adcorp.co.nz
WEB: http://www.niwa.co.nz/careers

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22	JW Fishers Mfg Inc.	www.jwfishers.com	(508) 822-7330
9	L-3 Communicatons	www.L-3com.com	(603) 893-6131
23	LinkQuest, Inc.	www.link-quest.com	(858) 623-9900
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47	Markey Machinery	www.markeymachinery.com	(206) 622-4697
3	Pacific Crest	www.pacificcrest.com/adl	Please visit us online
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17	Seacon	www.seaconworldwide.com	011 44 149 365 2733
7	SonTek	www.sontek.com/hydrosurveyor	Please visit us online
47	Specialty Devices, Inc.	www.specialtydevices.com	(972) 429-7240
39	Subsea Photo Contest	http://photos.seadiscovery.com/rules-and-terms.asp	Please visit us online
15	Teledyne TSS	www.teledyne-tss.com	44 (0) 1923 216020
3	Trimble	www.trimble.com/gnss-inertial	Please visit us online
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C2	VideoRay LLC	www.videoray.com	(610) 458-3000

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PetroMarker this summer performed a number of EM surveys in the Norwegian sector of the Barents Sea. More and more oil companies see the advantage of PetroMarker's unique EM technology to evaluate prospective acreage. According to the Norwegian Oil Directorate (NPD), the Barents Sea is one of the key areas for future O&G production in Norway. The NPD has launched series of seismic campaigns in previously un-touched parts of the BarentsSea.

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EvoLogics GmbH
Ackerstrasse 76,
13355 Berlin, Germany
tel.: +49 30 4679 862-0
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