The Information Authority for the Workboat • Offshore • Inland • Coastal Marine Markets

Marine News

OCTOBER 2014
www.marinelink.com

Innovation on the Waterfront

Penetrating & Impacting all Workboat sectors

Security Workboats
The backbone of commercial operations

CAD/CAM Software
Fierce fighting for a foothold

Workboat Communications
The utility and mobility of wireless Comms

ENVIRONMENTAL SAFETY FACT:

LAST YEAR ALONE,
RESPONSE AND DAMAGE COSTS FOR LUBRICANT LEAKS
COST MARINE BUSINESS OWNERS
$322,000,000.

ENOUGH TO EMPLOY
6,440 ABLE-BODIED SEAMEN

ENVIRONMENTAL SAFETY SOLUTIONS.

As you know, environmental regulations continue to evolve. Clarion® Lubricants is committed to helping you meet the 2013 Vessel General Permit with formulations that offer excellent anti-wear properties. With options that are readily biodegradable, zinc-free and non-toxic in acute aquatic toxicity tests, our lubricants provide confident protection for your operation. And our waters.

Contact an expert or visit **ClarionEnviroSafety.com** to learn how the right lubricant can help your business.

clarion LUBRICANTS

CONTENTS

MarineNews October 2014 • Volume 25 Number 10

12

28

34

ON THE WATER. AROUND THE CLOCK.

Commercial operators count on Volvo Penta to maximize uptime and keep productivity high. Whether it's scheduled service or an unexpected problem, we're right here for you – whenever, wherever – with hundreds of North American service locations and responsive 24/7 support. Learn more at volvopenta.com/us.

GLOBAL SERVICE NETWORK

VOLVO PENTA

MarineNews

ISSN#1087-3864 USPS#013-952
Florida: 215 NW 3rd St., Boynton Beach, FL 33435
tel: (561) 732-4368; fax: (561) 732-6984
New York: 118 E. 25th St., New York, NY 10010
tel: (212) 477-6700; fax: (212) 254-6271
www.marinelink.com

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

Associate Publisher & Editorial Director
Greg Trauthwein • *trauthwein@marinelink.com*

Editor
Joseph Keefe • *keefe@marinelink.com*
Tel: 704-661-8475

Web Editor
Eric Haun • *haun@marinelink.com*

Contributing Writers
Susan Buchanan • Lawrence R. DeMarcay, III • Joe Hudspeth • Randy O'Neill

PRODUCTION
Production & Graphics Manager Nicole Ventimiglia • *nicole@marinelink.com*

SALES
Vice President, Sales & Marketing
Rob Howard • *howard@marinelink.com*

Advertising Sales Managers
National Sales Manager
Terry Breese • *breese@marinelink.com*
Tel: 561-732-1185 Fax: 561-732-8414

Lucia Annunziata • *annunziata@marinelink.com*
Tel: 212-477-6700 Fax: 212-254-6271

Frank Covella • *covella@marinelink.com*
Tel: 561-732-1659 Fax: 561-732-8063

Mitch Engel • *engel@marinelink.com*
Tel: 561-732-0312 Fax: 561-732-8063

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

Dawn Trauthwein • *dtrauthwein@marinelink.com*
Tel: 631-472-2715 Fax: 631-868-3575

Jean Vertucci • *vertucci@marinelink.com*
Tel: 212-477-6700 Fax: 212-254-6271

Managing Director, Intl. Sales
Paul Barrett • *ieaco@aol.com*
Tel: +44 1268 711560
Fax: +44 1268 711567

Uwe Riemeyer • *riemeyer@intermediapartners.de*
Tel: +49 202 27169 0
Fax: +49 202 27169 20

Sales & Event Coordinator
Michelle Howard • *mhoward@marinelink.com*

Classified Sales
(212) 477-6700

CORPORATE STAFF
Manager, Public Relations Mark O'Malley • *momalley@marinelink.com*
Manager, Info Tech Services Vladimir Bibik • *bibik@marinelink.com*

CIRCULATION
Circulation Manager Kathleen Hickey • *mncirc@marinelink.com*

TO SUBSCRIBE:
Subscriptions to ***Marine News*** (12 issues per year) for one year are available for $60.00; Two years (24 issues) for $95.00.
Send your check payable to:
MarineNews, 118 E. 25th St., New York, NY 10010.
For more information email Kathleen Hickey at: k.hickey@marinelink.com

POSTMASTER Time Value Expedite

BPA WORLDWIDE BUSINESS

On the Cover

34 Specialty Workboats

In a dangerous world, even the largest ship in the world depends on the smallest maritime security/special mission platform. And when it comes to small boat security operations, innovation is the name of the game. John Haynes' primer on the advances in small military & municipal applications starts on page 34.

MarineNews ISSN#1087-3864 is published monthly, 12 times a year by Maritime Activity Reports, Inc., 118 East 25th Street, New York, N. Y. 10160-1062. The publisher assumes no responsibility for any misprints or claims and actions taken by advertisers. The publisher reserves the right to refuse any advertising. Contents of this publication either in whole or in part may not be reproduced without the express permission of the publisher.

POSTMASTER: Send address changes to ***MarineNews***, 850 Montauk Hwy. #867 Bayport, NY 11705.
MarineNews is published monthly by Maritime Activity Reports Inc. Periodicals Postage paid at New York, NY and additional mailing offices.

We've got you covered. With a legacy of reliable power and trusted service for commercial marine vessels. MTU offers powerful Tier 3 engines and propulsion systems. And the Ironmen Series 4000's tradition of reliability and durability continues with the new EPA Tier 3 certified family, including our 8V 4000—the first Tier 3 solution in its class.

www.mtu-online.com

Series 4000

mtu

Power. Passion. Partnership.

keefe@marinelink.com

A one-week trip to the SMM Trade Show held in Hamburg, Germany reminds me that innovation is alive in well in the world of maritime commerce. There's nothing like trudging across acres of thousands of exhibitors to demonstrate that, just when you think you've seen it all, something new comes around the next bend to prove you wrong. But, it's like drinking from a fire hose. At the same time, it was clear that there is much on that side of the pond that we can also put to work on ours. And, of course, we can show them a thing or two, as well.

Progress on the waterfront during the final 50 years of the previous century was (arguably) measured in the almost unbelievable increases in deadweight, LOA, beam and draft of waterborne tonnage. If that's true, then the first 50 years of this one will almost certainly be known for the equally amazing leaps in technology that go into building even the smallest of hulls. Just as the master of yesterday's T-2 tankers could not have imagined sailing on the ULCC's of today, even the high-tech gadgets on board today's vessels will seem pedestrian to the mariners of tomorrow.

Innovation on the waterfront is alive and well. If necessity is the mother of invention, then the regulatory and operational crises of today are most certainly the drivers of tomorrow's technologies. Nowhere is that more apparent than in the world of maritime security workboats, especially those being produced by domestic boatbuilders from coast to coast here at home. Demand from foreign navies and coast guards – as well as domestic municipal and federal sectors – are fueling robust output of competitively priced, well-built high tech hulls. At a time when bluewater shipbuilders are experiencing a sustained upswing in domestic deliveries, our workboat builders are serving notice that they can compete on a global scale. Susan Buchanan lays out the story, starting on page 28 of this edition.

Many stakeholders believe that the domestic oil boom is the biggest factor driving our maritime rebound. If so, then it also follows that the need for environmental compliance and fuel economy form the one-two punch which is guiding the creation of new and innovative designs for brown water tonnage. That means LNG. The race to create and market the perfect LNG bunker barge and some interesting twists on that concept is well underway. The competition between naval architecture shops is fierce and not surprisingly, so is the battle to gain market share for the CAD/CAM software packages that allow designers to whip up these forward-thinking ideas. We explore both situations, also within these pages.

October is a time when the leaves begin to turn and we look ahead to the weather change certain to come. The waterfront is also taking a turn, in this case, for the better. Looking around at all that has happened, I can't help but think that those who do not do the same will be forever left behind.

Joseph Keefe, Editor, keefe@marinelink.com

RELIABLE POWER

WHEN THE WEATHER IS NOT

Powering the industry for 60+ years

+ Control Systems Repair & Installation
+ Switchgear Design & Installation
+ Engineering Services
+ Electrical & Corrosion Surveys
+ Power Distribution Systems Design & Installation
+ Fire Inspections
+ Installation & Sales of Electrical Components
+ Electrical Systems Repair
+ Panel Production & Design

ABYC CERTIFIED MARINE TECHNICIAN
MARINE ELECTRICAL
MARINE CORROSION

Ft. Lauderdale, FL + 954.523.2815
Riviera Beach, FL + 561.863.7100
Toll Free: 800.545.9273
www.WardsMarine.com
Se Habla Español

WARD+S
MARINE ELECTRIC

@WardsMarine /WardsMarine LinkedIn

Improvements to Reduce Human Error and Near Miss Incidents – A U.S. Coast Guard Report to Congress

We recently came across a very interesting report issued to Congress by the United States Coast Guard. The May 2012 study might seem dated, but that's hardly the case. Actually, it's a telling description of what can go wrong, why and perhaps, a blueprint for how to go forward and fix things. That's our take, in any event. The Report chronicles oil spills from all vessel types, including the towing industry, tank ships, the offshore industry, freighters, and fishing vessels. Section 703 of the Coast Guard Authorization Act of 2010 directs the Coast Guard to conduct a study of oil spills involving commercial vessel sources, covering 2001–2010. The data for this report was derived from incident investigations in the Coast Guard's Marine Information for Safety and Law Enforcement (MISLE) information system.

The Coast Guard Report included consultation with and input from Maritime Industry Experts such as the American Waterways Operators (AWO), the Great Lakes Pilots Advisory Committee, Intertanko, the Maritime Administration (MARAD), Offshore Marine Service Association (OMSA), the Passenger Vessel Association (PVA), the Ship Operations Cooperative Program (SOCP); and the Towing Safety Advisory Committee (TSAC). And, in the end, they examined spill causes by accident, type of vessel, service, size of vessel and myriad other variables. It's really a good primer. The 74-page report includes analysis of oil spills and their causes, and an assessment of near-miss casualties, based upon comparisons of all reported marine casualties to those resulting in a spill. It is fascinating stuff and in truth, better than a night of "must-see" TV. We include just a few of the Tables and Figures that accompanied the report within our pages.

The data also shows that a small number of vessel casualties resulted in most of the spill volumes. Most spills do not involve vessel casualties – these non-casualty spills are termed "operational" spills and these incidents are reportable under the Federal Water Pollution Control Act of 1973. The casualty and non-casualty groupings were studied separately in order to identify their respective causal factors. For purposes of this report, a non-casualty spill is one in which the only reported occurrence is an oil spill (the incident did not involve an allision, collision). Interestingly, material failure was the most frequently reported casualty reason, involving about 50 percent of all incidents. Material failure is a mechanical failure of a shipboard system (i.e., systems involving steering, propulsion, navigation, pollution prevention, fuel transfer, cargo transfer, cranes), which when functioning properly, acts as a defense against a casualty or pollution incident from occurring.

Inattention and procedural errors were the most frequently reported human factors. Predictably, other human factors included drug or alcohol use; fatigue; and violation of law or regulation. These types of occurrences were reported most often among ***crew members of fishing vessels and towing vessels*** who may not be required to have a license or other mariner credential. More so, fishing vessels had more reports of drug or alcohol use and fatigue than all of the other vessel types combined. But, this shouldn't surprise anyone, especially since the Coast Guard's ***Walter J. Brudzinski, Chief Administrative Law Judge*** did a study on this very trend, not too long ago. As we reported in these very pages just one year ago, it turns out that U.S. Documented small passenger vessels (SPV) and their crewmembers are among the most heavily regulated of all U.S. documented categories. Conversely, U.S. Documented commercial fishing vessels (CFVs) are subject to the least amount of Coast Guard regulation. CFV's are, however, subject to Post-Accident drug and alcohol testing – presenting a perfect contrast to SPV crewmembers for comparison. In this report, the Coast Guard recommends that "dockside examinations of commercial fishing vessels should be used to educate vessel owners on the importance of vessel maintenance and watertight integrity. On the other hand, we think that the Coast Guard ought to start random drug and alcohol testing on this segment, as well. Two studies – both emanating from Coast Guard sources – say so. ***What are they waiting for?***

The Coast Guard also recommends that given the success within the oil shipping industry to reduce their level of oil spills and pollution, then it stands to reason that that the Safety Management System (SMS) provisions of the recently published proposed rule for inspection of towing vessels should emphasize SMS implementation to the fullest extent possible. Of course, here, they are talking about the Subchapter M towboat rules. Again, this sounds like a great idea. And, industry, for once, is dying

FULL SPEED AHEAD

Caterpillar marine diesel engines deliver impressive performance throughout a wide speed range with exceptional power density. That means they're as smooth and efficient when you're pulling into dock at an idle as they are when you're heading up the river or out to sea at full throttle.

When it's time to "shove off" in a Cat® powered vessel, there's simply no holding back.

- Caterpillar offers the industry's largest range of marine engines to provide the power you need.
- High-performance or commercial, propulsion is in the name.
- The ease and speed of maintenance gets you quickly on the way.
- Cat marine generator sets and auxiliary engines keep things smoothly running onboard.
- Louisiana Cat is behind you all the way with fully equipped facilities, factory trained technicians, factory authorized warranty repairs and preventive maintenance programs.
- Long-term durability, high fuel efficiency and long life-to-overhaul provides maximum productivity with minimum outlay.

24-HOUR EMERGENCY PARTS AND SERVICE

Call our toll free number below to learn more about our Caterpillar products and services.

ALEXANDRIA | BELLE CHASSE | BOSSIER CITY | LAFAYETTE | LAKE CHARLES | MONROE
MORGAN CITY | RESERVE | NEW IBERIA | PORT FOURCHON | PRAIRIEVILLE

866-843-7440 **www.LouisianaCat.com**

GL CERTIFIED

Louisiana CAT

to have the subchapter M rules ratified. *We ask again: what are we waiting for?*

Inattention to detail, (lack of) worker qualifications, external causes (warning buoys off station), inadequate training, mistiming during vessel maneuvers, incorrect situational assessment – you name it – they examined it.

In fact, in the 10-year period in question, most spill volumes can be attributed to five groups or types of vessels: vessels engaged in offshore oil production; towing industry vessels (tank barges and towboats); tank ships; freight ships; and fishing vessels.

We won't steal the Coast Guard's thunder, though.

Vessel Spills By Size Range, Calendar Years 2001 - 2010

Spill Size Range	Number of Spills	Percentage of Spill Count	Total Gallons Spilled	Percentage of Spill Volume	Average Spill Size (Gallons)	Maximum Spill Size
1 - 100 GALLONS	19,648	94.87 %	168,839	2.53 %	9	100
101 - 1,000 GALLONS	822	3.97 %	297,783	4.47 %	362	1,000
1,001 - 3,000 GALLONS	124	0.60 %	229,278	3.44 %	1,849	3,000
3,001 - 5,000 GALLONS	32	0.15 %	124,575	1.87 %	3,893	5,000
5,001 - 10,000 GALLONS	36	0.17 %	271,549	4.08 %	7,543	10,000
10,001 - 50,000 GALLONS	33	0.16 %	745,526	11.19 %	22,592	50,000
50,001 - 100,000 GALLONS	3	0.01 %	195,689	2.94 %	65,230	84,000
100,001 - 1,000,000 GALLONS	11	0.05 %	2,802,729	42.07 %	254,794	420,000
1,000,001 + GALLONS	1	0.005 %	1,826,626	27.42 %	1,826,626	1,826,626
Totals	20,710	100.0 %	6,662,594	100.0 %	322	

Table 1: Five percent of the incidents resulted in more than 97 percent of the total oil spilled.

Material Failure Casualties

Description	Number Of Spills	Gallons Spilled
Hull Plating	57	378,776
Cargo Pumps, Piping, Fittings	19	6,200
Other	16	359
Totals	**92**	**385,335**

Table 7: Hull plating failures account for more than half of the material causes and almost all of the spill volume.

Spills From Material Failure, By Component Type

Description	Spills	Percent of Total
Hull Plating	32	28.8
Steering Gear	31	27.9
Shafting/Propeller Components	15	13.5
Fuel Oil System Pumps & Piping	9	8.1
Fuel Tank	7	6.3
Engine Cooling piping & valves	4	3.6
Bilge Water piping/Valves	3	2.7
Main Engine	3	2.7
Other	7	6.3
Grand Total	**111**	**100.0**

Table 18: Hull plating and steering gear failures were the two largest material failures leading to discharge experienced by towing vessels.

Tank Barge Casualty Frequency vs. Spills, 2001 – 2010

First Event of Casualty	All Casualties Involving Tank Barges	Percent of Incidents	Number of Tank Barge Spills	Percent of Spills	Gallons Spilled	Percent of Volume
Allisions	1,201	22.9 %	17	13.3 %	2,020,232	66.9 %
Collisions	404	7.7 %	8	6.3 %	451,842	15.0 %
Material Failure	672	12.8 %	92	71.9 %	385,335	12.8 %
Explosions	6	0.1 %	3	2.3 %	84,131	2.8 %
Groundings	1,412	27.0 %	6	4.7 %	78,586	2.6 %
Sinkings	4	0.1 %	2	1.6 %	11	0.0 %
All Others	1,537	29.4 %	0	0.0 %	0	0.0 %
Totals	**5,236**	**100.0 %**	**128**	**100.0 %**	**3,020,137**	**100.0**

Table 9: Allisions and collisions represent 30 percent of barge casualties, but more than 70 percent of spill volume.

Access the report here: *http://storage.marinelink.org/Files/GetFile/20120507humanerrorandnearmiss.pdf*

Paul N. Jaenichen

Maritime Administrator,

United States Maritime Administration

Paul "Chip" Jaenichen was appointed by President Obama and sworn in as Maritime Administrator on July 25, 2014. Before his appointment, Administrator Jaenichen served as Acting Administrator beginning in June 2013. He joined the U.S. Department of Transportation, Maritime Administration in July 2012 when he was appointed Deputy Maritime Administrator. A career naval officer, retiring in 2012 after serving 30 years as nuclear trained Submarine Officer in the U.S. Navy, Jaenichen's final assignment was Deputy Chief of Legislative Affairs for the Department of the Navy from October 2010 to April 2012. Prior to that, he commanded a Los Angeles Class Fast Attack Submarine, as well as an entire Submarine Squadron. His shore tours included assignments as Director, Submarine/Nuclear Officer Distribution where he was responsible for career progression and assignment of over 5,200 officers and as Chief, European and North Atlantic Treaty Organization (NATO) Policy Division on the Joint Staff where he was responsible for military-to-military engagement on security cooperation and involvement in coalition operations with all 26 NATO member nations. Jaenichen earned a Bachelor of Science in Ocean Engineering from the United States Naval Academy and a Masters in Engineering Management from Old Dominion University. Although no stranger to the waterfront itself, Jaenichen is better known on the naval side of the equation. That said; he brings common sense to a position which surely demands it and has shown himself to be a quick study in all things that impact commercial, domestic maritime stakeholders. Throughout his short tenure at the U.S. Maritime Administration, he has been known as a capable advocate for department and the maritime sectors that he helps foster. Listen in this month as he provides a thorough SITREP on the domestic waterfront.

You are 15 months into the job as U.S. Maritime Administrator and have been approved by the U.S. Senate. You've been with Marad for more than two years. Give us your impressions of working at Marad and also tell us what you brought to the Administrator's office.

Since arriving at MARAD I have found the professionalism, diligence and dedication of MARAD employees impressive and among the best I have seen in Government. Without question, they are working hard every day to reinforce America's future course as a maritime Nation. I think what I brought to MARAD was a focus and prioritization on the issues of most importance to the maritime industry in those areas where MARAD can make a difference and achieve the best affect or outcome. In any government organization, you are faced with limited resources. Once you lose focus on the most important areas or fail to prioritize actions, the organization is spread so thin that you don't get much done nor do you get appreciable return on the organization's investment either in funding or human capital. As you're aware, there has been no real attempt to develop a National Maritime Strategy since the late 1960s, and obviously—a new one is long overdue. This was something

I was able to discuss with Secretary Foxx shortly after his arrival, and he got it right away. He clearly understood the importance and need for a seamless integration between maritime, rail and road, as well as how important this industry's continued success means to our Nation's economic and national security. The Secretary's support put a lot of momentum behind the development of the strategy, and it will enable us to take it to the next level.

Marad's role is described by some as being "America's Maritime Cheerleader." But, it is much more than that. Tell the readers why and how.

While MARAD is a staunch advocate for an irreplaceable but largely invisible industry, we manage numerous programs geared toward keeping American freight moving efficiently by increasing the utilization of our Nation's marine transportation resources and infrastructure. For instance, StrongPorts delivers development assistance to U.S. ports, helping them continue to meet our growing population's increasing demands for goods that travel by water. Additionally, the Department of Transportation announced the next round of Transportation Investment Generating Economic Recovery or TIGER grants in mid-September. Through the first five rounds, we invested over $420 million in 33 ports, inland and coastal both large and small. So ports and Marine Highways will continue to be well represented in future rounds of TIGER. The Marine Highway program looks to improve intermodal efficiency in freight transport by shifting from congested roadways and rail lines to underutilized rivers, waterways, the Great Lakes and near coast routes, where it makes sense to do so. This effort will become increasing more important when you look our Nation's expected population growth by 2050. The addition of nearly 80 million more people will require us to move 14 billion more tons of freight than is currently moving today. So it is an absolute necessity that our marine transportation system be part of the solution. Our financing initiatives (including Title XI shipbuilding loan guarantees) enable U.S. shipyards to support the Jones Act build requirement and in some cases compete globally to help our Nation maintain our essential shipbuilding infrastructure and capacity. That industrial base is a critical strategic asset to our Nation and can never be lost. Additionally, our national security programs ensure that the Department of Defense has assured access to U.S.-Flag vessels and Merchant Mariners required to support any sealift effort to support global projection of the U.S. Armed Forces in the event of a contingency involving armed conflict or national emergency.

Likewise, you also insist that logistical situations or short term inconveniences on the rail and road can also prompt shippers to look for a better way. Where have you seen that happen?

Several start-up services demonstrate how Marine Highways are a viable method of moving our Nation's freight. Since 2008, the M-64 Express has been running a service between Richmond and Norfolk, Virginia. While it initially operated once a week, demand doubled by 2012 and tripled by 2013. It has saved over 10,000 truck trips last year alone, providing public benefits in the form of reduced air emissions and savings on road maintenance costs. We're seeing similar successes where geography and the right markets coincide, like with Couch Lines in the La Porte, Texas area, and Columbia Coastal, which operates on the M-95 from Norfolk to Baltimore and Philadelphia. Unfortunately, there are also challenges as we discovered with the M-580 Green Trade Corridor project, but we will take those lessons learned and apply them to future Marine Highway projects.

Marad is the only modal arm office in the U.S. Department of Transportation that has – for the most part – little in the way of regulatory powers. How does this impact your mission to better the domestic waterfront and where do you make up for organizational shortcomings to make a real difference?

A regulatory agency has to maintain a certain degree of separation from industry in order to maintain an objective position and credibility in enforcement. One of the advantages that MARAD has in the absence of a large regulatory role is that we are able to work much more closely with stakeholders and operate in a more effective manner as a partner with the industry. This allows us to roll up our sleeves and work directly to help the industry where it is needed. In that context, being largely non-regulatory is actually a strength, not a limitation. I will note that MARAD was tasked in the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009 with enforcing the Nation's Cargo Preference laws. We are currently in the process of drafting a proposed rulemaking and should have it be ready for government interagency review soon. This will give MARAD a greater regulatory role once the rulemaking is implemented, but that, as you know, is a lengthy process.

Trucking, rail, air freight and maritime – they all form essential parts of the intermodal equation. Too often, maritime gets lost in the noise. Beyond this, the trucking and rail lobbies are pretty good at what they

do. What can we from the waterfront do to convince trucking and rail that maritime can be a complement to, without detracting from their share of the pie?

The shipping container was developed out of the need to move freight more efficiently. The fact that it works on three modes should send a strong message. Our future freight system must be intermodal, all of the modes will need to work together to accomplish fluid, non-congested freight flow. It will take continued teamwork between the stakeholders and operators from all the modes as well as the intermodal yards and facilities to maintain efficient freight movement across our Nation and accommodate the larger freight volumes that our expected population growth by 2050 will bring. Our focus for the maritime industry is to grab a large piece of the future pie, not the current one. The size of our industry, if you look at it only in individual segments is relatively small, but collectively it is large. That is why the National Maritime Strategy that MARAD is developing has to include ports, shipbuilding and repair, maritime labor, domestic and international shipping. It is through our collective voice that will have the strength to achieve the results we are looking for. However, because freight tends to migrate to the most efficient way of transport, part of our job is also to provide viable alternatives that can help our freight system avoid bottlenecks, congestion and safety issues.

From the waterfront, one of your more vocal mantras has been that we as the maritime component of the intermodal picture have to speak with one voice, if we want to be heard. Flesh that out for the readers.

The railroad industry has seven Class One Railroads. There are 50 states focused on highway maintenance and construction. The maritime industry has 360 ports, 30,000 inland operators, numerous organized labor organizations and thousands of ocean going ships flying dozens of flags. Last year alone, we had over 68,000 vessel calls in the U.S. with over 90 percent of our imports by volume coming by water. The incredible number of stakeholders in the maritime industry makes not only building consensus difficult but also limits our ability to communicate one message with one voice. As I pointed out before, that is why we must be focused on developing a National Maritime Strategy. I am not saying it is going to be easy, but MARAD is committed to doing it. We really have no choice since doing nothing and waiting for a different outcome is not an option.

If you had to choose just one effort and/or accomplishment that Marad can point to as a serious victory for the domestic waterfront under your leadership, then what would that be?

I think it is way too early to be talking about my legacy at MARAD. Quite frankly, it is not about me, but rather it is about the maritime industry and whether we can point the Agency and the industry in the right direction. If I had to pick one accomplishment, it would be bringing the industry together to recognize that we have what may be a once in a lifetime opportunity. Over the course of four days in January and May 2014, over 600 maritime stakeholders took part—either in-person or via internet— in two National Maritime Strategy Symposiums hosted at the Department of Transportation. Participants identified issues, had constructive dialogue, looked for opportunities and developed ideas for the sustainable future of our industry. MARAD has since translated those conversations into actionable items that will guide responsible marine transportation policies our Nation will need in the future. There is a lot of work and collaboration that still needs to be done, but it is a real start to finding a way for the maritime industry to take advantage of this opportunity.

Marad describes America's Marine Highways as "the nation's 25,000-plus miles of underutilized coastal, intracoastal and inland waterways that can help mitigate the landside congestion that is creating gridlock on our highways and railroads." How well we are moving in the right direction to achieve those goals?

Just this August, Secretary Foxx designated a new Marine Highway Corridor—the M-35, running on the Upper Mississippi River between St. Louis and Minneapolis. The request for the designation was co-sponsored by five state DOTs and reflects what we've seen in other requests -- growing coalitions between state governments, local municipalities, ports, cargo owners and other stakeholders—all working together to identify alternative opportunities for freight movement, emphasizing a shift to water. Additionally, the Obama Administration historic decision to allow marine transportation infrastructure to compete with land-based infrastructure for TIGER Grants as well as the freight provision outlined in the Moving Ahead for Progress in the 21st Century Act (MAP-21) provides concrete proof that steps are being taken at the Federal level to develop an interconnected national freight system planning perspective, rather than the modal mindset of years past. We've reached a point where the maritime mode has

joined the other modes at the transportation funding and planning table—and I have no plan to get out of my seat.

LNG power for marine vessels: a hot button issue to be sure. What is Marad doing to stay relevant – and engaged – in the conversation, as the trend gathers momentum here at home?

There are a lot of questions regarding LNG's potential in the maritime world, and MARAD is pushing for answers and to gain the knowledge that our industry needs to move LNG forward. Our Office of Environment and Compliance has been working overtime and linking up with a number of partners—from renowned research universities to key industry stakeholders—on crucial LNG research initiatives. Additionally, we released a study in September that analyzes the issues and challenges associated with bunkering and the landside infrastructure needed to store and distribute LNG. We are making headway outside of research as well—by remaining fully engaged as a co-Chair of an interagency alternative energy task force with the Department of Energy and are partnering with the U.S. Coast Guard to assess research data as well as opportunities for the greater use of LNG as a marine propulsion fuel.

Fostering the Domestic Shipbuilding industry is one of Marad's most important tasks. Give us a "state-of-the-industry" situation report on the domestic shipbuilding and repair front. Arguably, it is doing quite well. Where do you have concerns (if any?) and what can be done about them?

In a large part driven by our country's energy boom, the domestic shipbuilding industry is seeing robust activity, the most over three decades. Billions of dollars are being invested to meet the demands of oil production, and nearly 30 large, self-propelled, oceangoing Jones Act-eligible tankers and containerships are under construction or are on-order at U.S. Shipyards. Although times are good, throughout history, shipbuilding has followed a very cyclical pattern. Right now we are experiencing a big upswing in smaller vessels, offshore supply vessels, and large commercial ships. However, if we don't reinforce a stable shipbuilding base, we're going to face a similar crisis during the next downturn. It is essential that we keep our eye on the ball and go after what will sustain this industry in the long run.

Give us one key mission that Marad performs that readers might not be aware of. Why is that mission important?

MARAD's recently formed StrongPorts program bundles existing initiatives with new products and services to provide our ports a one-stop shop for infrastructure assistance. That program includes MARAD's Port Conveyance Program which transfers surplus Federal Property to state and local governments for the development of port facilities—for no cost. The program is designed to facilitate the expansion of our Nation's marine transportation system, as well as create jobs, strengthen port communities, meet national defense needs and improve goods and freight movement. Since the program's inception, MARAD has transferred over 2,700 acres of former Federal Property, to ports including Los Angeles, Long Beach, Hueneme and Stockton in California; Tacoma and Benton in Washington; Orange County in Texas; Davisville in Rhode Island; and Mid-America Port Authority in Granite City, Illinois. MARAD is currently working with the Department of Defense to execute the conveyance of several other surplus Federal Properties. It is a program that is not very visible, but ports have benefited greatly from it.

The Gulf Intracoastal Waterway – *A Silent Giant No More*

By Jim Stark

The recent enactment of the Waterways Resources Reform and Development Act of 2014 (WRRDA) has brought a sense of optimism to inland waterways mariners, operators and industries across the nation. Our inland waterways are poised for success, and key to that success is the anticipated support provided in that bill. Of course, follow on appropriations and carefully planned implementation is critical to assure continued success of our waterways system. One segment of that system, the Gulf Intracoastal Waterway (GIWW) is growing in importance and value to the nation. It stands ready to shoulder its share of commodity traffic, but like the rest of our inland system, it also needs resource attention.

Once referred to as the "Silent Giant," the GIWW stretches 1,300 miles from Brownsville, TX to St. Marks, FL and carries over 115 million tons of commodities in a typical year. Initially built to provide a safe, land-locked route from Texas to Florida, it has evolved through the decades into an essential route that links Gulf of Mexico ports to each other; to refineries and plants; and to the heartland of the nation via the Mississippi River and other tributaries. In recent years, the GIWW ranked third among the major inland routes in terms of tonnage carried (Mississippi River and Ohio River were one and two). However, the monetary and strategic value of the waterway is quickly growing as a result of the United States' energy renaissance.

Consider that over 100 billion dollars is being invested in energy related projects and infrastructure in southeast Louisiana and Texas. These projects will rely on the safe, economical, efficient, and environmentally friendly mode of barge transport to move crudes, feed stocks and products along the coast and up and down the river systems. Clearly, this means more towboats, barges, facilities and support industries will use the GIWW. Reliable infrastructure is important to the waterway's continued success – and that's why WRRDA and other initiatives are important to the users of the GIWW. Authorization and funding for recapitalization of old lock and flood control structures is needed.

For instance, the Inner Harbor Navigation Canal (IHNC) Lock in New Orleans sits astride the mid-point of the canal, bisecting its east and west reaches. Built in 1921, it was on track for replacement as a deep draft lock. However, with the closure of the Mississippi River Gulf Outlet Canal following Hurricane Katrina, the deep draft portion was no longer feasible and the non-federal sponsor withdrew its support. Now, the United States Army Corps of Engineers (USACE) is starting a General Reevaluation Report to determine the next steps for replacing the lock with a modern shallow draft version. This is a significant project, affecting east-west traffic, as there is no alternate inland route should the aging lock fail.

To the west, the lock at Bayou Sorrel on the Port Allen Alternate Route helps move traffic from Morgan City, LA up the Atchafalaya River to the Mississippi River and northward. A recent reevaluation of the project to replace this lock with a modern, larger design determined that due to construction cost increases, a positive benefit cost ratio no longer existed, preventing project authorization and funding from moving forward. Industry and Inland Waterways Users Board representatives have asked the USACE to reexamine the issue in light of the significant investment in energy facilities and waterways growth we expect to see.

In Texas, the Brazos River Floodgates near Freeport are simply outdated and not up to the task of safely and efficiently passing the unprecedented, record volume of tank barge traffic originating in Victoria, TX and moving east. Recognizing that to take full advantage of the GIWW's capacity, the gates should be either replaced or removed, the waterway's non-federal sponsor, the Texas Department of Transportation, has undertaken an effort to accelerate and fund the first step in the process – a USACE feasibility study. These three long term infrastructure replacement projects, all important to future GIWW viability, have strong industry and non-federal sponsor advocacy, both vital to success. WRRDA's reform of the Inland Waterways Trust Fund and Capital Development Planning are the bookends to this kind of advocacy and can help ensure infrastructure recapitalization.

Equally important, USACE needs a properly funded Operations and Maintenance (O&M) budget for the GIWW. Keeping up with dredging, mooring buoy replacement and maintenance, and lock and floodgate repairs are becoming more and more difficult as increasing traffic

wears on the waterway and infrastructure, federal budgets stagnate and maintenance is deferred. WRRDA requires the Corps to assess the O&M costs of both the Atlantic and the Gulf Intracoastal waterways with an emphasis on identifying costs to achieve authorized length, width, and on identifying the unmet O&M needs of the waterways. This assessment, and the funding that will hopefully follow in the President's budget, are essential steps to ensuring tows and barges have safe moorings and lock delays and groundings are kept to a minimum.

In a study, currently undergoing peer review, industry output losses and impacts due to unplanned, extended waterway closures were examined. Closures may occur for any number of reasons, but primarily failed or damaged infrastructure is usually the culprit. In relative, annualized terms, estimated losses associated with a GIWW waterway closure are far greater than those associated with the Mississippi or Ohio River systems. This is most certainly due to the high value of GIWW cargoes – predominately crude oils, petroleum products and chemicals – and the increasing volumes we're seeing on the waterway. This tells us the "Silent Giant" is making some noise and verifies that the GIWW's importance and value to the nation is growing. Continued strong industry and stakeholder advocacy, WRRDA implementation and adequate appropriations are the keys to ensuring that the noise on the GIWW continues via this essential, safe and prosperous route for inland commerce.

***Jim Stark** is the Executive Director Gulf Intracoastal Canal Association. GICA's mission is to ensure the Gulf Intracoastal Waterway is maintained, operated and improved to provide safe, efficient, economical and environmentally-sound water transportation across Gulf coast states. Stark has earned an M.B.A. from the College of William and Mary and a Bachelor of Science degree in Ocean Science from the United States Coast Guard Academy.*

Taking Cyber Risks Seriously

Once, the stars were all that mariners needed to navigate the seas. Today, maritime companies rely on hi-tech systems to operate and navigate equally hi-tech vessels. All of that comes with new and significant risks.

By Christopher Cooke and John Coletti

On one side, automation has its benefits, especially as crews grew smaller and ships got bigger. On the flip side, however, marine technology, like most other technology, comes with its own risks. Today's technologies often require Internet connectivity to function properly. A recent study by Boston-based security company Rapid7 found more than 100,000 devices – from traffic signal equipment to oil and gas monitors – were connected to the Internet using serial ports with inadequate security leaving them vulnerable to breaches or hacking.

Hackers seek and exploit weaknesses in computer systems and networks. They may be motivated by a variety of reasons, such as profit, protest, challenge or just the sport of it. Like most businesses, maritime companies can show weaknesses in their computer systems and networks that many hackers would just love to exploit.

Risk on the Water

Hackers recently shut down a floating oil rig by tilting it, while another rig was so riddled with computer malware that it took 19 days to make it seaworthy again. Last October, Tokyo-based cloud security firm Trend Micro Inc. said it discovered flaws in ships' mandated automated identification systems, installed in an estimated 400,000 vessels, that can let attackers hijack communications of vessels and even create fake vessels. In another well-publicized incident, researchers at Texas A&M University last year "fooled" an $80 million yacht off the coast of Italy as to its location by manipulating its GPS.

In the maritime industry, the number of known cases is low as attacks often remain invisible to the company, or businesses don't want to report them for fear of alarming investors, regulators or insurers. But while it might be fun and games for hackers, a hacking incident can have significant and costly consequences for vessels and their owners. For the marine industry, areas of vulnerability include:

Company information: Breaches in computer networks can pose a threat to financial, customer, employee and other proprietary data, putting it in the wrong hands. Hackers can take down a website and totally interrupt a company's online operation. Like most companies, maritime companies stores customer and employee information on computer systems. For one, consider cruise lines who maintain databases of their loyalty customers, in addition to the more than 300,000 people they employ. By law in the US, any breach of data that is deemed Personally Identifiable Information (PII) must be reported. PII is information that can be used on its own or with other information to identify, contact, or locate a single person, or to identify an individual in context. When a breach occurs, most states mandate that companies notify those affected and oftentimes, companies incur costs to provide credit monitoring services.

Ships: In another study, security firm Rapid7 was able to collect information from 34,000 vessels around the world using their automatic identification system (AIS) receiver. Using this information they were able to identify and track individual ships, GPS coordinates and outgoing communications from every vessel involved, which included 29 law-enforcement vessels and 27 military ships. Somali pirates help choose their targets by viewing navigational data online, prompting ships to either turn off their navigational devices, or fake the data so it looks like they're somewhere else. That doesn't mean that others are watching in other parts of the world.

Ports: Hackers infiltrated computers connected to the Belgian port of Antwerp, located specific containers, made off with their smuggled drugs and deleted the records. A study last year by the Brookings Institution of six U.S. ports found that only one had conducted an assessment of how vulnerable it was to a cyber-attack, and none had developed a plan to response to an attack. Of some $2.6 billion allocated to a federal program to strengthen port security, less than 1 percent had been awarded for cyber security projects.

Insuring Cyber Risks

Insurance can play a key role as companies search for better ways to manage and reduce their potential financial losses from cyber-attacks. It's important to know that most traditional insurance products such as property and general liability do not cover claims stemming from cyber events (such as hacking). And, to avoid future coverage disputes, more policies are incorporating "exclusions" to clarify that cyber protection is not offered by the policy. The Lloyds of London have already incorporated an Institute Cyber Attack Exclusion Clause (CL 380) into most of the marine policies they issue.

Why? It's not that insurers are refusing to offer coverage for this business risks. It's just that these new and emerging technology risks need to be addressed differently than other business risks. Hence, a whole new cyber liability insurance market is developing quickly to do so.

Currently, available cyber liability insurance focuses on two types of risk: first-party and third-party risks. Available first-party coverage includes loss of business income resulting from a data breach, the cost of repairing and restoring computer systems if there is a virus that destroys business software and data, costs associated with forensic analysis and crisis management to respond to a data breach incident. First-party coverage reimburses the insured for the costs of notifying the individuals whose information was or may have been breached. Some of these policies will even cover the cost of setting up ID theft monitoring services for the potential victims.

Third-party risks such as data breach incidents result from unauthorized access to information or personally identifiable non-public information like bank account numbers, credit card numbers or Social Security numbers. Third-party insurance covers the financial damages an identity-theft victim might incur from the breach.

In purchasing cyber insurance, it's important to remember that there are no off-the-shelf cyber liability policies. Each policy is tailored to meet the specific needs of individual clients. Insurers have extended their coverages to include a wide range of cyberliabilty coverage under one policy form, including network security liability, media content liability, privacy liability, extortion threat, business interruption, credit monitoring, privacy notification costs, and regulatory fines. Some cyber liability policies will cover social media risks, crisis management, and data restoration. Coverage can include direct and indirect costs associated with a breach, ranging from breach notice costs to damages and defense costs.

Cyber liability coverage has greatly evolved since the first products were introduced to the market in the late 90's, and is still evolving. Insurers are working hard to keep pace with new technologies and the risks that accompany them. There is growing concerns about physical damage that cyber-attacks could potentially cause. Additionally, insurers are looking to see how cyber coverage can help protect intellectual property losses and reputational damage. The cyber liability risks of today will be markedly different tomorrow and so, too, will available insurance coverage.

Boosting Security

While a growing cyber insurance market is available to provide coverage, still a company's first line of protection is its own risk management efforts. Companies need to recognize that they have tremendous potential risk and need to invest in practices and protocols that can boost their online security. Many insurers work with outside security vendors to provide their clients with access to pre-qualified services such as network assessment analyses that is customized to meet a company's specific needs and budget. These services test a company's vulnerability to breaches.

Employees play a significant role in staving off cyber risks. It's important to educate and continuously remind employees of, not only their vulnerability to cyber breaches, but the companies. One lost company laptop can wreak havoc therefore, companies are wise to:

- *Train employees and contractors to understand their responsibility in the protection of data assets.*
- *Ensure that mobile devices are encrypted and that employees understand the organizations' policies with respect to downloading sensitive information and working remotely.*
- *Make employees aware of the precautions that should be taken when traveling with laptops, PDAs and other data bearing devices.*

In the whole scheme of things, cyber insurance policies and an investment in more proactive cyber security may be very inexpensive when compared to the potentially enormous costs associated with any kind of data breach. As world commerce becomes ever more global and interconnected and dependent on technology, protecting physical assets, information and privacy is going to be a bigger risk management priority for all industries.

***Christopher Cooke** is Vice President of General Liability for XL Group's North America Marine business. **John Coletti** is Chief Underwriting Officer of XL Group's Cyber and Technology business.*

Monitored Confined-Space Entry

Protecting Workers, and Ensuring Safe Sailing for the Maritime Industry.

By Keith Lincoln

The cable-laying vessel GS Global Sentinel was undergoing repair work. Shipyard workers and members of the ship's crew found a mysteriously high hydrogen sulfide reading in a confined space on board that created a toxic environment. They could not understand why. What caused this potentially lethal scenario?

After investigation and safe entry into the tank, crewmembers of the vessel and shipyard workers discovered where the gas was coming from: a worker's sandwich that had long since decayed had been left in the toxic space and was giving off hydrogen sulfide. Had this been left as is, it could have could have killed workers or personnel in the space.

Marine environments are dangerous unless a very cautious and compliant approach is taken to safely access them. Improper entry practices may violate laws and regulations established by authorities. Proper safety training, combined with proper tools, technology and safe practices, are all key to a safe work culture in a marine environment known as a most dangerous environment.

A Most Dangerous Environment

According to OSHA, the rate of injury in a shipyard environment is twice that of the general construction industry. Extra care must be taken by workers, safety managers, operation personnel and emergency responders to ensure that a confined space is free from substances that can be deadly. The risk of confined-space entry injury or death on marine vessels is very real.

"When you look at incident statistics, they indicate that confined space incidents are causing lives to be lost and workers to be threatened any time they're working in and around confined spaces. Over the course of the last five years, an average of about 92 workers annually are losing their lives in confined spaces," said Guy Colonna, Manager of the NFPA's Industrial and Chemical Engineering Division.

Image above: Preparation and vigilance are everything when it comes to confined space entry.

Incidents Do Happen

A few years ago, in the Pacific Northwest, an integrated tug and barge had a close call when an ordinarily safe space within the barge, was found to be anything but. Initial indications of a lower explosive limit did not indicate a hazard. But workers were picking up signals on their photo ionization detectors (PIDs) indicating dangerous substances. As it turned out, diesel fuel from the tug had somehow migrated to a confined space in the barge. They were about to do hot work in the barge and the PID picked it up. Fortunately, they used advanced gas detection technology to identify a potential problem that otherwise would not easily have been suspected. The PID operator's recognition and alert to the crew prevented a potential major casualty.

Marine chemists are usually required by OSHA and the U.S. Coast Guard to certify a space for access and entry in a shipyard or repair facility. However, that alone does not alleviate the prevalent risks. Once the chemist or other competent person certifies the space as safe and leaves, there's no telling what can be uncovered later. Additionally, crewmembers may be doing minor work in a tank or confined space during routine operations. Without gas detection technology or proper safety training they could fall victim to a deadly accident.

That's what happened at a Texas marine repair facility, when employees working an overnight shift moved spray-painting equipment and portable lighting equipment inside a barge to continue a painting operation. An earlier shift had already worked in the space for ten hours. As it turned out, the previous shift had not adequately set up ventilation equipment and the confined space was not monitored for dangerous gas levels. In addition, the portable lighting equipment they were using was not explosion-proof. Tragically, a spark from an unknown source ignited the flammable paint vapors and both employees were killed.

In this case – and all like it – a designated shipyard competent person should have visually inspected the space and its equipment. He also should have measured its oxygen content and lower explosive limit with a calibrated and reliable gas detector. If he had, he could have discovered the dangerous atmosphere, evacuated the space, and stopped work immediately.

Many accidents follow a similar pattern: a worker goes into a tank, and that worker collapses and perishes from gases in that tank or space. This happened in 1986 when a worker entered a septic tank and collapsed. Two of his colleagues went in to save him and all three ended up dead.

Checklist: Preparing for Confined-Space Entry

✓Review applicable data and documentation to understand any hazardous substances known to affect the space. Review material safety data sheets and chemical hazard response information.
✓Has a marine chemist or other competent person verified safe access into the space? Review the system or other database for entries related to the last three cargoes or materials carried in the cargo space (or the adjacent space) that is to be entered. Consult the marine chemist certificate and competent person log to verify that the space has been tested for oxygen, flammability, and toxic atmospheres and that the toxic tests are consistent with the last three cargoes carried.
✓Ensure the space is adequately ventilated. Verify that air in the space has been exchanged a minimum of three times prior to entry.
✓Review and consider the use of proper tools and technologies upon entry. Carry a multiple gas meter when entering a confined space. Check the calibration and operation of the oxygen or multiple gas meter. Carry an emergency escape breathing device if there is a potential for a dynamic change in the environment such as a valve being opened and cargo entering the space, pumps running in an engine room, compressors operating in a compressor room onboard a gas ship, workers walking through muck in the bottom of the space and releasing hydrogen sulfide or other gases or vapors, or inert gas being inadvertently introduced, etc. Ensure the breathing device is maintained and certified.
✓Review egress procedures. Discuss emergency rescue procedures, and verify that egress is readily available. Evacuate the space if your personal monitor sounds an alarm, if you feel dizzy or light-headed, if forced-air ventilation stops or is apparently ineffective, or if you sense any unexpected chemical through smell or dermal sensation that causes concern.

Links to Standards:

NFPA 306 — access to these regulations requires a paid subscription, as the standard is maintained and owned by the NFPA. http://www.nfpa.org/Assets/files/AboutTheCodes/306/306-14-toc.html
OSHA Standard 29 CFR 1915 Subchapter B Ship Repair — Confined or Enclosed Spaces and Other Dangerous Atmospheres: https://www.osha.gov/SLTC/etools/shipyard/shiprepair/confinedspace/index_cs.html
OSHA Standards for Shipyard Employment, 29 CFR 1915: https://www.osha.gov/pls/oshaweb/owastand.display_standard_group?p_toc_level=1&p_part_number=1915

A shipyard visit typically involves confined space entry – and lots of it.

Hot Air

In another incident at a Louisiana shipyard, two workers were cleaning marine vessel tanks with solvents. Workers were directed to ventilate the space and dilute it with an air hose. One worker used an oxygen hose that ran into the space for three hours. The other worker entered the space, while smoking a cigarette, which he rubbed out with his foot on the deck. This caused a ball flash of fire to be ignited; his pant leg caught fire, and burned the employee badly. As a result of the burns, the employee perished.

The workers should never have used an air hose, nor should they have used oxygen to ventilate a space. No competent person tested the space for air quality and flammability with a calibrated gas detector. And the employee should not have been smoking. Incidents such as these show the inherent value of safety training, as well as the need to have the right gas detection tools, technology, and trained personnel on hand to monitor conditions and protect against deadly incidents.

Tools and Technology

Shipyard workers want to use the same equipment and devices that marine chemists use when they certify the tank or space. Gas monitors can detect four gases: carbon monoxide, hydrogen sulfide, combustible mixtures, and oxygen levels. A PID can also be used to detect volatile organic compounds (VOCs) that could represent a myriad of potential substances.

A PID detects measurements of VOCs that can be dangerous if ingested or pose a danger as a combustible gas. The device uses a standard of 10.6 electron volts (eV) as the cut line for VOCs. Below this level, the device will indicate only the presence of VOCs and a sample may be sent to a lab for more precise identification.

In the past, shipyards, chemists, and marine operators have commonly used portable gas detectors and analyzers. However, gas detection technology that is wireless and portable is available. Such technology is more effective and provides 24/7 monitoring and intelligent data collection to better protect workers, assets and the community.

For example, remote monitoring equipment, such as the MultiRAE wireless multi-gas monitors, allows someone to remotely monitor dangerous levels for a worker carrying the device. In addition, the device has a "man down" alarm, which alerts the remote monitoring personnel or maintenance command station in case someone goes down.

Confined-Space Entry Regulations and Requirements

Confined-space entry by marine safety personnel is covered under OSHA's 29 CFR 1915, subpart B regulations governing shipyard employment: *Confined and En-*

closed Spaces and Other Dangerous Atmospheres in Shipyard Employment. This regulation applies to all shipyard employment, involving vessels, vessel sections, and shoreside operations, regardless of location.

OSHA regulations require all employers to designate one or more competent persons in accordance with 29 CFR 1915.7. The regulation specifies the parameters for designating a competent person. The only exception is if all duties of the competent person, under 29 CFR part 1915, are carried out by a marine chemist.

A certified marine chemist holds a valid certificate issued by the National Fire Protection Association (NFPA), establishing the holder as a person qualified to determine whether construction, alteration, repair, or layup of vessels can be undertaken with safety. Such operations may involve hazards covered by the Standard for the Control of Gas Hazards on Vessels, NFPA 306.

According to the NFPA, "the United States Coast Guard and the Occupational Safety and Health Administration (OSHA) require that a gas-free Certificate issued by a Marine Chemist be obtained before hot work or fire-producing operations can be carried out in certain spaces aboard a marine vessel. In complying with both the U.S. Coast Guard and OSHA regulations, the Marine Chemist applies the requirements contained in NFPA 306. This standard describes the conditions that must exist aboard a marine vessel. A survey by the Marine Chemist ensures that these conditions are satisfied."

A Safe Environment

The marine confined space environment can be dangerous. Ships carry dangerous cargoes. Substances in confined spaces and tanks are left over or carry over from previous hauls and were never meant to be there. Workers and personnel may never realize the hazards that confined spaces pose. The paramount goal when it comes to confined-space entry is to ensure the safety of personnel. Marine operators as well as repair facilities and shipyards that do not put confined-space-entry safe practices as a paramount goal risk heavy fines from regulatory bodies, as well as injury or death of personnel.

The use of advanced technology and gas detection tools that are maintained and calibrated, combined with safety training and implementation of safety practices, is a smart strategy to avert the risks inherent in confined-space entry and keeps workers safe. Wireless gas detection systems, including some using mesh radio networking, are now available with a broad range of options, including standard 110V/220V AC power, battery power, and solar operation/charging. These options marine safety and risk reduction managers a new set of tools to deploy in a wide range of safety management situations. Other applications for wireless gas detection include HazMat response for a wide array of critical service application including sewage, cargo, fuel and bilge and ballast gas and leak detection, worker protection and hydrogen sulfide (H2S) safety.

Keith Lincoln *is a senior product manager at RAE Systems Inc. by Honeywell (http://www.raesystems.com). His expertise includes detector repair, operation, applications, with specific expertise in docking systems and wireless technologies. He has specific focus in the marine industry and offers adept counseling for any gas monitoring and detection needs.* ***(klincoln@raesystems.com)***

FORAN Takes a Run at North America

Ship Constructor, Military pose some challenges.

By Patricia Keefe

Madrid's Sener Ingeniería y Sistemas S.A. (Sener) is hoping to regain a foothold via its FORAN CAD/CAM software in the North American market, and to use that opening to crack the Big Six military shipyards, landing at least one lucrative long-term contract. But first, it's going to have get past its chief competition on these shores, Vancouver-based SSI's ShipConstructor software, CATIA from Dassault Systèmes of France, and Nupas-Cadmatic, jointly owned by Numeriek Centrum Groningen B.V. of the Netherlands and Cadmatic Oy of Finland.

Part of the attraction is the recent uptick domestically in shipyard projects in multiple market sectors. "There are lots of projects on the commercial side – containers and bulk carriers, articulated tug barges and ferries and offshore supply vessels – there's a lot going on," says RADM Joe Carnevale (Ret), a senior defense advisor for Shipbuilders Council of America (SCA), which represents over 120 U.S. shipyard facilities.

"America in the recent past has had so many opportunities," agreed Verónica Alonso, SENER North America Area Manager, "You need to offer something really good – with added value – to go into this market, and we think we have it."

Moreover, Sener sees military contracting as a large part of the U.S. market, and feels it has gained the necessary experience to compete from its naval contracts in the UK in particular. "We are powerful in the market," Alonso said. Still, she acknowledged that in America, it is very difficult [to break into the military market].

Military Maneuvers

"There aren't that many military contracts out there, and it can take years to get out a bid," cautioned one veteran naval architect, who asked not to be named. "They'll have to convince a shipyard or naval architects doing the design, and the naval architect firm won't do it unless the shipyard agrees." On the plus side, most military ship classes don't have the length of run of say the DDG 51 class, says Carnevale, adding that "from class to class, the Navy is willing to look at something new.'

And there are other priorities that could help Sener gain traction with FORAN, an integrated "complete" ship design and construction software platform. Carnevale says 3D CAD has taken a backseat to product lifecycle management (PLM), pointing out that once a ship is built, it's the data in the PLM that matters. "A lot of what's in the 3D CAD, no one is ever going to use again," he explained. In his view, this leaves the market for 3D CAD wide open, giving Sener as good a chance as anyone else. "The test for FORAN is, is it compatible with Team Center, Siemens' PLM product? It's very popular with the military builders in the U.S., and will make them a candidate for ship yards using that product."

Alonso claims Sener is in talks with some interested military shipyards, giving demos, taking meetings. "There is no signed contract, but we are in a process."

SSI, meanwhile, claims it is used on the "overwhelming majority" of the U.S. Navy and U.S. Coast Guard programs with a few exceptions, such as Newport News, Electric Boat and GD BIW.

There are obstacles to overcome in the commercial market as well. "In the U.S., their biggest competitor is ShipConstructor. It is used at almost all the naval architect firms, most small-to-medium size shipyards and even a few of the big ones," according to the naval architect. "In the really big yards, they'll run into CATIA or Aveva."

Popular Competitor

"ShipConstructor is popular because it is capable and less expensive. All you need is AutoCAD, the ShipConstructor package and a heavy duty PC with lots of memory and processing power," he added.

The fact that it works on AutoCAD is huge, adds Carnevale. "People swap AutoCAD drawings all the time."

The issue for shipyards, according to one user who asked to not be identified, is whether they want an application that is a one-stop shop – which is what Sener is pitching - and whether they are willing to pay big for it. Meanwhile, Sener is well aware of SSI's market share, but thinks it has an alternative to offer.

"ShipConstructor is a good solution and has some advantages; it's very well known," conceded Alonso, but, she added, it is "not so complete or so advanced" as FORAN. "We have been in the market for many, many years, enough to give added value for shipyards to change. We offer a solution that is complete – 3D, single layer; you won't see inconsistencies in production."

SSI CEO Darren Larkins takes issue with the idea that FORAN is 'more complete.' "It's true FORAN has an initial design capability(naval architecture, analysis) that we do not offer, but we read initial design data from any of these programs." On the engineering side (basic/detail/production design) "we offer broad options driven by client demand." Not only does ShipConstructor stack up to or best the competition when comparing apples to apples, says Larkins, but the company's commitment to integrating with third-party vendors enables clients to be able to choose the vendor who best suits their needs.

Back to the Future

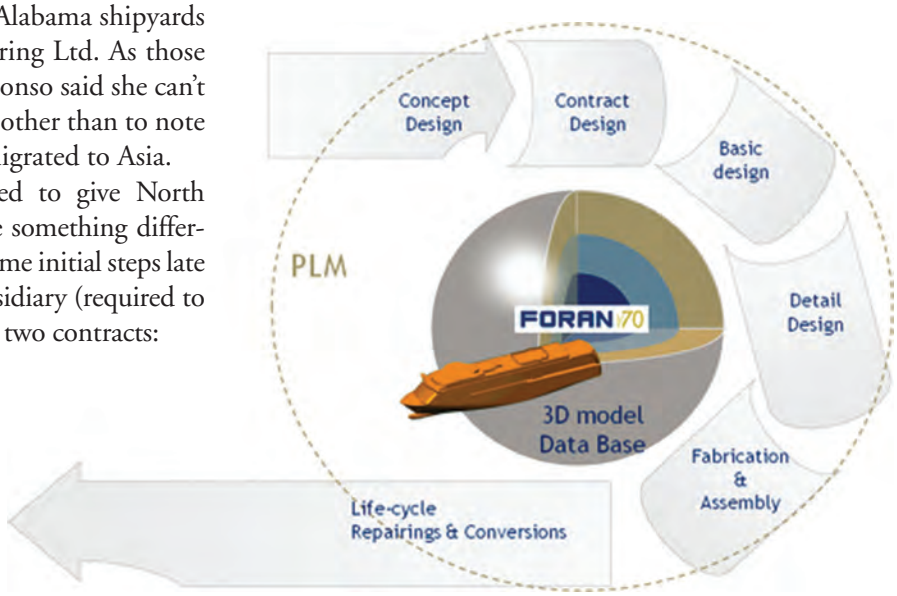
FORAN, the granddaddy of naval architecture applications on the eve of its 50th anniversary, has prior history in the North America. According to the naval architect, FORAN was used "a teeny bit" in the 1990s, at companies like the Philadelphia and the then Alabama shipyards and Canadian Shipbuilding & Engineering Ltd. As those contracts predate her tenure at Sener, Alonso said she can't speak to why those relationships lapsed, other than to note that over time, most shipbuilding has migrated to Asia.

However, the company is determined to give North America another go. "We think we have something different to offer clients." Hence Sener took some initial steps late last year, forming a North American subsidiary (required to compete for naval contracts) and signing two contracts:

• ***Eastern Shipbuilding Group, Inc.*** *(Eastern) signed a licensing agreement with Sener that covers implementation of the complete FORAN System comprising: Forms Generation, General Arrangement & Naval Architecture, Hull Structure, Machinery & Outfitting, Electrical Design and Advanced Design &Drafting. Eastern, which also licenses ShipConstructor, picked up FORAN as part of its efforts to expand its ship design office at its shipyards in Panama City, FLA. The initial project in FORAN involves the first of two 340-foot multi-purpose supply vessels, with an initial focus on improving the quality of the design (see photo). "They created a new design with new people, new software and a new strategy from zero, and they have had success," said Alonso.*

• ***STX Canada Marine*** *(STXM), naval architecture and marine engineering consultants, signed a contract to licence FORAN's Hull Forms, General Arrangement & Naval Architecture, Hull Structure, Machinery & Outfitting and Drafting and Drawing modules. Specializing in offshore supply and patrol vessels, the company has four offices in North America. FORAN was selected as part of an "ongoing modernization process" at STXM, because it "enables STXM to cover the total process of the ship design in 3D, which is fundamental to improve the productivity and quality." The company has since been bought out by VARD, and could not be reached for comment.*

SSI, however, was quick to say that STX acquired FORAN for initial or basic design, and "not to replace the detail design work that is being done . . . with ShipConstructor. CEO Larkins added, "Eastern, a client since 2005, is still using ShipConstructor . . . to deliver the majority of their workloads," which include the fifth in the Bravante PSV series, the fourth of six in the HOSMAX 310 series, an order for 4 Z-Tech tugs and an inland towboat, he add-



FORAN is a multidisciplinary and fully integrated system that can be used in all design and production phases, in all disciplines. All the information is stored in a single database.

"A shipbuilding-specific product like FORAN that doesn't have a platform like Autodesk will struggle to keep up with advances in general CAD technologies."

– SSI CEO Darren Larkins

"The test for FORAN is, is it compatible with Team Center, Siemens' PLM product? It's very popular with the military builders in the U.S."

– RADM Joe Carnevale (Ret), a senior defense advisor for Shipbuilders Council of America (SCA), a national trade association representing over 120 U.S. shipyard facilities.

ed. The shipyard is also one of three companies in the running for the U.S. Coast Guard's 11-vessel Offshore Patrol Cutter contract, which requires that the designs be done in ShipConstructor.

Technically, Larkins is correct. Eastern is currently using FORAN on just one project – two models of a multipurpose ship - and remains a committed user of ShipConstructor. However, the company is in the process of expanding its design capabilities, and was looking for a more integrated package. After looking at three to four options, it chose FORAN, says Fernando L. Malabet, Naval Architect & Marine Engineer, Vice President Engineering, at Eastern Shipbuilding.

Malabet, who joined Eastern 2011, leads Eastern's team of designers, naval architects, mechanical and electrical engineers, a group he has so far grown into the equivalent of a medium size engineering firm. "We did not eliminate ShipConstructor. It has a series of advantages here in America, such as the availability of designers and things like that. We are keeping it and working on several projects still with that. For, example, we made a decision recently with a smaller tug boat, where the design was done, that it was easier to proceed in ShipConstructor.

According to Larkins, those advantages include Support for open architecture, which keeps its data accessible, Connection to Autodesk, a greater user base, and potential pool of already trained workers. Beyond this, SSI's Larkins insists that older shipbuilding technologies, like FORAN, are typically either script-based or a hybrid of scripting and CAD modeling. This works well with typical (tanker) structures, but can be a weakness when dealing with more complex or non-typical shapes.

In terms of SQL Server support, Larkins maintains that Microsoft's database is at least as capable as FORAN's Oracle database, and is more commonly found in the shipyard environment. SSI also provides a single, centralized product data model. "Our database contains all the assembly, part and attribute data as well as the geometry model for the entire project."

Nonetheless, Eastern wanted FORAN "because we wanted software that was fully integrated because soon the naval architects here, me and some others, will be designing vessels," Malabet explained. By fully integrated, it means that within a single system, FORAN can handle all the initial concept, the design process, in 3D, not 2D, and later on, the production process. "It's one of the key things that made me decide to use FORAN," says Malabet. "For example, when I design a vessel, I go in and put all the surfaces, bulkheads etc., and look at in 3D, using modeling software called Rhino. Excellent software – love it – but you cannot use it to develop structural drawings or review CAD, it's cumbersome, so now you have to jump into AutoCAD. In FORAN I can do all that from a single system."

Eastern Shipbuilding Signs Up for FORAN. From the right: Verónica Alonso, SENER North America Area Manager; Kenneth R. Munroe, Eastern Shipbuilding Executive Vice President and Chief Operating Officer; Rodrigo Pérez, SENER Project

Despite the conventional wisdom that it is difficult for shipyards to support more than one design and construction package, given what some say are significant capital and training investments involved in switching CAD platforms, Malabet is unfazed, and unconvinced. "We get all types of clients with all kinds of designs and preferences. We do not dictate to the client how to do what he wants. We accommodate our process to their requirement. We're here to please and follow specifications," he said.

Of course, its first FORAN project, the multi-purpose vessels, involved new designs and hence Eastern didn't migrate. It paired new people with the new designs and new software with some integration help from three Sener personnel on site at Eastern.

"ShipConstructor is very U.S.-based. The reason many yards here use it is because you have a lot of modelers trained in ShipConstructor – and none in FORAN. I was lucky to find some people trained in software similar to FORAN so their change to FORAN was much easier than from ShipConstructor to FORAN," says Malabet.

The two products are not compatible with each other, but Eastern has had no library issues. It has created parallel parts and pieces in libraries for both software packages. "It's fully operational on both." Malabet says it took a couple of people 30-45 days to create the libraries, something that is done for each specific vessel due to different types of equipment, material, fittings and the end cuts of stiffners.

FORAN Garners High Marks

"We have been assessing FORAN as we go along, and so far, so good, "says Malabet. Among the benefits he ticked off so far attributed to FORAN:

- *A single database is used – All disciplines – structure, piping, electrical etc. – work from the same database, which means anything any of the disciplines do, the others know about. If a change would create interference, the process tells the user they can't do that. "It prevents an online interference. With ShipConstructor, you have to stop and do an interference check. With FORAN it's automatic, right in front of your nose." Malabet also noted the FORAN database resides on the server and "anyone we authorize, can work on that database, which was not possible in Ship Constructor until a year ago. It's a big advantage."*
- *A topological drafting tool, which means all parts are associated with each other, so when you make a change on one of them - for example, move a bulkhead - all related parts automatically move with it. "This is one of the biggest advantages in a modeling tool. ShipConstructor does not have this that I know of, but they may be working on it."*
- *Quantifiable ROI – Malabet says his modelers say "that modeling time has been reduced significantly from ShipConstructor to FORAN; it's a lot less man hours."*
- *"The only thing we are having an issue with is the output, what we give the yard to build." The issue? Translating between the metric and American system of measurement (United States customary units). "In 15 years, I have built only one metric vessel, which was designed for China."*

Regardless of how well FORAN continue to prove itself, Malabet expects that Ship Constructor either has or will shortly catch up to FORAN in some of these areas, either in its latest release or a future one. Regardless, he sees a role for both products at Eastern going forward.

At the end of the day, what shipyards look for is cost and capitalization versus ROI, says Carnevale. "If they can be shown that a product is easier to use, is less prone to error and more efficient, so that they will get their ROI for capital investment and training, shipyards will consider going to a new product."

Security for the Long Run

Firms Building Sought-After Security Boats Have Multiyear Backlogs

By Susan Buchanan

U.S. companies continue to land lucrative contracts with domestic and foreign customers for vessels that are designed or specially customized to meet defense, police and anti-piracy needs. Governments here and abroad, meanwhile, continue to cut budgets. Many of the security craft to be delivered this year are built to save energy, reduce emissions and reach higher speeds and greater cruising ranges than their predecessors. They have the latest tracking and communications systems. And a few new vessels are remotely operated. Domestic companies building these sought-after security boats have work backlogs of two to five years.

MetalCraft Supplies Long Range Interceptors and Patrol Boats

"We will deliver five Long Range Interceptors to the U.S. Coast Guard this year and next, along with two interceptors to foreign navies and a number of other boats to foreign navies," Bob Clark, New York-based contracts manager with MetalCraft Marine Inc., said last month. "We'll also deliver two groups of our Patrol 36 to foreign customers, a group of Patrol 44s, and two or three of the Patrol 28s." The company's clients include governments in the Middle East, Africa and South America. MetalCraft Marine is based in Kingston, Ontario and Cape Vincent, N.Y.

Image above: Swiftships sandblasting of the 148 ft vessels for South Oil Company of Iraq.

In June 2012, MetalCraft Marine U.S. was awarded a $9.8 million contract for the design and production of up to ten new-generation Long Range Interceptor IIs--eight for the U.S. Coast Guard and two for other government agencies, including U.S. Customs and Border Protection and the U.S. Navy. These boats will be used for National Security Cutter operations, such as interdiction and intercepting illegal migrants, the USCG said.

The company's Patrol series are high-speed, small craft for navies, coast guards and police agencies. Built in partnership with Brunswick Commercial and Government Products in Edgewater, Fla., they're maneuverable, rugged and suited to search and rescue, monitoring and special operations.

"The biggest new technologies we've adopted are energy saving," Clark said. "We built a new 50-foot aluminum patrol boat for the Massachusetts Environmental Police, delivered on June 27, with a Volvo Penta Inboard Propulsion System. It allows 30 percent fuel savings and a 30 percent reduction in carbon emissions, compared with straight shaft props and rudders, according to Volvo Penta's numbers." The boat is the first commercial vessel in North America to be powered by IPS propulsion. "This IPS, which provides greater cruising range and higher speed, while reducing noise, is so amazing it can even make recreational boaters look like rock stars," Clark said.

All in all, Metal Craft Marine remains busy. As for back orders, "we have 5-year contracts for salvage boats with the U.S. Navy and 5-year contracts for LRIs with the USCG, along with a multi-year foreign fireboat contract," Clark said. The Navy contract is for eight U.S. Navy Superintendent of Salvage or Supsalv boats.

Tampa Yacht Builds Mission-Specific Craft

This year and next, Tampa Yacht Manufacturing LLC in Pinellas Park, Fla. will deliver ten 36' RHIB craft for special ops forces to a foreign navy; four 50' fast attack craft to a foreign government's border-security forces; and ten 44' Fast Coastal Interceptors to foreign coast guard forces, the company's CEO Bob Stevens said last month. The orders, impressive enough by themselves, also showcase the ability of U.S. yards – in certain niche areas – to compete in the export boatbuilding game.

"We're delivering 24 vessels in 2014 and 2015, and right now we have on the books another 19 vessels for delivery in 2016," Stevens said. "All craft are custom configured for mission-specific requirements, and all our sales are to foreign governments. But I'm not at liberty to identify them or the territories we're selling into." Tampa Yacht also remains busy into the foreseeable future. Stevens said the company's security vessels are on back order for two or more years.

Brunswick Delivers Patrol Vessels Worldwide

"This year alone, we plan to deliver security patrol vessels to Central and South America, as well as the Middle East, and to the northeastern United States and Gulf states," Jeremy Davis, sales director at Brunswick Commercial and Government Products in Edgewater, Fla., said last month. "One of our main business segments is maritime security. Brunswick for over fifty years has produced commercial-grade Boston Whaler fiberglass boats for law enforcement agencies in coastal regions worldwide."

Brunswick recently expanded its product line to include

Brunswick Commercial's IMPACT 850 model


MetalCraft Marine's Sentry 36 vessel


Tampa Yacht Manufacturing's 50' fast attack craft

IMPACT rigid hull inflatable boats, along with Sentry aluminum vessels. "Our security and law enforcement boats are considered by customers to be a great value proposition," Davis said. "In the near future, we plan to deliver boats equipped with cutting-edge technology from FLIR Systems, Mercury Marine and SHOXS seats," he said. "Through our relationships with some of the industry's best innovators, we're able to offer fully customizable boats, equipped to handle the tough missions that maritime security professionals often endure." As of September, Brunswick had back orders for security vessels stretching well into 2017.

Swiftships: Patrol Boats and – a Security Service

"With growing threats in the Middle East region, several international clients have shown interest in our proven 25m to 65m Security Patrol Vessels or SPVs," Shehraze Shah, CEO of Swiftships Ship Builders, LLC in Morgan City, La., said last month. Swiftships plans to deliver its first fleet of 56-foot Security Patrol Vessels to the Malaysian and African coasts by December.

"We're building our own fleet of vessels with operators to provide turn-key solutions for a large gas exploration company," Shah said. "And, in addition to new-build opportunities, we just launched Swiftships Maritime Security or SMS as a service." SMS's roster of security professionals and expert crews use patrol vessels with the latest tracking and communications systems to provide piracy and robbery protection for commercial vessels and private yachts from ports to international shipping lanes. Under SMS, oil-and-gas and other companies pay day rates, Shah said. So far, Swiftships has one SMS customer for this year.

"If requested by a client, SMS can provide armed guards on vessels transiting danger zones in international waters," Shah said. Many SMS personnel have 'special forces' experience. Former naval officers and seamen operating SMS vessels know international ports and their operations.

As for new technologies, "Swiftships has been working with tier-3 engines to sustain longer missions by being fuel efficient and to keep carbon footprints down," Shah said. "In addition to our emission initiatives, our non-lethal mission, along with remote operated vessels or ROV, technology is being fully deployed under SMS."

Shah said University of Louisiana at Lafayette is one of Swiftships' technology partners. "They are, for example, involved in researching the trend of technology and how science will view a concept and come up with a prototype," he said. "In the end, Swiftships' sister company, ICS, builds the technology and takes it to market." ICS-Nett Inc. is based in Vienna, Va.

With its latest set of orders, Swiftships joins the growing number of small, U.S.-based boatyards that remain very busy. "We have back orders on six 45 meter Fast Missile Boats for Iraq and various 65m Offshore Patrol Vessels for Libya, which are under Letter of Request with the Navy International Program Office or NIPO, pending funding approval," Shah said.

NEW FROM INTERNATIONAL MARITIME ASSOCIATES

FLOATING PRODUCTION SYSTEMS

ANALYSIS OF FUTURE BUSINESS DRIVERS & FORECAST OF ORDERS 2015 - 2019

Order Your Floating Production System Report Today!

THE REPORT INCLUDES:

Annual Report

120 pages of Analysis, Data, Charts and Information, all geared to provide you with the biggest, best and most comprehensive resource so that you can long-range plan to capture your fair share of the burgeoning Floating Production System market.

Insightful Updates

Monthly "What's New" report which refreshes the data and analysis. Six months after the Annual Report World Energy Reports will recalculate, factoring in the world economy, market conditions and future prospects for growth.

Database

Every day – 24/7/365 – the World Energy Reports team updates critical data and statistics; Yours for the taking.

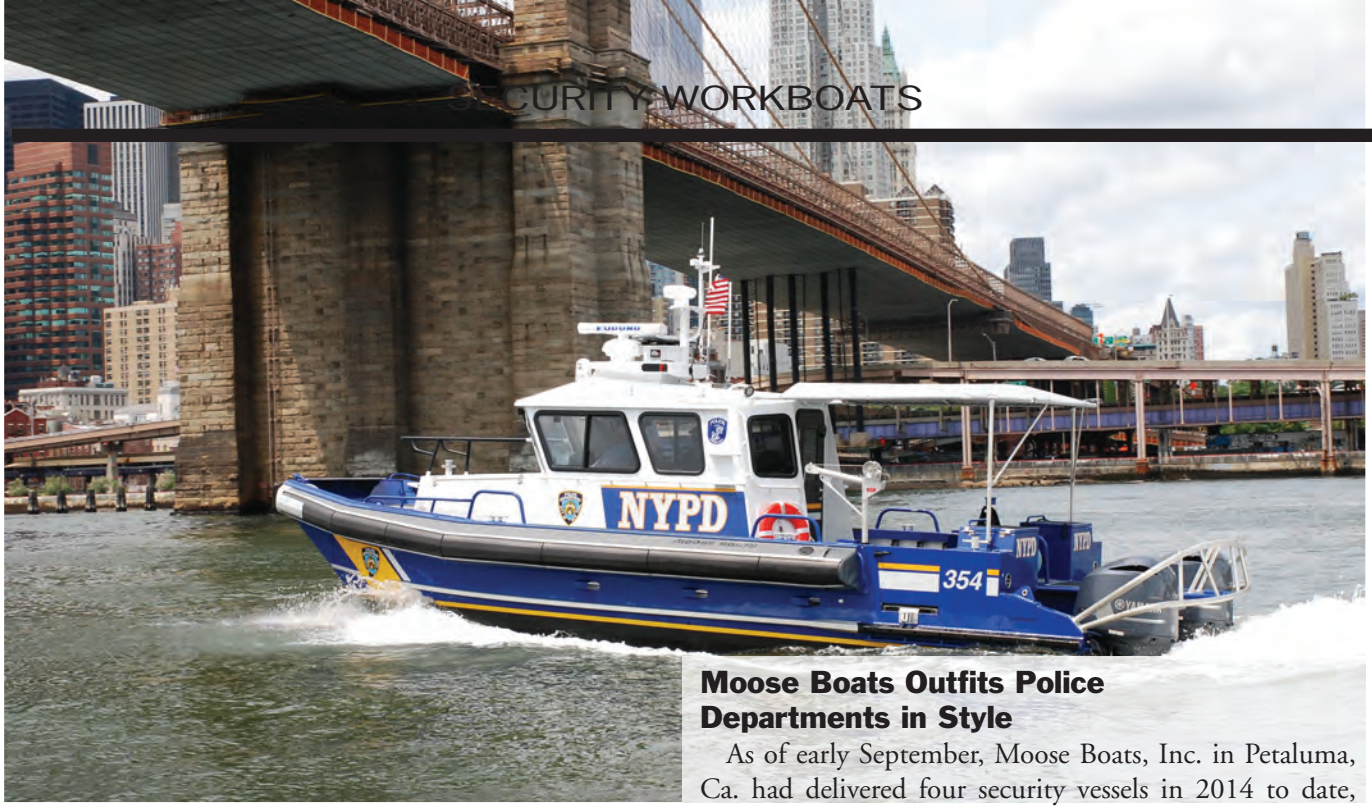
Contacts

An industry exclusive, here you receive all of the critical project contacts in one tidy format. Invaluable information.

- Complete Floating Production Report with 24/7/365 access to data online as it is updated
- Monthly "What's New" Report
- Full Project Contact Details
- IMA's 30+ years expertise in this market

Order your report at
www.worldenergyreports.com
or contact us at:
tel: +1-212 -477-6700 fax: +1-212-254-6271
reports@worldenergyreports.com

World Energy Reports
www.worldenergyreports.com



Moose Boats Outfits Police Departments in Style

As of early September, Moose Boats, Inc. in Petaluma, Ca. had delivered four security vessels in 2014 to date, with individual vessel values ranging from $580,000 to $870,000, Mark Stott, the company's sales engineer said. Deliveries were as follows: one M2-35 walk-around cabin outboard powered catamaran for New York City's Police Department Harbor Unit; one M2-38 wide-cabin diesel, water-jet powered catamaran for the New Jersey State Police, delivered in Point Pleasant; one M2-38 wide-cabin diesel, water-jet powered catamaran for the United States Park Police in Fort Tilden, N.Y.; one M2-37 walk-around cabin diesel, water-jet powered catamaran for the Richmond Police Department in Richmond, Ca.

Beyond this, Moose also has on tap one M2-38 wide-cabin diesel water-jet powered catamaran for delivery to the New Jersey State Police in Newark; and two M2-35 outboard powered catamarans for the Port Authority of New York and New Jersey, to be delivered to JFK and Newark airports.

Always looking to upgrade its offerings, Moose recently enhanced its products by offering a 50 percent larger 10' wide by 12' long cabin in its M2 38 foot catamarans. "This large, center helm cabin offers the interior and seating op-

U.S. Builder Backlog Data

Company	Vessels	Customers	Value	Backlog
Brunswick	Whalers, RHIBS, Sentry	Central & South America	Proprietary	2017 +
MetalCraft	LRIs, Patrol Boats	Global & Local	$9.8m (USCG) + others	2017 +
Moose Boats	Catamarans	State & Municipal	$580-870,000 each	
Swiftships	Patrol & Missile Boats	Middle East, Africa, Oil & Gas	$200 million; others pending	2017 +
Tampa Yacht	RHIBs, fast attack, interceptors	Foreign undisclosed	Proprietary	2016 +

Sources: Company data

tions that had been available only on our larger M1 44 and 46 foot catamarans," Stott said. "The new wide-cabin M2-38 catamarans have a center helm seat, forward companion seats--port and starboard, a full galley, a four-person table, a command desk-workstation, and access to a cuddy cabin via a door to the forward hull area." Wide-cabin catamarans have been well received, says Stott, with three vessels currently in service and a fourth under construction, he said. Regarding backlogs, "we have four vessels under construction, pending contracts in process and several prospects awaiting approval of federal FY 2014 Port Security Grant Program funding," Stott said.

Replacement Hulls, the Environment, Fleet Upgrades & Mideast Tensions Drive Sales

Although belt tightening at federal, state and municipal levels continues in North America, aging patrol and police vessels are being replaced with more energy efficient and environmentally benign craft, vessel builders said. Overseas, the Middle East region, which had been relatively quiet, has reignited as a military hot spot, with coastlines that need constant surveillance and protection. All of that adds up to a red hot market for U.S. builders who have shown that they can deliver both quality and low prices, in a timely fashion, to customers anywhere on the planet. That's a winning combination in any discipline and a welcome sea change that domestic shipbuilders – in any class or size of vessels – can try to emulate.

__Susan Buchanan__ is a New Orleans-based business writer, specializing in energy, maritime matters, agriculture, the environment and construction. She holds a master's degree from Cornell University in agricultural economics and an undergraduate degree from the University of Pennsylvania.

Extreme Applications Demand


Credit ReconCraft

Specialist Small Craft

In a dangerous world, even the largest ship in the world depends on the smallest maritime security and special mission platform. And when it comes to small boat security operations, innovation is the name of the game.

By John Haynes

With 90% of world trade transported by sea then passing through ports and waterways, no amount of technology will replace the requirement for multiple small fast craft and skilled operators. Finding new ways to share knowledge and best practice has never been more important in the maritime world. Innovation has always been a crucial theme at defense sector events that explore the latest technology in small craft design, acquisition and operations. Beyond military applications, homeland security and law enforcement, there are many ongoing initiatives around the world that require fast response craft.

Mobility plus the ability to operate in shallow areas are critical capabilities for small craft. Commercial fast boat builders typically focus on building higher speed and

larger capacity boats in the 30 to 50 feet (9 to 15m) range. Deep-V RHIBs and hard boats still make up the lion share of procurements, however there are growing opportunities to utilize innovative small craft under 30 feet for new scenarios that present unique challenges.

Defining a multi-role craft is a challenge for large fleet procurements. The U.S. Coast Guard is replacing the Response Boat-Small (RB-S) fleet with a new vessel. The 45+ knot Metal Shark craft, at 28 feet 6" (8.7m), with a shaped solid foam collar encased in urethane, offers the impact protection of a RHIB with the deck space of a hard sided craft. The procurement is for up to 500 RB-S II, with 20 going to US Customs & Border Protection and 10 to the Navy. The Coast Guard defines the craft as a multi-mission platform, used for the full range of Coast Guard missions, including search and rescue, vessel boarding team deployment and law enforcement missions, port security; drug and migrant interdiction and environmental response operations.

Reaching the Mission

Trailers and towing vehicles are critical components for small craft mobility, launch and recovery. In most countries there is a strict requirement to be 'road legal' which limits length and width, as well as the ratio of weight between the towing vehicle and the combined boat with trailer load. Even when organizations have access to helicopter transport for remote insertion and extraction of personnel, they still need to consider how to move their craft. For example, Maine-based Yale Cordage has developed a range of heavy duty rope slings to handle boats that are carried under helicopters. Government Accounts Manager, Skip Yale explained, "The

HYSUCAT Hydrofoil Supported Catamaran

design goal for our Four Leg RIB Boat Slings was to eliminate wire rope plus reduce weight, electronic interference, corrosion, wire fish hooks and to engineer an overall safer system. The stainless lift ring with hand holds is coupled with four Aracom T Maxijacketed rope legs. We know that over engineering can be crucial to mission success so each rope leg is capable of carrying 34,000 lbs (15,300 kg)."

Riverine Environments & Challenges

Riverine craft are specifically designed and manufactured for estuary, river and shallow water operations. In the extreme brown water environment, a poorly designed vessel can impact on mission effectiveness and crew safety. Generally, a speed of 30+ knots is common for riverine craft. Greater speed and armor can give tactical advantages but this often means twin engines and a heavier craft, since weight is a critical concern for any shallow water vessel. Modular ballistic protection enables the use of armor during specific missions.

By combining extensive background of operational experience with task-specific design Massachusetts based specialist boat builder ReconCraft have developed vessels for challenging applications. ReconCraft COO Joe Silkowski said, "Depending on the size of the vessel and the projected operating environment, deadrise angle between 5 and 10 degrees are the most common for riverine craft. We develop some models up to 17 degrees with a variable deadrise if there's a need for both coastal and riverine capabilities from the same platform, for example transiting from a river mouth through the coastal area to another river." In conventional naval architecture, chines and spray rails are incorporated for grip on the water at planing speed. Silkowski adds, "This is very much dependent on how the vessel is desired to perform in shallow water. For example, some operators prefer some amount of slide when turning the vessel and aggressive chines can hinder this. There is no one size fits all solution to riverine craft in terms of hull design and performance."

Many lessons learned from riverine will translate well to melting ice regions as they present similar hazards to navigation as those encountered in a river system. Use of ultra hard wearing keel pads and hull coatings allows craft to slide over obstructions and areas with little water. These features enable operators to patrol in previously inaccessible areas and extend the working life of the craft. The advantages with utilising successes from other sectors include short timelines from tender to build, and COTS (Commercial off the Shelf) procurement.

Rising Up: Hovercraft & Hydrofoils

Small hovercraft have a growing role to play in search and rescue, commercial and military operations around the world. Hovercraft can be a practical proposition for operations in areas inaccessible to other vehicles including frozen water, mud flats, intertidal areas, shallow rivers and flooded inland areas. Perceived to be environmentally sound, as they don't exhaust into the water, create no wash and do not disturb the sea bed, they are also economical and do not endanger marine animals as there is no propeller in the water. UK manufacturers Griffon Hoverwork and Flying Fish Hovercraft and have formed a manufacturers association to develop the Hovercraft Code of Practice (HCoP). The objective is to address the differences in operating procedures, construction and usage relevant to these unusual vehicles.

The Griffon 380TD is a 22'-4" diesel powered hov-

4 UK RNLI Inshore Rescue Hovercraft

ercraft capable of carrying up to five persons or payload up to 837 pounds. The 28 feet Griffon 995ED is a fully amphibious diesel powered and electric drive hovercraft capable of carrying up to eight persons, or payload up to 2193 lbs (995kg). Griffon Hovercraft benefits from being road trailerable using a purpose designed 'hover-on / hover-off' road trailer which can be towed behind most 4x4 vehicles or trucks, allowing rapid deployment in roles such as surveying, search & rescue and flood relief. The 380TD hovercraft is easy to operate due to the ability to control lift and thrust independently.

A growing number of small craft are incorporating hydrofoils to improve efficiency at speed. When the craft is moving the hydrofoils create dynamic lift for early planing and reduced wetted area. The HYSUCAT (Hydrofoil Supported Catamaran) principle uses a hydrofoil system in the tunnel between two asymmetric hulls. The system consists of a main foil located slightly forward of the craft's center of gravity which carries part of the craft's weight at speed. Two smaller 'trim' foils in the tunnel near the transom act like tail wings on an aircraft to provide longitudinal trim stabilization of the hull.

The Hysucat Extreme is a 28 foot) catamaran RHIB fitted with the hydrofoil system. Malan Conradie, designer and Director of the South African manufacturer, explains, "Less resistance and increased buoyancy enable the Hysucat to carry more weight at speed with less power. The hydrofoil technology can also provide high speed operations in excess of 70 knots. Operational benefits include reduced wake, reduced fuel consumption and increased range." Conradie adds. "We are building boats for Kuwait and the U.S. We are currently working on a project for a full electric water taxi for Belize, showing a running time of more than 2 hours at 25 knots with a single 180 hp electric engine."

Smaller Craft, Bigger Potential

Smaller, lighter, easily transported and occasionally man-handled to launch and recover are requirements for some professional users. The UK built C-Fury Patrol is a 13 foot hybrid RHIB designed to deliver high levels of control from low speed to over 40 knots whether empty or fully loaded. The composite FRP hull combines a catamaran for ride quality, an assister hydrofoil for efficiency and ride enhancement plus large air tunnels for stability and shock reduction. The hydrofoil provides up to 30% lift, while the air trapped and being compressed in the tunnel provides up to 5% lift. The result is that the hull planes high in the water and the reduced wetted area of the hull

UK RNLI Rescue Water Craft in surf

Riverine Operations Helm (Credit ReconCraft)

increases efficiency and reduces fuel consumption. The Patrol hull is a flexible platform that can be re-configured for tasks ranging from patrolling with sophisticated electronics suites to disposable unmanned target boats.

Many maritime organizations around the world now use Personal Water Craft (PWC) for patrolling and rapid response. PWC have handlebar steering and utilize waterjet propulsion for high performance with stock craft achieving over 60 knots. The driver sits or stands on PWC, they can carry one or two passengers with the option to tow a sled. The coast guard defines a personal watercraft as a jet drive boat less than 13 feet in length. Characteristics include small footprint, light weight and inversion protection. In recent years the PWC acronym has evolved to define a new breed of applications. Rescue Water Craft (RWC) are used in Hawaii and Australia by lifeguards in high surf conditions.

PWC have gained a solid reputation in the maritime community for specialist roles that other craft simply cannot undertake due to design functions. These craft can be fitted with specialist navigation, mapping and rescue equipment for roles ranging from low speed environmental survey to high speed patrol. Mark Pullinger, Managing Director of UK company Specialist Small Craft, said, 'PWC can be used as patrol craft to cover roles ranging from managing busy waterways and large public events,

to security sweeps at waterside installations." Specialist military PWC can be used in overt or covert trim for surveillance and other specialist roles.'

Maritime Applied Physics Corporation (MAPC) is offering the Greenough Advanced Rescue Craft (GARC) as a multi-role craft. At 12 feet 8" (3.8 metre) the boat needs only 16" (40cm) of water to operate. The GARC is based on a rescue boat hull designed by George Greenough, an Australian designer best known for his innovative surfboard designs. Ongoing developments have led to a rugged, stable, jet powered vessel which can be launched in breaking surf or dropped from an airplane. The open transom and stern tongue allow rescues without lifting the casualty. Mark Rice, founder and president of MAPC, says, "This design has a proven track record in the surf and the ability to air drop the vessel provides a unique capability to deliver both manned and un-manned versions to a rescue site."

Unmanned Aerial Vehicles (UAV) now perform numerous roles around the world. Unmanned Surface Vehicles (USV) and robotic systems for marine operations, including launch and recovery, are developing rapidly. However a major obstacle to overcome is re-interpretation of the International Regulations for Preventing Collisions at Sea regarding keeping a lookout. Small craft are likely to be the first viable unmanned platforms in regular use around other vessels. Professional sector boat builders who currently offer propulsion and electronics options will offer craft with the option of 'manned or un-manned'. Extreme applications that may drive demand for this next generation of small USVs include the 3Ds – tasks that are Dark, Dirty and Dangerous. And, innovation will be the key.

John Haynes, *AFNI, is a Yachtmaster Ocean and Advanced Powerboat Instructor. Subject matter expertise includes high speed craft consultancy, product development and specialist training. He is Operations Director of Shock Mitigation and founder of the RIB & High Speed Craft Directory that brings together specialist boats and equipment for the professional sector.*

Z-Drive Towboats

ZF Marine penetrates domestic inland waterway markets – enjoying good success with two U.S. majors. The prospects for an even brighter future hinge on the performance of its early entries. So far, so good.

By Joseph Keefe

It's no secret that the domestic, inland marine business can be conservative in its approach to adopt new technologies, but then, this can probably be said of the global waterfront, as well. But the market is changing, driven by larger corporate entities moving into these tightly held markets, as well as a myriad of legislative and operational conditions – namely the rapidly rising cost of fuel. ZF Marine – or more specifically ZF Marine Krimpen b.v., the commercial thruster manufacturer – is poised to profit as it builds an impressive list of inland towboat companies enjoying the operational advantages and tremendous fuel savings that emanate from its thruster solution.

Building Blocks

When ZF bought HRP Thruster Systems B.V. in 2009, it was a strategic purchase that was intended to help HRP to grow its organization to a level where it was capable to serve clients globally. ZF turned out to be a perfect partner. ZF Group was looking to add marine thruster technology to its ZF Marine family of products, and it already had the established network of sales and service in place, as well as the engineering horsepower and organizational structure to grow the thruster business quickly and effectively.

"Essentially, we went from a small company to a big company, and the way in which we view and approach the market is significantly different," said Frank van der Vegt, Sales Manager, Commercial Craft Thruster Systems, ZF Marine Krimpen B.V. "The way it is taking off now means that you need a lot of focus, a lot of attention and a lot of people on site. So we used the strength of the ZF organization, in this case in America, to give this focus and to bring this to the next level."

Despite traditional concerns that the shallow draft and ever changing inland waterways system might cause damage to the units, ZF nevertheless pulled off its penetration and rapid growth in the inland towboat sector, a conservative niche that traditionally had not embraced azimuth thruster technology.

ZF Thrusters on the Water – here and now

Looking for a willing, stable partner, ZF Marine found Southern Towing Company, headquartered in Memphis, TN, as a firm that would embrace newer technologies. Southern Towing is one of the nation's largest transporters of fertilizer and other products along the nation's inland waterways. For more than 50 years, it has operated the largest fleet of anhydrous ammonia barges in the U.S. The company prides itself on building and running a cutting edge fleet. And, starting in 2008, it started outfitting a number of its new build towboats with the innovative rudder propellers. A total of six Southern Towing vessels are now equipped with ZF Marine Z-Drives.

"It's very much an industry where everyone waits for the first guy to do it and everyone watches," said van der Vegt.

"And I think you're seeing that on the inland waterway market with some of the big companies that can absorb a first vessel project like this to test the technology. These big companies build one or two boats and get them in revenue service and compare them apples to apples. The smaller companies really watch for the results." In the case of Southern Towing, the company reported a nearly 30% savings in fuel costs.

van der Vegt adds, "When you look at the fuel savings, it's always difficult to give exact numbers because it is so dependent on how you are using the equipment. The savings is highly dependent on the vessel, route and operator, but I think that at least a 20% fuel savings for this type of push boat application is a safe number to mention."

Separately, American Commercial Lines (ACL) has also been a leader on the inland waterways incorporating Z-Drives, starting earlier this year when it took delivery of The American Way in February 2014. "Two boats have been received (*American Way and American Spirit*), two are under construction and four are on order," said an ACL company spokesperson. "All eight boats are 2,000 HP with ZF 5,000 units. "

In making the decision to add Z-Drive boats to the ACL fleet, the company cited improved performance, reduced operating costs, replacement of older boats and the addition of boats for business growth as the primary factors. At the same time, the company weighed the drawbacks, which it says includes the initial cost for spare parts, limited service coverage due to the technology being new, and additional training needs. While the jury is still out on the long-term cost benefits of the Z-Drive boats, early results are promising.

"Analysis shows a ~20% improvement in fuel burn or performance when ran hard," said an ACL company spokesperson. "It remains unclear whether Z-drive boats are more cost efficient than conventional drive boats with regard to maintaining the Z drive unit vs. shafts, gearbox, wheels and rudders. Time will tell."

Opportunities Abound

The ZF product line includes azimuth thrusters (360° steerable thrusters), Tunnel Thrusters, Shallow Draft Thrusters, and Thruster Control Systems. Units can be supplied with electric-, diesel- or hydraulic drive systems. The steering controls are advanced and interfaced with GPS and Dynamic Positioning systems. And, while the U.S. inland towboat market is large and promising, it certainly is not the only market in play for this propulsion technology.

Elsewhere, there are many emerging markets with mammoth river systems, namely South America and the Amazon River system, that present good opportunity as well. "We see the demand increasing for deck mounted units

Frank van der Vegt,
Sales Manager, Commercial Craft Thruster Systems, at the ZF Marine Krimpen B.V.

in the Amazon, as well as some of the big river systems in Africa that are growing along with the oil business," said van der Vegt. For example, the rudder propeller solution, particularly the deck-mounted version, is particularly attractive in remote areas where there are a dearth of marine facilities or infrastructure, as the deck-mounted unites are easy to maintain and replace without the need of a shipyard. In addition, many emerging markets want to build the boats locally to feed the local market, and with the deck-mounted solution, the countries can build their barges locally than easily add the propulsion solution.

"The advantage in push boat performance is you have cleaner thrust coming through the kort nozzles, so there is not a parasitic loss of the propulsion power that you have in a traditional vessel," said van der Vegt. "So you get more pure directional thrust pushing, pulling and turning the tow. You can get equivalent performance in a smaller power output, and so we are seeing with the tug fleets they are able to use smaller engines, meaning they are lighter, and with less weight penalty they are more fuel efficient."

"A 1400 hp pushboat (with the Z-Drive) can perform the same as a conventionally outfitted boat with 2000 hp– same barges, same loads – as each thruster has full power at 360 degrees. With traditional systems you only have full power in one direction."

While azimuth thruster technology comes with a number of advantages, the main reservation has been that the Z-Drive – which hangs below the vessel – is more vulnerable to damage than traditional systems, particularly on the shallow draft, oft changing and sometimes litter-strewn inland waterways.

Here the ZF global network of supply comes into play, as it realizes that keeping a boat in revenue service is JOB 1 for these operators. To that end, it emphasizes that a key strategic advantage is that – if the unit is installed as a top-mount thruster – it can be pulled and replaced with a swing unit easily and quickly – sometimes between eight to 10 hours – while the boat stays in the water.

Engineered Solutions: Just in Time

A key challenge in any manufacturing business is controlling costs in the design and production shops, and the ZF Marine thruster business is no exception. In fact, as this business unit produces no 'standard' units, it is particularly adept at looking at the project as a whole to design with the naval architect, with the shipyard and ultimately with the owner what is agreed to be an optimal solution.

"If a client comes in and says 'I want a 2000 horsepower boat,' our first questions are: What do you want to do with the boat?; What are you going to be pushing?; What kind of thrust do you need?," said van der Vegt. He explained that thrusters can offers several power and maneuverability advantages; for example of a vessel outfitted a traditional power train may require a 2000 hp power plant, whereas a vessel outfitted with a thruster may need only a 1400 hp power plant, offering substantial space, weight and fuel consumption advantages . "We want to offer an optimum solution based on what the client wants to do with the boat, and the interaction with the client is crucial" because it doesn't manufacture and house standard thrusters that are simply off-the-shelf.

Nevertheless and despite the custom nature of each order, ZF delivery times range between five and eight months, which is a key plank in extending its platform in North America as he said U.S. shipyards build boats faster than its European counterparts. And today, they are building a lot of them. ZF aims to be there, when they do. So far, so good.

Effective Communication on the Water

Because communication on the water is serious business, David Clark Marine offers a number of system solutions tailored to meet specific needs. On board the City of Marco Island's Firestorm 32 High Speed Aluminum Fireboat, made by MetalCraft Marine, first responders depend on their wireless communication gear every day.

By Joseph Keefe

The Problem

Surrounded by wind and engine noise, salt spray, choppy seas and all of the unexpected variable that come with operating in a harsh, unforgiving marine environment, communication is key to effective performance. Nowhere is that reality more evident than for firefighters and first responders everywhere, as they patrol and perform a myriad of public safety missions. Deputy Chief Chris Byrne of the City of Marco Island Fire Rescue Department can personally attest to that.

Marco Island's list of requirements for a dependable communications system was long and demanding. These included Durability in the marine salt environment, mobile grade, stainless steel hardware, dynamic earphones with stainless steel retainers, and immersion proof, dynamic microphones. Battery life [Li-polymer batteries last up to 24 hours of continuous use between charges] was also important, comfort [the DC headsets feature comfort-gel, undercut ear seals and adjustable head band assemblies], ease of use and strong support from customer service.

The Solution

Bob Daigle, David Clark Company Product Manager for Wireless Systems told *MarineNews*, "The Marine Series 9900 Wireless Communication System gives crew members added mobility to move about freely and communicate clearly, without being tethered to the vessel, which, as in the case of Marco Island Fire Rescue, is a critical benefit for fire/rescue crews as well as a variety of other workboat applications." In the end, it was David Clark that met the Marco Island challenge. And, Byrne says, "That's why we chose and depend on our Series 9900 Marine Communication System from David Clark."

David Clark Marine Intercom Systems improve on board safety by providing solutions on board boats and vessels where problems such as high-noise, constant shock and vibration from choppy waves and the corrosive environment of the sea create obstacles to reliable and effective communication. In general, this takes the form of three different applications:

Evaluation, Installation – and Training, too ...

According to Deputy Chief Chris Byrne, Marco Island uses the 9900 Marine Series Wireless Headset Communications System. He adds, "The system provides us the ability to monitor and transmit on two different radios, 800 MHz Fire Rescue Dispatch and VHF Marine band. The intercom allows for crew communications as well as

Series 9500 Workboat Intercom:	For the extremely demanding requirements of those who work on the water. Currently being used by numerous agencies concerned with homeland security. Accommodates up to eight crewmembers and three mobile radios while providing hearing protection for all. Every crewmember may have access to radio transmit and receive.
Series 9800 "Go-Fast" Intercom:	Helps to maximize the thrill of high-speed performance boating by providing crisp and clear communication between crew and passengers. Accommodates up to six headsets with radio transmit and receive for two crewmembers. For those who play on the water, an auxiliary stereo input and stereo headsets serve to enhance the safety and enjoyment of the ride.
Series 9900 Wireless Intercom:	Adapts to either 9500 or 9800 Series systems to add the freedom of mobility without being tethered to a wired system.

communication between the Vessel Operator and the Paramedics providing patient care." Communications are conducted with the Marine Incident Command Center and with the U.S. Coast Guard, as well as other rescue and law enforcement vessels. Paramedics also have the ability to contact the ER for physician orders and the Medical Helicopter if the patient requires Medivac.

The City of Marco Island Fire Rescue Department was first exposed to the David Clark solution when David Clark's Bob Carroll made a visit with a demo set and tested the system on their Fireboat. Byrnes told *MarineNews* in September, "After that evaluation we were convinced and made our decision to purchase DC."

The System was first installed in July 2014 by the department's fire apparatus mechanic, and the install posed some challenges due to radio cable compatibility. That said; the support from Bob Carroll and David Clark factory Engineers was – in Byrne's words "outstanding" – and they quickly ironed out all the kinks. Once installed, David Clark provided initial support to ensure that all crew members were well-versed in the equipment's operation.

While some customers might be satisfied with the wired options, Byrne says, "Wireless was our only option. The wireless product allows our personnel to freely move around our vessel while maintaining communications. It provides us the ability to have a crew member / paramedic board another vessel to evaluate a patient and relay information and needs to the Fireboat." In the end, this improves situational awareness and incident preparedness.

Real Life; Real Applications

The Marco Island team recently responded to a near drowning on a remote Island south of the City. According to Byrne, the incident occurred during inclement weather creating strong wave action. The patient was located on the beach, however due to the condition of the waves breaking on the beach, the vessel had to maintain a safe distance offshore. Deploying one firefighter paramedic into the water with a headset to the beach, communications were quickly established, a medical assessment of the patient was performed and the

pickup procedure of patient and firefighter was agreed upon and handled, with the help of the David Clark system.

Still another recent incident involved a swimmer who had been taken out into the Gulf of Mexico off the beachfront and was unable to swim back to shore due to strong tidal flow and rip currents. Byrne explains, "Our Fireboat responded and upon arrival had to maneuver the rear rescue platform of the fireboat towards the victim to retrieve her from the water. With a crew member on the platform communicating with the fireboat operator, the victim was safely retrieved from the water." In this case, improved crew-to-crew communications was the key. The victim was then transported to shore during which the paramedics assessed her for injuries and communicated her condition to an awaiting Rescue unit.

At the end of the day, the number one feature/benefit that Marco Island personnel like about the system is that it has provided them with markedly improved communications and at the same time, improved incident coordination due to the ability to clearly understand direction from the Incident Commander. Deputy Chief Chris Byrne sums it up neatly, insisting, "Safety is paramount in these operations and the

David Clark wireless system provides us with reliable consistent crew communications through the intercom feature." All of that adds up to a more confident, effective and safer crew. And, that – in a nutshell – is David Clark's mission.

Barging Right into LNG

A raft of new and innovative concepts for LNG barge missions hits the market, in North America and across the pond, as well. Industry gears up for the soon-to-come need for bunkering, infrastructure and LNG-related logistics.

By Joseph Keefe

In 2014, innovation – as it turns out – means new ideas for the (previously) boring subject of marine barges. It also means LNG. Paired together, LNG and barges are giving naval architects, global classification societies and the operators of a new generation of LNG-powered tonnage something to think about. That's because the final link of the push to move to dual fuel and/or LNG-powered commercial vessels involves infrastructure. Some early stakeholders are ramping up shore infrastructure to meet the coming demand for bunkers. Others are planning – and building – barges to accomplish the task. And, since it never really has been done before, the design task faces many challenges.

Spending time and money on a design that no one, to date, has agreed to pay for, represents a real leap for some smaller naval architecture and design shops. The idea of an LNG bunker barge also entails a new area for classification societies, the IMO and of course, the U.S. Coast Guard. And yet, spec designs are emerging and their creators, looking for customers. Most that already have customers aren't yet willing to talk about it, but that doesn't prevent the ideas from making a splash in the trade news. Beyond this, the differences between the various designs and the driving forces behind each make for interesting discussion. This month, we look at a few of these entries to the hottest thing to hit shipping since Noah crewed up for his inaugural voyage.

BHGI, Conrad Team up on LNG Barge Concept

In late August, Conrad Shipyard, L.L.C. engaged Bristol Harbor Group, Inc. (BHGI) to develop a 3,000 cubic meter Liquefied Natural Gas (LNG) transport barge utilizing a Bristol Harbor Group proven hull design built by Conrad. It was also announced that BHGI had been awarded an "Approval in Principle" (AIP) by the American Bureau of Shipping (ABS) for the design of the 3,000 cubic meter Liquefied Natural Gas (LNG) Transport Barge design on behalf of Conrad.

The deal looks to be a natural fit for natural gas. That's because BHGI has a long relationship with Conrad that, in the past, had focused on coastal liquid cargo barges. In this case, the 300' version of those proven double hull oil barges that came to be the basis for the LNG Transport Barge. According to BHGI, the new design will serve the purpose of primarily transporting LNG in blue water along the United States coastline. Storage containment

will consist of four Type C pressure tanks, all equally sized at 750 cubic meters. The tank design offers suitable hold times for cargo transport without the need for reliquefaction. The design is focused on constructability and ensuring cargo safety.

Separately, BHGI has also been active in a number of marine related natural gas projects for a variety of clients. Recently, BHGI has been awarded a contract to perform design conversion work for the United States Army Corps of Engineers on one of their vessels from diesel to dual fuel.

Bureau Veritas to Class first LNG bunker barge

International classification society Bureau Veritas (BV) has been chosen to class a unique LNG bunkering vessel which will be built in Korea. The vessel will carry 5,000 cubic meters of LNG for ships' fuel stored at 4 Bar in two IMO Type C pressure tanks. Delivery is set for 2016. The LNG bunker barge will be 111m LOA, beam 16.8m, draft 4.9m and will have dual-fuel diesel electric propulsion with twin azipods for high maneuverability. According to BV, It will be built and equipped to the highest environmental friendliness standards.

Jensen's LNG Play

At the Passenger Vessel Association (PVA) annual meeting held in Houston, Texas, Jensen Maritime Consultants had on display just a couple of their many design efforts underway at the Crowley-owned design and engineering shop. Naturally, those designs had the use or carriage of LNG as their central theme. LNG, at least on this side of the pond, is still largely uncharted waters, but that's hardly the case for Jensen. Their new LNG bunker barge design, for example, is ample testimony to that.

Ongoing in-house projects include an LNG bunker barge, the LNG-powered tug, LNG powered ATB designs and of course, the design work with the larger, faster and environmentally-friendly liquefied natural gas (LNG)-powered, combination container – Roll-On/Roll-Off (ConRo) ships. Already in the thick of LNG, Jensen will provide construction management and supervision in the shipyard throughout the building phase of the ConRo's.

Jensen's bunker barge designs are a closely guarded secret, but Jensen will focus on two basic sizes – ranging from capacities of 2000 to 3000 cubic meters. According to Jensen, a bunker barge has to be large enough to where it makes sense, but also small enough that it is affordable and economical.

Jensen's philosophy for LNG is simple. Summing it all up, Jensen Maritime Vice President Johan Sperling told

Becker Marine Systems' new LNG Hybrid Barge acts like a floating power plant, supplying low-emission energy to cruise ships.

MarineNews earlier this year, "The Rule of thumb today: LNG equipment is about double the price of non-LNG components. We're talking about the equipment. Whoever moves first takes the most risk because they are going to spend a lot of money and then the prices are going to drop. You don't want to be first and get it wrong."

Jensen went forward with its LNG pioneering efforts for several reasons. Sperling says, "It was a big risk – for a naval architect, time is money and we spent a lot of R&D time on this. In this case, we felt the risk was low enough because we think it's real enough that someone will eventually pay for it and that's exactly what has happened." Indeed, LNG ships being built, and when they are delivered, something will need to be in the water to serve them.

Becker Marine Systems: LNG Hybrid Technology for Barges

Environmentally-friendly innovations are the future of shipping. Nowhere is that more apparent than with Becker Marine Systems' new LNG Hybrid Barge, that acts like a floating power plant, supplying low-emission energy to cruise ships. It's also a new twist on the practice of "cold ironing" in port. Ports considering the installation of fixed ship-to-shore power connections will no doubt be taking a hard look at a concept that allows for a portable solution.

According to Becker, the LNG Hybrid Barge is being eagerly awaited at the Port of Hamburg. Launched in early September, the barge is expected in Hamburg in mid-October. With a length of 76.7m, a breadth of 11.4 m and draught of approx. 1.7 m, the vessel will eventually, for the first time, deliver energy to a cruise ship as part of a joint project with AIDA Cruises. Delivered only two years after the start of the project, the LNG Hybrid Barge is equipped with five generators with an overall output of 7.5 MW (50/60 Hz). These generators will be the first marine classified LNG Caterpillar engines to be delivered to customers. **www.LNG-Hybrid.com**.

LNG & Barges: here to stay

No matter what a particular LNG/barge concept is dreamed up for, the advantage of a mobile source of bunkers and power has to be an attractive lure for both marine operators and ports clamoring for cleaner air. In North America alone, at least eight LNG and/or dual fuel vessels are either on the drawing boards, under construction or, as in the case of Harvey Gulf's industry-leading entries on the Gulf Coast, already in the water. That means a ready and regular, dependable supply of LNG has to be made available. In the absence of shore-based bunker facilities, barges will be among the early solutions sought by stakeholders.

While barges as LNG bunker vehicles may be the most obvious application, it is also true that unique entries such as Becker Marine's mobile power source for in port "plug-ins" will find utility in other markets. As LNG moves forward on the waterfront, however, the one certainty all can count on is that barges will be part of the solution. Fortunately, there is no shortage of innovative ideas to make this happen.

Bureau Veritas unique LNG bunkering vessel.

An early, preliminary rendering of the Jensen-designed LNG bunker barge.

Innovation Goes Global:

Safely Testing Marine Bollards

A UK-based manufacturer has come up with a new solution for safely testing marine bollards and is now planning to take the innovation global. Working with the Manufacturing Advisory Service (MAS), Tyne and Wear Marine (TWM) has spent the last year developing the 'Bollard Load Test' (BLT), which uses a powerful hydraulic ram and specialist torque rope to recreate more than 100 tons of 'pull.' This breakthrough replaces the traditional method of a tug pulling against the bollard, a method that has previously caused damage to vessels and can be dangerous to the people involved in the test.

The trademark has been registered and a patent is pending, with the long-term plan to roll out the testing service to other ports across the globe. TWM have come up with a fully calibrated and easily deployable way of testing the strength of marine bollards, creating conditions equivalent to 100 tons with plans in place to increase this to 150 tons of pull in the next model. Inquiries from the Port of Tyne Harbor resulted in the development of a fully functioning, calibrated, safe and easily deployable system.

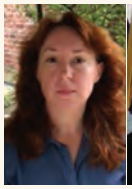
Mike Nicholson, Harbormaster at the Port of Tyne, said of the developing technology, "We have been extremely impressed with the results of the first successful trial and we are now ready to roll out a regular testing regime. We are confident that it will help guard against future bollard failures and provide greater safety and security for ships at our berths."

Plans to seek legislation to certify the performance ratings of bollards are in motion, with the ultimate intention of ensuring that each bollard tested is identified by GPS and has the potential to cut insurance premiums for ports all over the world.

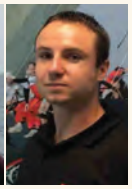
Due to the anticipated interest, Tyne and Wear Marine is currently in the early stages of building a new factory – adjacent to its current site – to give it more capacity and the ability to develop a bespoke production layout. TWM has just entered full production on the new device and, following certification by Noble Denton and approval from Port of Tyne and its Harbor Master, has launched it to the marketplace. It is currently looking for international partners to rollout the BLT service.

The Bollard Load Test (BLT) developed by Tyne and Wear Marine Ltd (TWM) and offers a safe method of testing marine mooring bollards – something which has not existed in the past, other than 'one-offs' where testing involved the use of tugs pulling against a bollard.

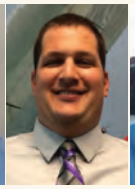
Pettit Marine Paint

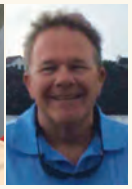

Cartwright


Falls


Maellaro


Stark


Wickey


Wolf

Coating Manufacturer Pettit Marine Paint has announced promotions and additions within its sales and customer service teams. **Tom Maellaro** has been to the position of New Jersey Sales and Technical Service Representative. **Bill Wolf** joined the Pettit team on May 1st. Based in Florida, Bill leads the company's 'Big Yard Initiative' program. **Rachael Cartwright** joined the Pettit Sales and Technical Service Representative team on July 1st. **Garrett Falls** joined the Pettit Sales and Technical Service staff earlier this year with responsibility for the Midwest market. **Ken Wickey** strengthens Pettit's Customer Service team as the Technical Service Advisor. **Tim Stark** joined the Pettit team to cover Western Florida and the Gulf States, assuming the Sales and Technical Service role previously held by his father.


White


Cotte


Harris


Marmillion

Ricky White has joined Twin Disc Mid-Atlantic as Territory Manager for North and South Carolina.

Ricky will report directly to Mill Log Equipment Group of Companies' Director of Sales & Marketing, Don Lindsey. Ricky brings vast experience with electrical and mechanical systems in the industrial equipment markets working for John Deere, RW Moore, and National Pump & Compressor.

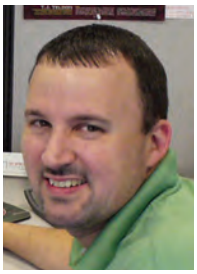
Ken Cotte was named Twin Disc Territory Manager for Virginia and the Outer Banks. Ken has a vast amount of experience with electrical and mechanical systems in the workboat and pleasure-craft, most recently with Sea Ray.

Scott Harris has been named Chief Financial Officer of The Safariland Group, where he will oversee global finance and accounting operations. Harris joins the Company after spending the past 14 years at Delphi Automotive PLC. Harris received his A.B. in Economics from Brown University and his MBA from the University of Virginia's Darden School of Business.

Bollinger Shipyards, Inc. announced the upcoming retirement of its Vice President Repair, Eastern Division, **Dave Marmillion**. Marmillion started his shipyard career as a lifelong resident of New Orleans. He graduated from Southeastern Louisiana University with a degree in Industrial Technology and began his career in the marine industry with Avondale Shipyards at their Harvey Quick Repair yard in 1968. Eventually, Marmillion was hired and promoted to VP, Inland Repair Operations and assumed responsibilities for repair operations at four (4) shipyard facilities for Bollinger. He held board positions for the Louisiana Association of Waterway Operations & Shipyards (LAWS), and for many years represented Bollinger with the American Waterways Operators (AWO).

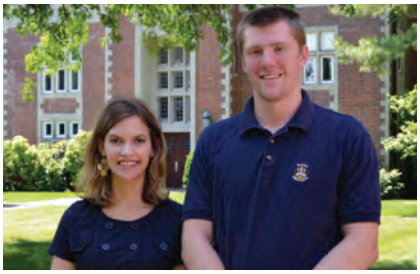
Elliott Bay Design Group (EBDG) has announced the hire of two new staff members, one in Seattle and another in New Orleans. Marine Designer **Paul Harman** has joined the EBDG staff in New Orleans. He previously worked as a contractor in EBDG's Seattle office. Harman brings 15 years of piping design experience to his position with expertise in the design of tank barges and new construction of various commercial vessels. He is a graduate of Universal Technical Institute in Phoenix, Arizona. **Rachel Walker** joins EBDG's Seattle office as a Naval Architect. Rachel first worked at EBDG as an intern. She holds a BS in Naval Architecture and Marine Engineering from the Webb Institute.

Lynne Griffith has been named Assistant Secretary for the Washington State Ferries Division. She officially begins her leadership role next month with responsibilities including, guiding the ferries management team and all ferries employees to meet safety, operational and budgetary goals; and collaborating effectively with community and labor partners and other


Harman


Walker


Griffith


McElroy & Mills


Watson

WSDOT divisions. Griffith will be the first woman to hold the position of Assistant Secretary for the Washington State Ferries Division. Griffith has more than 35 years' experience in the intermodal transportation industry, including transit, airlines and rail.

The Webb Institute has announced the 2014-2015 recipients of Crowley Maritime Corp.'s Thomas B. Crowley, Sr. Memorial Scholarship. **Erin McElroy** and **Brian Mills** were chosen for their leadership qualities, academic excellence and commitment to the maritime industry. McElroy interned at Sparkman & Stephens, a naval architecture and yacht brokerage firm, and worked as an engine cadet at Stolt-Nielson. Mills has interned as an outside machinist for General Dynamics Electric Boat, sailed on a Military Sealift Command tanker as an engine cadet and sailed aboard the tall ship USCGC Eagle.

William H. Watson has been appointed as Vice President of Meridian Global Consulting, LLC, a scalable risk mitigation specialist. Prior to joining Meridian Global, Mr. Watson maintained his own consultancy. His experience includes serving as a flag State security officer for one of the world's largest ship registries; service as a delegate to the United Nations Contact Group on Piracy off the Coast of Somalia; and as president of a Private Maritime Security Company. He is Vice President and Governor of the Maritime Security Council, He is an alumnus of the University of South Carolina.

Allegretti

Paxton

Great Lakes Bulker

Domestic American Maritime Industry Booming

The U.S. House Subcommittee on Coast Guard and Maritime Transportation last month heard about America's booming domestic maritime industry from Mark Tabbutt, Chairman of the Board of Saltchuk, who was testifying on behalf of the American Maritime Partnership (AMP). Tabbutt told Subcommittee Chairman Duncan Hunter (R-Calif.) and Ranking Member Rep. John Garamendi (D-Calif.) that American maritime, supported by the Jones Act, is strong, vibrant, and growing. AMP Chairman **Tom Allegretti** echoed those sentiments, saying, "We are very grateful for the opportunity to testify before the subcommittee to share the good news of America's vibrant maritime sector. This is an industry that is investing heavily in vessels, personnel and practices to ensure its continued ability to safely and efficiently meet the demands of its customers, as well as the nation's transportation needs."

Matthew Paxton, president of the Shipbuilders Council of America (SCA) also testified at the hearing, saying, "The state of the U.S. commercial shipyard industry is the strongest it has been in decades … Commercial markets are witnessing a boom not seen in decades, representing billions of dollars in new investments to our economy."

Lakes Coal Falls, but August is Strong for U.S.-Flag Lakers

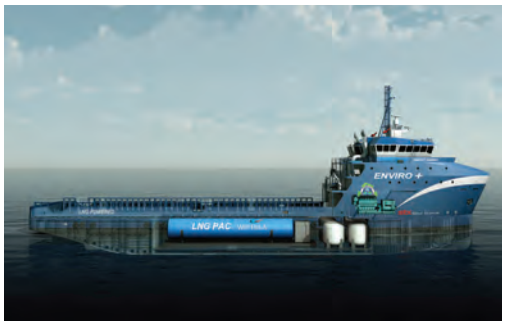
Coal shipments on the Great Lakes totaled 2.6 million tons in August, a decrease of 18 percent compared to a year ago. Loadings also trailed the month's long-term average by nearly 19 percent. Nevertheless, U.S.-flag Great Lakes freighters (lakers) moved 11 million tons of cargo in August, their second-highest monthly total in two years. The August float, while down 3.2 percent from July, also represents an increase of 5 percent compared to a year ago. According to the Lake Carriers' Association, year-to-date, U.S.-flag cargo movement stands at 49.4 million tons, a decrease of 7.7 percent compared to a year ago. Higher water levels and increased vessel utilization rates are allowing the fleet to narrow the gap between this year and last, caused by the brutal winter of 2013/2014. At the end of April, for example, U.S.-flag cargo movement was 45 percent off the previous year's pace. However, Great Lakes water levels normally begin their seasonal decline in the fall, so going forward, loads will likely be smaller.

Wärtsilä Inks Maintenance Agreement for Harvey Gulf's LNG Fleet

Wärtsilä has signed a long-term Technical Management Agreement with Harvey Gulf International Marine LLC (Harvey Gulf). This five-year agreement was signed in August and covers Condition Based Maintenance and Dynamic Maintenance Planning for eight new offshore supply and multi-purpose support vessels – six liquefied natural gas (LNG) fuelled platform supply vessels and two offshore construction vessels powered by diesel fuel. The signed agreement ensures ideal running conditions and optimized maintenance for Harvey Gulf's new vessels – specifically the 18 Wärtsilä 34 dual-fuel engines and eight Wärtsilä 32 engines. The agreement also includes Online Remote Operational Support, which enables Wärtsilä's technical experts to support vessels in real time, without the need for engineers to travel to the vessels.

U.S. Coast Guard Issues Interim Rule for 6,000 GT ITC OSVs

In August, the U.S. Coast Guard Tuesday issued an interim rule regarding regulations to mitigate the risk created by the removal of the statuto-



Harvey Gulf PSV Depiction


Bouchard


ABS

ry size limit previously placed on offshore supply vessels. The regulations were effective immediately upon publication in the Federal Register. The Coast Guard Authorization Act of 2010 removed the statutory size limit previously placed on offshore supply vessels and required the Coast Guard to issue regulations to mitigate the risk created as a result, noting the need to ensure safe carriage of oil, hazardous substances and individuals other than crew on OSVs of at least 6,000 gross tonnage as measured under the Convention Measurement System. Also, this rule will affect any vessel of at least 500 gross register tons as measured under the Regulatory Measurement System, if that vessel is not assigned a measurement under the Convention Measurement System and the owner desires to have the vessel certified as an OSV. The interim rule may be found at: www.federalregister.gov/articles/2014/08/18/2014-18721/offshore-supply-vessels-of-at-least-6000-gt-itc.

MARAD Releases Two LNG Marine Studies

The Maritime Administration (MARAD) has released a study examining options for liquefied natural gas (LNG) bunkering and the necessary infrastructure, safety, regulatory, and training factors of each in supplying LNG to ships as a propulsion fuel. The study examines four bunkering options (truck-to-ship transfer, shore facility-to-ship transfer, ship-to-ship transfer, and transfer of portable tanks) based on factors such as the number and type of vessels to be served, local availability of LNG, port size, congestion and level of activity. The study can be seen at: www.marad.dot.gov/documents/DNVLNGBunkering-Study3Sep14.pdf. MARAD also released a study that evaluates total fuel cycle emissions for natural gas versus conventional marine fuels. This study was conducted as a part of MARAD's Maritime Environmental & Technology Assistance program, which focuses on emerging marine transportation and environmental issues. Results of the study showed that the use of natural gas as a propulsion fuel can reduce air quality pollutants and reduce major greenhouse gas emissions when compared to conventional fuels. The study can be viewed at: www.marad.dot.gov/documents/Total_Fuel_Cycle_Analysis_for_LNG.pdf.

Bouchard Expands with Two New ATB Tugs

In August, Morton S. Bouchard III, President and CEO of Bouchard Transportation Co., Inc., announced the next step in Bouchard Transportation Co., Inc.'s ongoing fleet expansion with the construction of two 6000-hp ATB tugs. These new builds, the M/V Bouchard Boys and the M/V Evening Light, will be equipped with Intercon Coupler Systems and constructed by VT Halter Marine, Inc. Measuring 130 feet by 38 feet by 22 feet, these 6,000-hp Twin Screw ATB Tugs will be classed by ABS. Mr. Bouchard added, "I look forward to the delivery of two more first-class vessels built by VT Halter, and would like to thank Mr. Brian Everist for Intercon's assistance in completing these contracts." Bouchard was the first Jones Act company to build double-hull ocean-going barges with Intercon. With the addition of these tugs, Bouchard's fleet will be equipped with Intercon from 80,000 bbls to 250,000 bbls. The tugs will be married up to existing Bouchard barges.

ABS to Class LNG Short-sea Containerships

ABS has been chosen to class two LNG-fueled containerships to be built in China for German owner GNS Shipping/Nordic Hamburg. The 1,400 teu vessels will feature dual-fuel propulsion enabling them to burn LNG and conventional bunker fuel. They will be built at Yangzhou Guoyu


Nagle


Crowley


EBDG


Vigor


Dohle

Shipbuilding Co. Ltd, for GNS Shipping/Nordic Hamburg for long-term charter to Containerships Ltd Oy, of Finland. ABS will review the design, survey the construction and class the ships for operation on delivery in the course of 2016. The order includes options for a further two vessels. Beyond this, the vessels could ultimately serve as a model design for a future U.S. shortsea resurgence, especially in the wake of the widely anticipated widening of the Panama Canal. ABS is heavily involved in the "LNG as fuel concept," having classed the first LNG-powered containerships for US-operator TOTE and the first dual-fuel offshore support vessels in the US for Harvey Gulf. This past spring, ABS released the landmark study Bunkering of Liquefied Natural Gas-fueled Marine Vessels in North America.

Maritime Projects Win $74 Million in TIGER Grants

After evaluating 797 applications totaling requests for $9 billion for FY 2014 Transportation Investment Generating Economic Recovery (TIGER) grants, the U.S. Department of Transportation (USDOT) announced 72 awards totaling $584 million in the sixth round of this multimodal grant program. Of those, seven awards totaling $74,241,904, or about 13 percent of total funding, are going to projects that USDOT classifies as "maritime." American Association of Port Authorities (AAPA) President and CEO Kurt Nagle lauded DOT's recognition of the critical role of America's ports, adding, "AAPA urges that 25 percent of TIGER grants be provided for port-related and connector infrastructure, since ports are one of the four eligible areas for the TIGER program." Maritime TIGER awards included a Seattle terminal modernization project, rehabilitation of Wando Welch Terminal in south Carolina and for $10,840,000 – South Carolina State Ports Authority and an Oil Spill Response Access Dock for the Maheh Tribe in the state of Washington.

Crowley Tug Participates in GoM Deepwater Blackout Test

One of Crowley's four ocean class tugs, Ocean Sky, recently provided back-up station-keeping and hold-back services during a routine blackout test of ultra-deepwater, semisubmersible oil rig Noble Jim Day. This Shell-leased, Noble-owned rig is currently operating in about 9,600 feet of water in the 508 section of Walker Ridge as part of the Stones Prospect. As part of routine blackout testing, Crowley was contracted to have the Ocean Sky connect its tow line to the rig, which itself has DP3 technology. The tug's connection was to serve as a contingency in the event the rig required additional assistance. Crowley's ocean class tugs are modern ocean towing twin-screw vessels with controllable pitch propellers (CPP) in nozzles, high-lift rudders and more than 147 MT bollard pull. The first two ocean class vessels, the Ocean Wave and Ocean Wind, are classed as Dynamic Positioning 1 (DP1) twin-screw tugboats.

EBDG Announces Completion of the COLUMBIA Repower

Elliott Bay Design Group (EBDG) last month announced the completion of the M/V COLUMBIA repower. EBDG provided design services and ongoing owner support services for the ferry's repower, which was performed by Vigor Marine in Portland, Ore. For nearly 40 years the COLUMBIA has been the Alaska Marine Highway System's flagship vessel, linking a number of inside passage communities. The 418-foot vessel accommodates 625 passengers and features two vehicle decks with capacity for 134 vehicles. In addition to its support of the COLUMBIA, EBDG assists other ferry operators with an array of services.

Country's Largest Floating Drydock Comes to Portland

The country's largest floating drydock, the Vigorous, has arrived at Vigor Industrial's Portland shipyard on the Willamette River. Vigor invested more than $50 million to build and deliver the Vigorous. The 960-fooot drydock will allow Vigor to service vessels such as cruise ships, tankers and cargo ships and frees Vigor to send another drydock from Portland to Seattle, expanding capacity there. The new drydock will allow the company to better serve a range of customers at a time when total large-drydock capacity on the West Coast has been shrinking. Two large vessels, Maritime Administration cargo ships, are already booked for repairs when the drydock enters service in November.

Rolls-Royce Announces Completion of Power Systems Group

The latest Rolls Royce announcement follows a March 2014 note that the Board of Management of Daimler AG had decided to exercise the put option relating to its 50% equity interest in RRPS and the announcement on 16 April 2014 that Rolls-Royce and Daimler had agreed on a fair market valuation for the shareholding of EUR 2.43 billion. RRPS had previously operated as Tognum AG and is headquartered in Germany and employs 11,000 people. **Ulrich Dohle**, CEO of Rolls-Royce Power Systems said "With our well-known MTU high-speed engines, MTU Onsite Energy distributed energy systems, Bergen medium-speed engines and L'Orange fuel-injection systems, we are proud that we are now a full member of the Rolls-Royce family and look forward to contributing to its success."

W&O Supplies Actuated Valve Solution for Vigor Drydock

W&O has provided an actuated valve solution for the ballast system of Vigor's newest drydock. The W&O team provided technical and product expertise, utilizing SPACE Gate Valves, EIM Electric Actuators, reach rods and deck stands. One supplier for all of these critical components assured an integrated system for long term operation. SPACE valves are manufactured by W&O and are ABS and USCG approved.

www.wosupply.com

SENER's New FORAN V70R3.0

SENER's FORAN V70R3.0 incorporates improvements for the users and on its own technology. FORAN offers a solution covering all design stages and disciplines. Among other things, SENER offers a set of solutions for the visualization of the ship 3D model already generated in FORAN in a virtual reality environment, with examples from a stereoscopic view in a big screen, through cave, helmet or mobile devices.

www.senermar.es

SSI Releases ShipConstructor 2015

The release of ShipConstructor 2015 CAD/CAM software advances SSI's plan to increase flexibility, security, convenience and simplicity for its clients in the shipbuilding and offshore markets. ShipConstructor 2015 contains a significant augmentation that includes the addition of several new catalogs. These catalogs will help users quickly and accurately model components to correct specifications, increasing productivity and quality.

www.ssi-corporate.com

Caterpillar Selected to Power Harbor Tugs

Caterpillar Marine's MaK 8 M 25 C propulsion engines have been selected to power eight identical 70 ton bollard-pull tugs on order at a South African shipyard. The tugs will be each be powered by 2x MaK 8 M 25 C engines with a total output of approximately 5332 kW. The MaK engines will be delivered between 2015 and 2018.

www.MARINE.CAT.COM/pr

BMT's Design and Simulation Tool

BMT JFA Consultants (BMT) is developing a revolutionary design and simulation tool which will help to address the lack of validated methods available for designing land-based dredged material disposal basins and reclamations. A prototype of the tool has already been developed and successfully applied to aid Albany Port Authority in Western Australia to improve the performance of an existing on-land disposal basin.

www.bmtjfaconsultants.com.au

Vard's Dual Fuel Patent

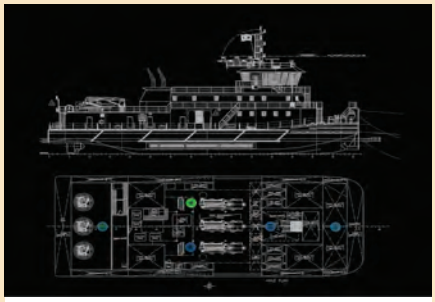
Vard Marine has been awarded a US Patent for design and engineering of a Dual Fuel Vessel. The first of six 5100DWT vessels, designed by Vard Marine and built by Gulf Coast Shipyard Group for Harvey Gulf International Marine will be delivered. These innovative vessels represent the first US flag vessels capable of operating exclusively on natural gas or diesel fuel oil.

www.vard.com

Voith Schneider Propeller for tugs and offshore support vessels

The new 34 Voith Schneider Propeller (VSP) is lighter, easier to maintain, and reduces servicing time. The market demand for tugs with a bollard pull of 80 tons and offshore support vessels with an input power of 3000kW per propulsor is growing. The new VSP 34 is optimized for a bollard pull of 80 tons and an input power of 3000kW for OSV.

www.voith.com



Krill's VFMMS Systems for Island Tug & Barge

Krill Systems Inc. has delivered three Krill VFMMS systems to Island Tug and Barge Ltd. The newly fitted vessels bring to a total of six fitted in the Island Tug and Barge fleet with Krill VFMMS. The Krill VFMMS systems will measure and transmit fuel consumption data from main engines and generators on vessels, transmitting that data to a Krill Vessel Operations Center.

www.krillsystems.com

Elco Motor Yachts' Electric Outboard Motors

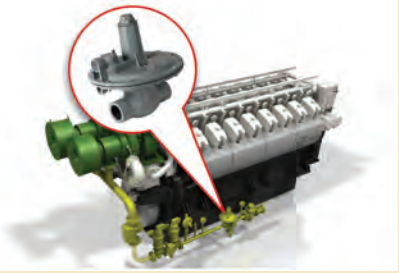
Elco Motor Yachts' new line of 5- and 7-horsepower motors are designed to provide clean, quiet and fuel-efficient propulsion for commercial boaters. Elco's electric outboard motors are ideal for a variety of maritime uses, from cruising on launches, to coastal waterways on trawlers. The new motors deliver benefits for commercial operators that want to control noise and water pollution while saving on fuel and maintenance.

www.elcomotoryachts.com

New CMR pressure regulators lead on delivery and value

CMR's cost-effective gas engine pressure regulators enable high-pressure gas fuel from lines and tanks within the fuel train on dual fuel or natural gas engines to be reduced to safe and/or usable pressures for the secure and reliable operation of high horsepower engine technology used in a wide range of harsh and challenging environments including the onshore/offshore oil and gas industry.

www.cmr-group.com



Fugawi's Quilted Raster Charts

Fugawi Aboard combines U.S. and Canadian raster charts, based on NOAA and Canadian Hydrographic Service nautical charts, into quilted regions for compatible chart plotters. Fugawi Aboard combines over 2,000 NOAA and 600 CHS navigation charts on one product. With coastline detail for U.S. and Canadian waters, Fugawi Aboard delivers the look and feel of vector charts with the unmatched detail and familiarity of paper charts.

www.fugawi.com/aboard

IMTRA's PowerLED Lights

IMTRA's high-output LED light range, the IMTRA Sigma PowerLED is a straight-forward dimmable LED upgrade for existing marine light systems. The Sigma PowerLEDs use existing fixture locations, hole cutouts, and 2-wire cabling for easy retrofits. The Sigma range provides the highest level of light quality and protection against interference. The hassle free LED solution exceeds halogen light output while only consuming 5 watts of power.

www.imtra.com

Bestobell Secures High Pressure Gas Fuel Contract

Bestobell Marine recently secured an order to supply cryogenic high pressure Globe valves to DSME. The innovative valves have been developed to meet the exacting standards required in the new fuel gas systems, which includes withstanding extremely high pressures. Designed to stand a maximum pressure of 370 Bar, the valves will be fitted in the gas phase piping of the fuel gas system.

www.bestobellvalves.com

Cat 3500 Dual Fuel GenSets to Power RIO Olympics Fast Ferries

The first Cat 3512C marine generator sets with Dynamic Gas Blending have been selected to power fast ferries for the 2016 Brazil Olympics. 28 Cat generator sets will be installed on 7 aluminum-hull fast ferries, with Cat 3512 & Cat 9 generator sets providing prime and auxiliary power. Each 3512 generator set will provide 1550 eKW @ 60 Hz of rated power.

http://marine.cat.com

Round Heated Coating Tank Increases Options

Marco Group International has introduced the Spraymaster Heated Coating Tank. The new round tank features a stainless steel liner, provides superior mixing capability, more consistent material heating, and is easier to clean. The tank is available with general and intrinsically-safe heating elements, and with standard or heavy-duty agitator options. This innovative new design reduces waste and provides consistent heating of the coating.

www.marco.us/heated-tank

ESAB Celebrates 110 Years of Welding with Redesigned Web Site

September 2014 marks the 110th anniversary of ESAB Welding & Cutting Products. ESAB's reach extends globally with manufacturing facilities across four continents. Celebrating that milestone, ESAB also announces its redesigned website for North America. A streamlined, modern design, the new www.esab-cutting.com offers extensive information about ESAB's comprehensive line of cutting products and processes as well as expanded resources in an easy-to-navigate format.

www.esabna.com

Rolls-Royce Offshore Cranes for Brazilian PSV's

Rolls-Royce has signed a contract with Detroit Chile SA to supply offshore cranes to nine Platform Supply Vessels (PSVs) under construction in Brazil. This includes nine ship sets of the dual draglink crane, making eighteen cranes in total. The vessels designed by Guido Perla utilize the dual draglink crane, optimized for safer and efficient load handling over the entire length of the main deck.

www.rolls-royce.com

Seakeepers Innovative New Gyros

Seakeeper 5, 9, 16, 26 and 35 models are small and powerful, expanding the range of boats that can be fitted with a gyro. Vessels 30' and up can have access to Seakeeper stability, with up to 90% roll reduction, using modest electrical power. These gyros can be installed off centerline. Computerized control and vacuum technology make Seakeeper the first practical stabilizer systems for yacht and commercial marine.

www.seakeeper.com

SNAME MARITIME CONVENTION

OCT. 20-25, 2014

*We are **SNAME**...*
*The **International Maritime Forum***

Register today at WWW.SNAME.ORG/SMC
or contact Alana Anderson at aanderson@sname.org / 703-997-6705

HYATT REGENCY HOUSTON

HOUSTON, TX, USA

Highlights:

- Technical Presentations
- Technology Demos
- Topical Breakfasts
- Industry Short Courses
- Panel Sessions
- Networking Opportunities
- National Shipbuilding Research Program Expo
- SNAME Short Courses

Marine Marketplace

Powered by www.maritimejobs.com

Post Your Resume for Free • Energize Your Job Search @ MaritimeJobs.com

MaritimeJobs.com

where employers and job seekers connect

The Maritime Industry's Leading Employment Website. For more information contact: Jean Vertucci at vertucci@marinelink.com

Bouchard Transportation Co., Inc.

Vessel Cook
Qualifications:
MMD endorsement Ordinary Seamen, TWIC, and Passport
Cooking Experience 2 + years, preferably on Tugs

Asst Engineer
Qualifications:
- Degree from Merchant Marine Academy or 3 year's experience working on tugs of at least 2,000 HP
- MMD DDE 1,000 to 4,000 HP
- STCW
- TWIC

Tankerman AB/Cargo Mate
Qualifications:
- Minimum of a AB Tankerman PIC (BARGE)
- STCW
- TWIC

Tug Mate
Qualifications:
- Minimum of a 200ton Mate Near Coastal with Radar Observer, TOAR, STCW and VSO endorsements
- TWIC
- GMDSS operator/maintainer a plus

Apply online at
www.Bouchardtransport.com
Click on the employment link and submit through the Vessel Employment Opportunity link.

NEW PRODUCTS

MASSACHUSETTS MARITIME ACADEMY

Founded in 1891, the Massachusetts Maritime Academy is the nation's oldest and finest co-ed maritime college. The Academy prepares young women and men for exciting and rewarding careers on land and sea. Our graduates have been at the very top of seagoing, engineering, environmental, and international business professions.

POSITIONS AVAILABLE

Tenure-track Engineering Faculty (2 positions available)
Tenure-track Marine Transportation Faculty (2 positions available)
Engineering Lab Tech

The Academy is located in Buzzards Bay at the mouth of the scenic Cape Cod Canal and is a special mission college within the Massachusetts university college system.

For information about this positions and how to apply, visit the employment quick link on our web page at **www.maritime.edu.**

Massachusetts Maritime Academy is an AA/EEO employer. Under-represented groups are encouraged to apply.

VESSELS FOR SALE / BARGES FOR RENT

NEW PRODUCTS

Marine Marketplace

NEW PRODUCTS

Marine Marketplace

NEW PRODUCTS

PROFESSIONALS

ADVERTISER INDEX

Page	Company	Website	Phone#
45	Ahead Sanitation	www.aheadtank.com	(337) 237-5011
35	All American Marine	www.allamericanmarine.com	(360) 647-7602
37	Breaux Bay Craft	Please call us at	(337) 280-1431
C2	Citgo Petroleum-Clarion	www.clarionlubricants.com	1-855-MY-CLARION
23	Dynamat Inc.	www.dynamat.qc.ca	(450) 662-1803
11	Great American Insurance	www.GreatAmericanOcean.com	(212) 510-0135
41	JMS Naval Architects	www.jmsnet.com	(860) 536-0009
17	Kidde-Fenwal, Inc	www.kiddemarine.com	(508) 881-2000
1	Konrad Marine	www.konradmarine.com	(715) 386-4203
9	Louisiana Cat	www.louisianacat.com	(866) 843-7440
55	Mariner's House	www.marinershouse.org	(617) 227-3979
51	McDonough Marine Services	www.mcdonoughmarine.com	(504) 780-8100
39	Metal Shark Aluminum Boats, LLC	www.metalsharkboats.com	(337) 364-0777
5	MTU	mtu-online.com	Visit us online
45	NABRICO Marine Products	www.nabrico-marine.com	(615) 442-1300
C4	R.W. Fernstrum	www.fernstrum.com	(906) 863-5553
33	RIB & HSC	www.ribandhsc.com	Visit us online
39	Rustibus	www.rustibus.com	(832) 203-7170
11	Silver Ships	www.silverships.com	(251) 973-0000
59	SNAME	www.sname.org	Visit us online
45	Sterling Equipment	www.sterlingequipment.com	(617) 984-0022
47	Suny Maritime College	www.sunymaritime.edu	(718) 409-7341
15	Tampa Yacht Manufacturing, LLC	www.tampa-yacht.com	(727) 954-3435
C3	Tuflex Rubber Products	www.tuflex.com	(813) 870-0390
37	Tutor Saliba	www.tutorsaliba.com	(818) 362-8391
3	Volvo Penta Americas	www.volvopenta.com	Please visit our website
7	Ward's Marine Electric	www.wardsmarine.com	(954) 523-2815

The listings above are an editorial service provided for the convenience of our readers.
If you are an advertiser and would like to update or modify any of the above information, please contact: productionmanager@marinelink.com

Insist on Tuflex Rubber Flooring for Your Fleet

- Superior sound dampening
- Unparalleled durability
- Ease of installation and maintenance
- Slip resistant and nonporous
- Cushioned support under foot
- Also proudly offering IMO Certified products

RUBBER Tuflex FLOORING

"All our customers appreciate the sound absorption of Tuflex."

– Jim Tabor –

Quality Shipyards
(A Tidewater Company)

"We've used Tuflex for 10 years. We've not had one problem."

– Mike O'Connor –

Surface Systems, Inc.

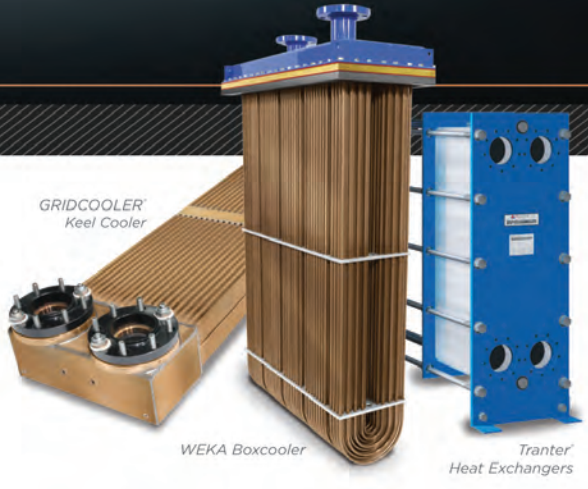
Tuflex Rubber Products, LLC
Sports & Marine Division
World Trade Center Tampa Bay
1101 Channelside Drive, Suite 244, Tampa, Florida 33602 U.S.A.
T: 800.770.6008 | E: marine@tuflex.com

ENGINEERED COOLING SOLUTIONS.

Photo courtesy of Vigor Industrial

OVER 65 YEARS COOLING THE MARINE INDUSTRY

R.W. Fernstrum is committed to providing long-lasting, quality cooling systems. Our sales and engineering team will work with you to custom design a solution that meets the needs of your vessel and operating conditions.



fernstrum.com
906.863.5553
sales@fernstrum.com

FERNSTRUM®
R.W. Fernstrum & Company