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USCG Commandant Adm. Paul

Zukunft

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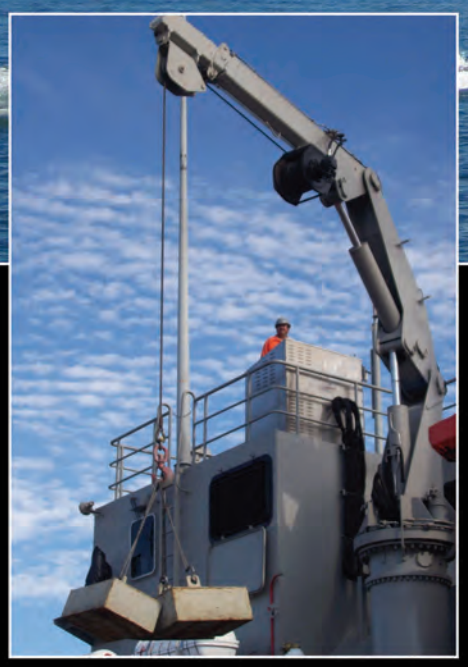

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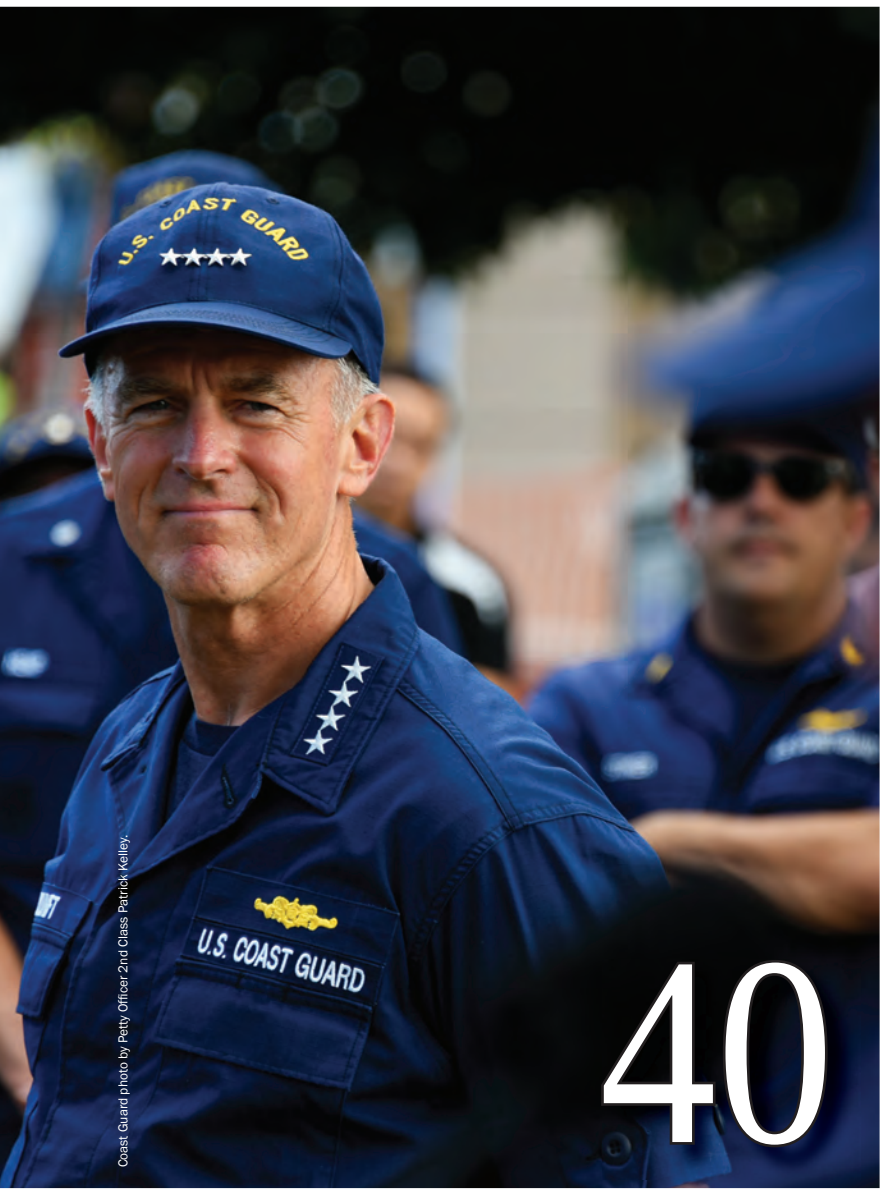
Coast Guard Commandant Adm. Paul Zukunft is pictured listening to a question during an all-hands meeting at Sector San Diego Feb. 13, 2015. Adm. Zukunft is the centerpiece of MR's Coast Guard coverage, starting on pg. 40.

Cover Image: Coast Guard photo by Petty Officer 2nd Class Patrick Kelley.



Coast Guard photo by Petty Officer 2nd Class Patrick Kelley.

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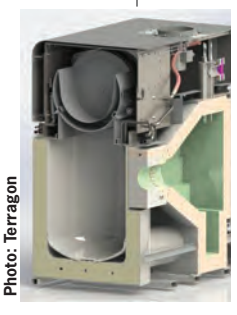
By Greg Trauthwein

Photo: Imtech

Photo: Maran



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The MAN *in Command*

GREG TRAUTHWEIN, EDITOR & ASSOCIATE PUBLISHER

I had never personally met with U.S. Coast Guard Commandant **Admiral Paul Zukunft** before I sat with him in his office at Coast Guard headquarters in Washington, D.C., last month, but having sat with a long list of government, military and corporate leaders in my time, my expectations were someone who was confident, focused and, well, commanding. He's all that and more, but what I did not expect was that the Commandant would be faster than I to the Tweet! (I rationalize by telling myself that his Public Affairs staff offers a quick hand in this regard). Admiral Zukunft is a perfect interview for our pages any day, but particularly this edition, our "U.S. Coast Guard Annual."

Admiral Zukunft, like every Commandant before and every one to come, has a large, diverse, ever-challenging and always changing plate of responsibilities. His 'short list' is actually a rather long list, as Admiral Zukunft seeks to drive sexual assault out of the Coast Guard; prepare the fleet for operations through 2061; thwart illegal drug flow into this country with an ever widening and much improving toolbox of intelligence assets; and envision a plan to bolster our capability in the Arctic. And that's just for starters.

Today's Coast Guard is a virtual 'Swiss Army Knife,' with broad and crucial responsibilities in protecting the best interests of the United States. For this industry there are several immediate pressing matters that we discuss. On the regulatory front, Ballast Water Technology Systems and Subchapter M uninspected towing vessel regulations are both priority one. On the former, Admiral Zukunft insists that the current course of independent lab verification of the technology is the only path, saying "once we have the technology box checked, we can move briskly in putting forward the final rule."

The other area of high interest is the status of the Offshore Patrol Cutter (OPC). To put its importance in perspective, Admiral Zukunft said that the OPC will be his defining moment, as it is the largest investment in USCG history and will be designed to operate beyond 2060. The final selection of the shipbuilding team to build OPC is currently scheduled to be announced in Q4 2016.

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Getting onboard the

Regulatory Train

Rail transport activists, analysts and environmentalists get a real taste of what the waterfront has endured for decades. They'll just have to get in line with the rest of us.

Joseph Keefe is the lead commentator of MaritimeProfessional.com.

This week finds the collective domestic oil industry wringing its hands about the latest in a series of serious oil transport train casualties. This time, on Monday, the news involved a crude-carrying train that derailed in West Virginia, complete with more than one dozen tank cars afire and necessitating the evacuation of nearby towns. Just before that, another train in Canada consisting of about 100 tank cars carrying crude oil derailed in remote Ontario and suffered a similar fate. Both events naturally caught the attention of environmental and safety activists and oil industry analysts.

Also this week, Reuters analyst John Kemp penned a column that chronicled the "high-stakes risks" that the use of rail for crude oil transport represents. First lamenting the 591 (now 593) days that have passed since a train high profile crude train derailed and devastated a small town in Quebec, Kemp also correctly points out that in that time, the U.S. Department of Transportation (DOT) has failed to finalize new safety rules for tank cars and operational standards for trains carrying flammable liquids. And yet, what we see here is nothing new for the domestic waterfront. Frankly, it is just a familiar way of life.

Eventually, some say it could take six years or more for regulators to finalize and implement the new standards. Kemp characterizes that lack of progress as "an astonishing example of regulatory failure." And while I don't think too many would argue with him on that score, looking out on the water, these kinds of rulemakings can span decades. Take, for example, ballast water management and/or the so-called subchapter "M" towboat rules.

The late Tip O'Neill, a Massachusetts Congressman and long time Speaker of the U.S. House of Representatives, coined the now familiar phrase, "All politics is local." He could just as easily have been talking about ballast water treatment standards, since we have at least 15 Balkanized state statutes, a pending Coast Guard standard and another issued by the International Maritime Organization (IMO) that has yet to be globally ratified because not enough tonnage and/or flag states have signed up for it.

And, yet, it was more than ten years ago when the Commander of the U.S. Coast Guard's Ninth District (Great Lakes) told me that "there was no higher priority in the Coast Guard's pending regulatory agenda than the ballast water treatment rules." Arguably, we haven't gotten very far since then.

The effort to implement the subchapter M towboat rules, intended to address a previously uninspected subset of inland vessels, has also languished for more than a decade. Championed by unprecedented industry support and guidance from the American Waterways Operators, the national advocate for the U.S. tugboat, towboat and barge industry, there is probably no other rulemaking in play that has more support from the folks it will eventually oversee. Even this can't speed its final rule along, apparently. Industry stakeholders had high hopes that the rule would be signed off on by former Commandant ADM Bob Papp before he departed last year. No such luck. And, current Coast Guard leadership won't give a timetable under ADM Zukunft's tenure. And, so it goes.

On the other hand, it seems like if you REALLY want to get something done, you can do an end run around the U.S. Coast Guard. Such was the case with the ruling on the small passenger vessel out of water survival craft. The nation's 25th Commandant, at a recent West Coast speech, distanced himself and the Coast Guard from pending federal legislation that would change the equipment and the methods that small passenger vessels would be required to handle rescue situations underway. The proposed new rules, which he said had circumvented the Coast Guard, could cost vessel operators hundreds of thousands of dollars for new, out of water survival craft. Beyond this, the proposed regulations – a hot button issue for PVA stakeholders – wouldn't necessarily improve safety.

Reuters also points out that "serious incidents involving crude-carrying trains posing a significant threat to life, property and the environment are occurring on average once every seven weeks." And, they list (between 2006 and April 2014) 16 significant accidents involving high-hazard trains carrying crude oil or ethanol, involving 281 tank cars derailed and nearly 5 million gallons of crude or ethanol released, as well as 48 fatalities, according to the U.S. National Transportation Safety Board (NTSB). John Kemp says, "No other industry would be allowed to tolerate such an appalling safety record." He's right.

The solution, say shippers and rail advocates alike, is to phase out the current rail cars in use and replace them with modern versions that carry the same safety features as those commonly found on today's inland barges and larger tankships.

Actually, it isn't rocket science. And the answer is even simpler: move the cargoes onto the water as soon as is possible – either through the inland river system or the Great Lakes. At this point, removing rail completely from the equation isn't altogether possible, but minimizing its role in the transport mix certainly is.

When I hear about a train traveling through West Virginia on its way to Hampton Roads, VA, laden with crude oil, no one can tell me that there isn't a river, canal or waterway nearby that could do the trick, just as well, a lot more safely and probably with less expense. Beyond this, The American Waterways Operators says that just one 15-barge tow takes the place of 216 rail cars and six locomotives, or more than a thousand semi-tractor trailers.

Think of the congestion that would be eliminated. Add to that the reduction in stack emissions represented by barge transport when compared to its modal cousins in rail, and one has to wonder what industry and the government is waiting for.

The latest casualties have reignited the debate about the safety of these shipments, especially given the perceived heightened flammability of the light North Dakota Bakken shale oil and the dated designs of older tankcars. In reality, imported crude oils with characteristics every bit as dangerous as the Bakken blend have been safely transported on the nation's waterways for decades.

As rail safety and environmental advocates clamor for quick reforms, they (understandably) grow increasingly frustrated at the lack of progress. I have some advice for them: they can get in line with the rest of us on the waterfront, or better yet, they can refocus their collective energies on something smarter: moving the crude oil off the rails and onto the water (not in it).

The Future is Clear

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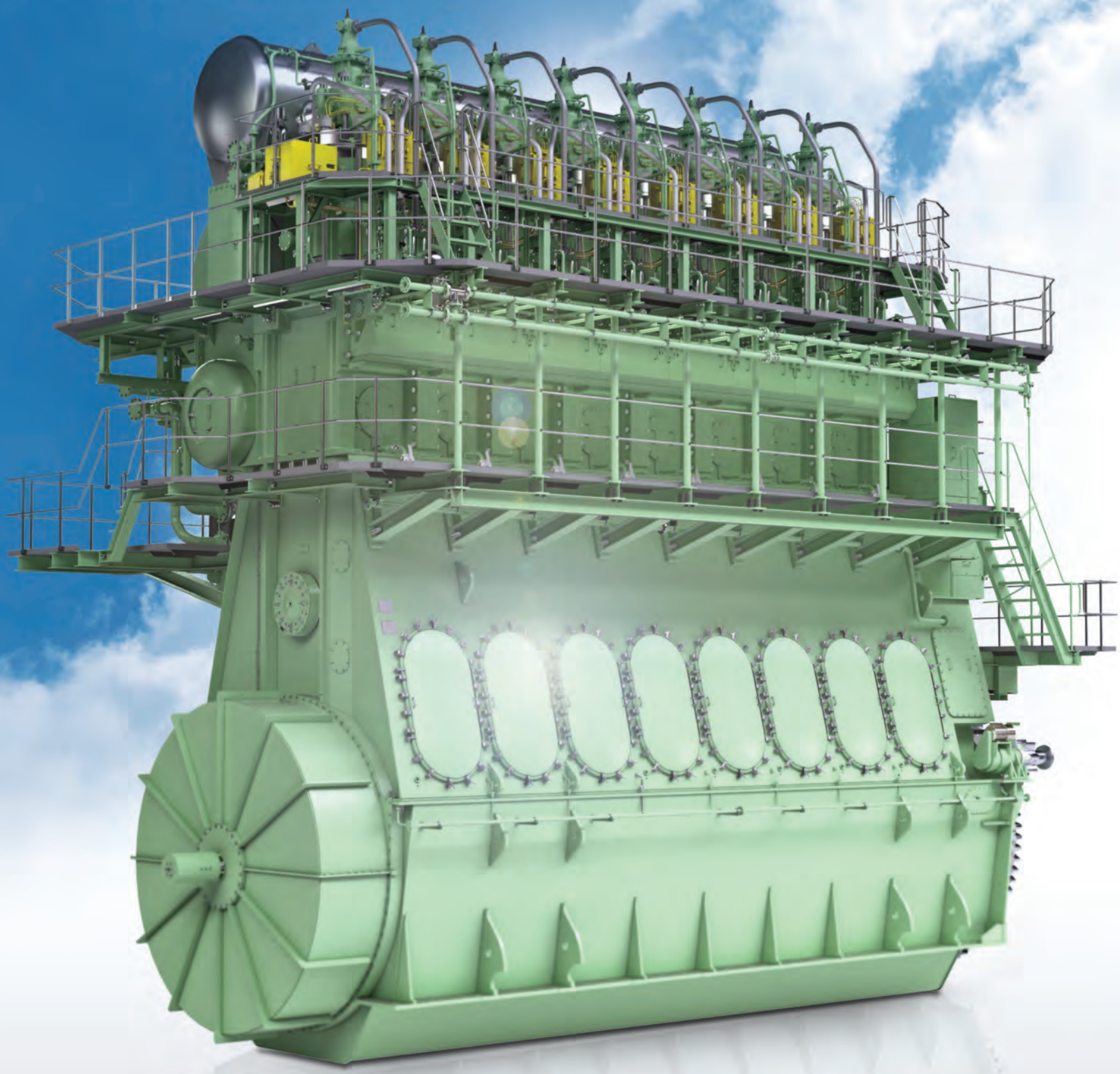

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Moskito to Recover Oil from Sunken Wrecks

A tool for removing oil in submerged vessels was developed in Norway by Miko Marine. Moskito is designed to address the pollution threat that exists with the large numbers of sunken ships around the world that still contain significant quantities of oil in their tanks as cargo or bunker fuel.

Many of the thousands of ships sunk during WWII now have seventy years of corrosion eating at their plates and the days are drawing closer when the pollutants could escape.

Options include sealing the wreck or recovering the pollutant in a controlled manner, which Moskito seeks to do.

How it Works

Moskito is able to be deployed by divers or by an ROV to any ocean depth. Once in position outside the tank the Moskito's three magnetic feet are planted against the steel hull and a technician on the surface activates a 75 mm (3-inch) diameter electrically powered tank cutter drill. With its operation controlled through a dual video link, the Moskito's drill pierces the steel tank walls which may be up to 40 mm (1.5-inches) thick. The cut disc then falls away inside and is immediately followed into the tank by a patented spring latch coupling that automatically connects and locks a hose to the tank without allowing any of its contents to escape. With the hose securely in position a subsea pump can be activated to extract the oil at the rate of up to 12 cu. m. per hour and send it to the surface for safe and non-polluting recovery. If it becomes necessary to relocate the Moskito it can be easily repositioned without being returned to the surface. Being such a compact device it is also easy to use multiple units close together if a higher rate of extraction is required.

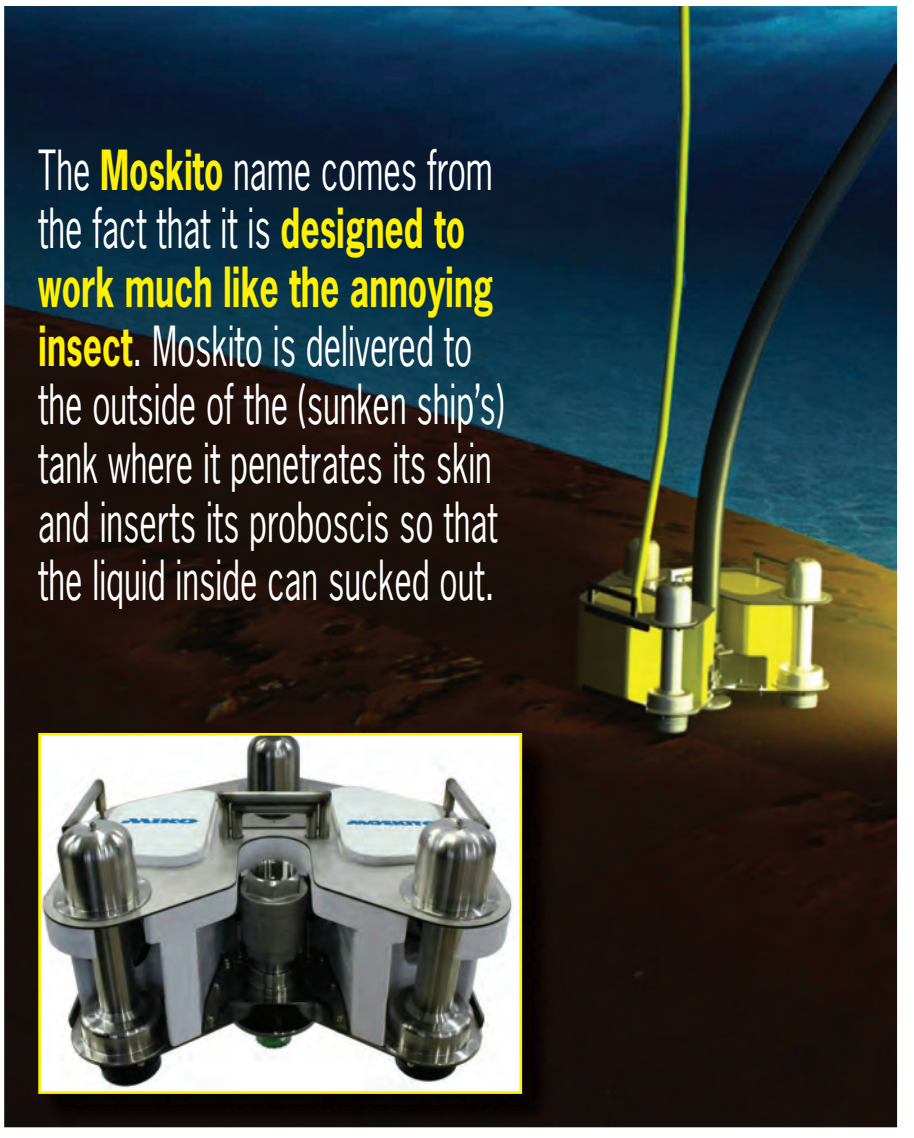
Emerging from R&D

Moskito arose from a research and development project launched by Miko Marine in 2012. It attracted the interest of the Norwegian Coastal Administration (NCA) which had been grappling with the same pollution problem being caused by spontaneous leaks from sunken wrecks around Norway's coastline. NCA decided to support Miko Marine's quest to find a solution and the two organizations joined forces with the backing of Innovation Norway, a government-sponsored research and development organization.

The name of the tool was the inevitable consequence of its working similarity to the unpopular insect. Just like the insect it has to be light, versatile and adaptable because when a ship settles on the seabed there is no knowing how its tanks will come to rest. However, with a visual inspection and by studying the plans of the vessel a means of attack can be found. The Moskito is then delivered to the outside of the tank where it penetrates its skin and inserts its proboscis so that the liquid inside can sucked out. The insect allusion falls short of the engineering reality but the principle is the same and measuring just 65 cm (25-inches) by 45 cm (17-inches) and weighing only 80 kg, by subsea engineering standards the tool has an insect's light touch.

"This was not an easy product to develop as it required us to call upon our highest standards of engineering and design," said Nicolai Michelsen, GM, Miko Marine.

www.miko.com



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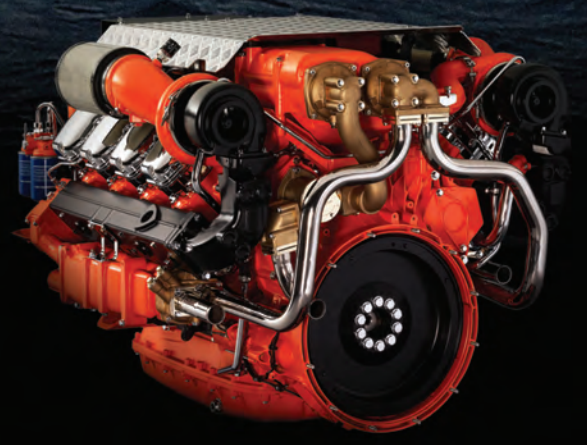

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Study U.S. Offshore's Untapped Potential

While short-term news emanating from the global energy sector was universally negative in the waning months of 2014 as the price per barrel continued to plummet below $60, the inevitable truth of oil & gas is that prices will rise again, and the long-term picture for this extinguishable natural resource is decidedly bullish. The oil and gas industry is very well accustomed to hard cyclical markets, markets that are defined not only by supply and demand but increasingly by hard-to-predict forces of politics and international gamesmanship.

Despite the gloom, two new studies released by the National Ocean Industries Association (NOIA) and the American Petroleum Institute (API) show significant potential added energy and economic benefits to the U.S. if the Eastern Gulf of Mexico and the Pacific outer continental shelf (OCS) were opened to offshore oil and natural gas development. Both studies were conducted by Quest Offshore Inc.

All three areas – the Eastern Gulf of Mexico, the Pacific OCS and the Atlantic OCS – are currently almost entirely off-limits to offshore oil and gas development but could be included in the federal government's next five-year leasing program. If the federal government begins holding lease sales in these regions in 2018, the three studies show that by 2035:

- Pacific OCS development could create more than 330,000 jobs, spur nearly $140 billion in private sector spending, generate $81 billion in revenue to the government, contribute over $28 billion per year to the U.S. economy, and add more than 1.2 million barrels of oil equivalent per day in domestic energy production.

- Eastern Gulf of Mexico development could create nearly 230,000 jobs, spur $114.5 billion in private sector spending, generate $69.7 billion in revenue for the government, contribute over $18 billion per year to the U.S. economy, and add nearly 1 million barrels of oil equivalent per day to domestic energy production.

- Atlantic OCS development could create nearly 280,000 jobs, spur $195 billion in private sector spending, generate $51 billion in revenue for the government, contribute up to $24 billion per year to the U.S. economy, and add 1.3 million barrels of oil equivalent per day to domestic energy production.

- Development in all three study areas – the Eastern Gulf of Mexico, the Pacific OCS, and the Atlantic OCS – could, by 2035, create more than 838,000 jobs annually, spur nearly $449 billion in new private sector spending, generate more than $200 billion in new revenue for the government, contribute more than $70 billion per year to the U.S. economy, and add more than 3.5 million barrels of oil equivalent per day to domestic ener

$115B

It is estimated that oil & gas development in the Eastern Gulf of Mexico could create 230,000 new jobs, spurring nearly $115 billion in private sector spending and nearly $70 billion in revenue for the government.

(Credit: Chevron - Statoil ASA)

Big Spending on Liquefaction Terminals

Capital expenditure (Capex) on global liquefied natural gas (LNG) facilities is expected to total $259 billion over the forecast period 2015-2019, according to the new ninth edition of Douglas-Westwood's (DW) World LNG Market Forecast 2015-2019, which predicts investments to be 88% larger than during the previous five-year period.

Report author, Amanda Tay, commented, "Global LNG Capex witnessed a slowdown in the period 2009 through to 2012, as a result of the global recession. Post-2012, alongside stronger confidence in the global economy and a growing appetite for energy, the industry started picking up and has piqued investors' interest in LNG projects again. Events such as the shale gas revolution in North America and Japan's emergency reliance on LNG, subsequent to the Fukushima incident, have all played and will play a part in shaping the LNG sector.

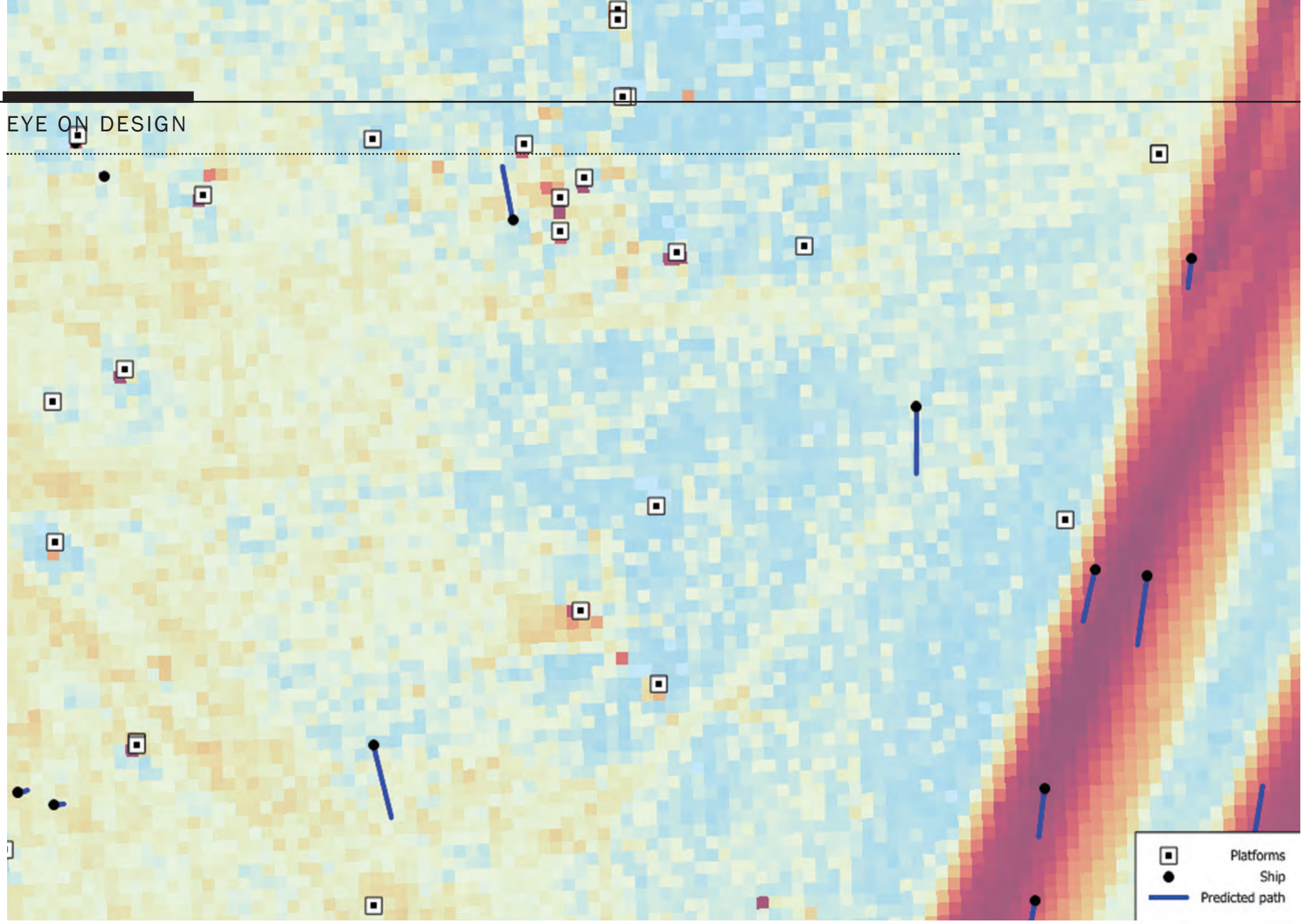
"Australasia and Asia have dominated Global LNG Capex in recent years, however, over the forecast period all the regions are expected to experience positive growth in Capex, except for Australasia and the Middle East. With its ambitious plans to export LNG, DW expects North America to be a significant market player in the forecast period. Asia is set to slightly increase its market share to 32% of investments in the forecast period, largely from regasification/import projects in China, Indonesia and Japan, as a result of increasing appetite for energy.

"Liquefaction terminals will represent two-thirds of the total market reflecting a 90% growth compared to the last five years. Import terminal expenditure is forecast to represent a quarter of total global LNG expenditure, a 112% increase, with LNG carrier expenditure just 9% of global expenditure.

88%

Capital expenditure (Capex) on global liquefied natural gas (LNG) facilities is expected to total $259 billion over the forecast period 2015-2019, an 88% increase.

"In the next five years we can also expect to see increasing participation from Chinese shipyards in the LNG shipbuilding sector. Around 100 LNG carriers are expected to be delivered globally during the forecast 2015-2019 with a total Capex of $23bn. General confidence in the market and a robust line-up of LNG terminals point towards a promising LNG carrier shipbuilding industry. The observed increase in average price of carriers and increase in carrier capacities are expected to continue in the forecast period."



Using AIS Data to Assess Collision Risks

BY DAPHNE LOOIJE

Automatic Identification System (AIS) data is now being used to determine the collision risk for offshore installations.

MARIN helps oil companies with risk assessments for offshore installations by calculating the probability of a ship collision with the offshore installation. For these calculations, the traffic around the installation can now be modelled using AIS data. In this way, the traffic situation is realistically represented.

The Safety Assessment Model for Shipping on the North Sea (SAMSON) has been used and developed for more than 25 years. Several types of risk assessments are performed. The traffic in SAMSON is modeled by a database consisting of two parts, the first of which is a network of links, describing the number of movements per year for different ship types and sizes. This network is based on ship voyages to and from European ports. The second part shows the density of non-route-bound ships but with a specific destination at sea, such as supply vessels, work vessels and fishing vessels.

Nowadays, almost all seagoing ships are equipped with an AIS transponder. Although this system was originally developed for collision avoidance, it is also a valuable source of information on ship behavior. AIS data, showing the actual paths sailed by ships, represents a considerable improvement to the SAMSON traffic database, particularly outside the main shipping lanes, where offshore installations are usually located.

AIS data can help to improve the modeling of traffic around existing offshore installations by determining the risk for all ships present in the area at a certain time step. For this calculation it is assumed that a ship maintains its current speed and course from time ti to time ti+1. Furthermore, for each ship, the specific casualty rates are determined. In this way, the actual traffic is modeled at each time step, including ships that pass an offshore installation at short distances. The existing modules of SAMSON can be used to perform the calculations, resulting in a risk for each ship at each time step. Calculating these risks over a year then results in the collision risk for an offshore installation.

The Author

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Resilience

& the Maritime Industry

BY DENNIS BRYANT

Resilience is defined generally as the ability to recover quickly from setbacks. Setbacks are inevitable. Individuals and entities are best judged by their resilience – their ability to get back on track after experiencing a reversal.

The best way to recover from a setback is to anticipate the setback in advance and plan a recovery strategy. At the most basic level, this is something we do all the time. We keep spare batteries in the house so that when the flashlight or television controller dies, we can quickly bring it back into operation. We keep at least a minimum amount of fuel in our vehicles so that we are less likely to be stranded. Businesses and other systems are more complex, but the same principle applies.

The maritime community faces a multitude of risks.

Most successful maritime businesses have, at least to some extent, planned how they might recover from or mitigate particular setbacks, ranging from higher costs to fire. Some planning is imposed from outside. Insurance companies often require insured's to develop plans for mitigating losses. Classification societies impose certain requirements. Government agencies, including but not limited to the International Maritime Organization (IMO), the US Coast Guard, and the Environmental Protection Agency (EPA), require a variety of contingency planning by regulated entities. These latter planning requirements address issues such as communications, navigation, pollution prevention and response, and security.

In 2011, President Obama issued a Presidential Policy Directive aimed at strengthening the security and resilience of the United States through systematic preparation for the threats that pose the greatest risk to the security of the nation. The directive notes that preparedness is the shared responsibility of all levels of government, the private and nonprofit sectors, and individuals. National Preparedness Guidelines were issued on 7 August 2012 identifying critical elements and initiating development of a National Preparedness System.

Utilizing the National Incident Management System (NIMS), which the US Coast Guard has used for years to organize and manage spill response, the National Preparedness System provides guidance regarding: (1) identifying and assessing risk; (2) estimating capability requirements; (3) building and sustaining capabilities; (4) planning to deliver capabilities; (5) validating capabilities; and (6) reviewing and updating capabilities, resources, and plans. As part of that process, the Department of Homeland Security (DHS) issued a comprehensive preparedness guide on threat and hazard identification and risk assessment (THIRA). As part of building resilience, THIRA focuses on the core capabilities of prevention, protection, mitigation, and response.

Rather than approaching risks, such as the danger of oil spills, individually and separately, the National Preparedness System envisions an "all-hazard" approach, where all threats and hazards of concern are identified and given context. The capabilities considered necessary to address the threats and hazards are established, along with the resource requirements appropriate to provide the needed capabilities.

The U.S. Coast Guard has been a leader in contingency planning, both with regard to its internal planning and with regard to guidance for the maritime community generally. It has for years encouraged float plans for the recreational boating community and voyage planning for the commercial sector. Oil spill response planning was initially encouraged and then mandated for tank vessels, non-tank vessels, and for facilities. Vessel response plan requirements were recently expanded to include salvage and marine firefighting. Hazardous substance spill response plans are also encouraged, as well as plans to address hurricanes and heavy weather events.

Recently, the Coast Guard has strongly encouraged development of cyber security plans by the maritime sector. Cyber threats are growing and have potential to inflict significant harm on individual entities, the economy, and the environment.

All-hazard contingency planning in the maritime sector has not received much attention or emphasis to date, but that is about to change.

In 2011, Canada and the United States reached agreement on an initiative to enhance perimeter security and economic competitiveness. Maritime commerce was recognized as an area deserving of increased attention for both economic prosperity and security reasons. From that recognition, a Maritime Commerce Resilience (MCR) bi-national program developed. Governmental and private sector partnerships have been established in the Pacific Northwest and in the Great Lakes to formulate comprehensive all-hazard approaches to maintaining resilience in the regional maritime sectors. Plans call for developing joint strategies, processes, and plans to facilitate the sharing of information and resources during emergencies, the dissemination of best practices, and development of clear lines of communication. This initiative is now expanding to New England and the Canadian Maritime Provinces.

The concepts, though, of Maritime Commerce Resilience and all-hazard planning are expanding far beyond the Canada-US border region. While a long way from being mandated (if ever), all-hazard planning is an idea that deserves greater attention within the maritime community.

The term "all-hazard planning" is not to be taken literally. It would be impossible to plan for every conceivable hazard. But it is possible, and prudent, to plan for all reasonably likely hazards. In the maritime sector, this would include, among other things, planning for response to and mitigation of spills, collisions, groundings, fire, significant equipment failures, heavy weather, electronic connectivity issues, supply chain disruptions, etc. Ideally, the planning should be expanded beyond individual entities to address port-wide and region-wide issues. For example, an all-hazard plan for the Port of Jacksonville would address major issues such as the port being impacted by a hurricane, the collapse of a major bridge, or the wide-spread loss of electrical power. An all-hazard plan for San Francisco Bay might not address hurricanes, but would certainly address earthquakes.

Basically, an all-hazard plan for a port or region would identify potential threats; prioritize critical infrastructure and services; prioritize assets, products, and services with a high consequence of loss to the economy or environment of the region; identify resilience gaps; and plan for the filling of those gaps. With a comprehensive and thoughtful all-hazard plan for a maritime entity or for a port or region, resilience and recovery from a setback will be improved, even if the setback which occurs is not the exact one for which the contingency plan was developed.

The Author

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EALs & Oil Spill Remediation

The Effects of EALs on Oil Spill and Discharge Reporting and Remediation

BY MARK MILLER

In the wake of increased environmental scrutiny and potentially expanding liability issues, oil spill remediation continues to be of great interest to marine operations. While most outsiders think of oil spills in terms of major failures or leaks, more common oil leakage or lubricant discharges from marine equipment result in millions of gallons of oil being released into the aquatic environment each year. Leaks, which are very difficult to prevent, far outpace catastrophic events and result in lost productivity, environmental damage, costly fines and remediation and negative public image.

The marine industry has made great strides in embracing and advancing the environmental spirit of the continuously evolving regulatory landscape. However, in a world where everything is "green," these changes have caused a certain degree of confusion in terms of potential environmental impact, requirements and exemptions.

By better understanding these regulations, operators can use a variety of environmentally acceptable solutions, including Environmentally Acceptable Lubricants (EALs), to significantly reduce fines and cleanup costs associated with discharges and to mitigate possible environmental and reputation damage.

Regulatory History

The Clean Water Act (CWA) of 1972 is the principal federal statute protecting navigable waters and adjoining shorelines from pollution. The CWA forms the foundation for regulations detailing specific requirements for pollution prevention and response measures. Section 311 of the CWA addresses pollution from oil and hazardous substance releases, providing the United States Environmental Protection Agency (EPA) and the U.S. Coast Guard with the authority to establish a program for preventing, preparing for and responding to oil spills that occur in navigable waters of the United States. The EPA implements provisions of the Clean Water Act through a variety of rules and statutes, including the National Contingency Plan and the Oil Pollution Prevention regulations.

In 2008, the EPA issued the first version of the Vessel General Permit (VGP) to allow for the discharge of lubricants from normally operating vessels, provided the amount does not exceed what was defined as harmful to the environment. The VGP was amended by the EPA in 2013 to require all vessels to use EALs, rather than mineral oils, in all oil-to-sea interfaces unless technically infeasible. The EPA defines an EAL as a "lubricant that is biodegradable, exhibits low toxicity to aquatic organisms and has a low potential for bioaccumulation."

The regulation is applicable to all commercial vessels larger than 79 feet, operating within three nautical miles of either the United States coastline or any one of the Great Lakes. The 2014 Small Vessel General Permit (sVGP) for non-recreational or non-military vessels less than 79 feet in length that are operating as a means of transportation will require compliance beginning Dec. 19, 2017.

Marine Oil Spill and Discharge Reporting and Costs

Regulatory pressures from the EPA, U.S. Coast Guard and other environmental organizations continue to mount. All petroleum hydraulic fluid spills are "reportable events," and, while small petroleum releases will not result in a full Resource Conservation and Recovery Act (RCRA) cleanup, large spills will. These events involve a great deal of cleanup cost, administrative procedures and punitive fines that can range from tens of thousands to hundreds of thousands of dollars.

A 2010 study estimated operational discharges (including stern tube leakage) input 36.9 to 61 million liters (9.7 – 16 million gallons) of lubricating oil into marine port waters annually. Leaks

of lubricating oil represent 10 percent of the total oil inputs into marine waters, as estimated in the 2003 NRC Oil in the Sea study. The total annual estimated response and damage costs for the U.S. portion of these discharges are estimated to be $31 million annually (Etkin, 2010).

Reporting Under "The Sheen Rule"

There is a common misperception that the Coast Guard approves oils based on the oil not leaving a sheen. Under the legal authority of the CWA, the Discharge of Oil regulation, more commonly known as the "sheen rule," provides the framework for determining whether an oil spill or discharge to inland and coastal waters and/or their adjoining shorelines should be reported to the National Response Center. Specifically, the regulation requires the person in charge of a facility or vessel responsible for discharging oil that may be "harmful to the public health or welfare" to report the spill to the federal government. The regulation also establishes the criteria for determining whether an oil spill needs to be reported.

The criteria are:

- Discharges that cause a sheen or discoloration on the surface of a body of water;
- Discharges that violate applicable water quality standards; and
- Discharges that cause a sludge or emulsion to be deposited beneath the surface of the water or on adjoining shorelines.

In actuality, the Coast Guard does not approve, recommend or specify fluids, nor does it approve or recommend any testing procedures. That said, while discharges of biodegradable hydraulic fluid must be reported, agencies are required to evaluate environmentally acceptable solutions differently than petroleum based oils.

According to the EPA regulations, the use of any EAL - regardless of the application - does not authorize the discharge of any lubricant in a quantity that may be harmful, as these oils may still cause undesirable, though less severe impact than petroleum based counterparts. Based on this potentially reduced negative impact, under certain circumstances and on a case-by-case basis, EPA and/or U.S. Coast Guard authorities may consider whether a vessel used an EAL in their enforcement response.

Bottom-Line Impact

As awareness of biodegradable fluid has increased, state and federal agencies become more lenient toward those using readily biodegradable lubricants, often resulting in significantly reduced fines and cleanup costs. In fact, there are several case studies of equipment releasing several hundred gallons of vegetable based hydraulic fluid into environmentally sensitive areas with no fines and minimal cleanup expense. In most instances, the operator was able to continue working while cleanup efforts were underway. And, since the fluids were readily biodegradable and minimally toxic, there was no long-term negative effect to the ecosystem.

Thanks to the latitude available to the National Reporting Center, EPA and U.S. Coast Guard, many companies have experienced significantly reduced fines or received no fine at all and minimal to no remediation mandates following a spill when they demonstrated use of an EAL. Marine operators have reported remediation costs for incidental petroleum based spills/discharges to range anywhere from $2,000 to $10,000 and sometimes beyond.

In marine operations, oil and lubricant spills and discharges are a given. The industry has worked diligently to meet and exceed what is required of operators in these situations and to proactively minimize their adverse impact on the environment. Broad use of EALs is one way to help address the issue, but it's important to choose wisely. Products can make false or misleading claims and no discharge is exempt from reporting, regardless of the lubricant or oil in question. Operators no longer need to choose between performance and sustainability. By embracing EALs and understanding regulations, it is possible to improve water quality and safety while achieving significant costs savings even in the face of spills – a major win-win.

The Author

Mark Miller serves as executive vice president at RSC Bio Solutions, a leader in the area of biobased cleaners, degreasers and readily biodegradable functional fluids. The company provides high-performing, readily biodegradable (ASTM 5864 and ASTM D7373 compliant), safer biobased chemistries and specialty products that extend the life of equipment and tools while reducing clean-up costs and mitigating negative environmental impact. The company's products have been tested and proven in some of the toughest environments possible.

www.rscbio.com

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Company:
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Title:
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Age:
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Favorite Quote:
Insanity: Doing the same thing over and over again and expecting different results. – Albert Einstein

Email:
Fergus.campbell@Imtechmarine.com

Images (L to R)
Technician of Radio Holland, part of Imtech Marine providing maintenance on board; Imtech Marine USA Technician at work on the MS Westerdam; Technician of Radio Holland, part of Imtech Marine providing maintenance on board.

Fergus Campbell Leads Imtech Marine USA and

Radio Holland 'Reloaded'

How did you come to a career in the maritime industry?

There were a number of factors that led me to this career. Growing up in a small seaport town along the banks of the River Clyde, I remember from a young age being captivated by the variety of ships sailing by and wondering what it would be like to work on them. This idea of going to sea and seeing the world stayed with me throughout my teenage years and (I ended up going) to Glasgow College of Nautical Studies (GCNS) to study electrical and electronics. This was at a time when the British Merchant Navy was in decline and job prospects for Radio officers at sea were pretty bleak. However in my final year, while studying Radar Maintenance, a new classmate joined our class who was working for Denholm's in the North Sea on a diving support vessel. I walked into Denholm's office on speculation and six weeks later I was joining the same vessel as his back-to-back relief. This was part of a pilot program Denholm's was running, training Radio Officers to also take care of the engine room, electrical and automation systems. This program led to the start of Electro-technical Officers (ETO's) which is a common function on most vessels these days. After spending five years at sea on various assignments and vessels, I came ashore and found myself working as a technician supporting automation systems on vessels.

Over the course of seven years as a technician I found myself involved in retrofitting systems on many of the major cruise ships and spent a lot of time in the U.S. during their drydock periods. Then in 1998 I was asked to open a support office for the cruise ships in the Miami area. We established our office on October that year by renting office space from Radio Holland Miami and the rest is history.

Imtech has been a driver of consolidation in recent years. For MR readers not intimately familiar with the company and its offering, can you describe it in one or two sentences?

Imtech Marine is a technically innovative global company. We offer a full range of services, from traditional Navigation/Communication systems, high capacity Satellite Connectivity solutions to HVAC, Electrical power generation/distribution, Automation and Propulsion to name a few. As a system integrator and solution provider we now can cover the entire vessel from Bridge to Engine Room.

Coming into the position, what are your near and longer term goals, and how do you plan to achieve them?

In the near term we aim to have a larger presence and take new approaches to the market, focusing on new requirements of our customers but also building on our remote monitoring and maintenance capabilities.

Long term we are preparing our organization for growth and focus on being a solutions provider and system integrator to our customers by introducing new technology and services that can impact their business in a positive way.

You have had a diverse career including 10 years with Radio Holland USA. What will you take away from your past assignment that will be of value to Imtech and its customers?

Being with the company before has advantages from an inside perspective. Being on the receiving end of the services we provide gives you a totally different perspective, both are valuable from an experience point of view and will help us to improve and provide good quality customer service.

How is Imtech today … and its resurgent Radio Holland USA brand … the same and different from the Radio

Holland that you worked for five years ago?

It's the same from the perspective that our core business revolves around traditional Bridge Navigation/communication equipment and service and maintenance around the globe. However, we are adding new solutions, innovation (such as remote monitoring, ICT), new technologies we offer and maintain, such as electrical, automation, and new maintenance formats.

Times have changed, requirements of the market changes all the time, so it is Radio Holland 'reloaded,' focused on our customers' requirements and helping them achieve efficient operations, keeping their fleet operational. That last one remained the same!

As Director of the Imtech Marine USA, you now lead a considerable team of system integrators for the marine industries. Where do you think you and Imtech will have the most impact in the coming years in this market?

For a number of years now there has been a trend in the shipyards to use System Integrators for their new build projects. But also refit projects, like the project we started refitting three bridges of Holland America Line cruise ships.

At what point does the shipyard's responsibility and that of the OEM become yours – as the systems integrator? How will it all work when your goal of becoming "a supplier independent top three player in the global marine market." What does that phrase really mean?

As a system integrator, our responsibility lies in the engineering, project management, scheduling, installation and commissioning of the OEM equipment. Clearly we have to follow closely the construction schedule of the vessel which is the ultimate responsibility of the shipyard.

As for the OEM, we have to ensure that the installation of the equipment is to their exact standards to ensure their warranty is validated and will be honored to the client. As for what the phrase supplier independent means, it speaks for itself: we believe our core competences in the key disciplines are applicable, regardless of who the equipment manufacturer is.

The world, as always, is in various economic stages, either emerging from the economic meltdown of 2008/09 or digesting the dramatic plunge in oil prices second half of 2014. As you look over your area of responsibility, by market niche, by geographic region (or both), where do you see the most promise for better business today?

We operate in most key markets to minimize the impact of any downturn in one. This also allows us to focus on market specific trends. Our business is also driven by new regulatory changes and the retrofitting of old obsolete equipment with more modern technology. Recently we have been successful in the retrofitting of Bridge Navigation equipment in the cruise sector for example. Efficient and effective maintenance is also a driver for better business of the ship owners. Preventive maintenance will save money and lower operational costs, keeping the fleets at sea without interruptions. 'Connectivity' is another driver. Connectivity is more than providing communication and crew welfare. We see a key benefit in using VSAT as an enabler to monitor systems remotely on board a ship, which increases availability and lowers the cost of operations.

Maritime Training

Five Years from Now ... A Look Ahead

BY MURRAY GOLDBERG

For anyone involved in maritime training, now is an incredibly exciting time full of opportunity. More than ever before, there are new advanced techniques and technologies available that can significantly improve training outcomes and access to training, while keeping costs under control. Properly deployed, these advances will improve safety - on that, the research is very clear.

This article looks at training in the maritime industry and predicts how the advances will change training over the next 5 years. We are in the fortunate position of being able to say that the maritime industry is beginning to embrace the fact that training can indeed be improved - the "old" way is not always the "best" way. Now that we are on this path, there is no turning back in the face of improved outcomes. What changes will we see in maritime training over the next 5 years? There are many, but space is limited so we will focus on a few of the most notable.

Blended Learning

It is easy to argue that the biggest advance in training in the last 20 years has been blended learning. Blended learning means using more than one technique for training delivery. It is just beginning to take hold in the maritime industry and I suspect it will be the biggest story in maritime training over the next 5 years.

In practice, blended learning usually means combining on-line learning with face-to-face learning. There are many ways to "blend" the learning experience, but let's look at one model - that of using on-line self-study as a precursor to classroom or on-board training. This is an incredibly successful model that has been proven in thousands of studies to significantly improve training while at the same time being reasonably inexpensive and easy to implement.

It is easy to understand how it can be helpful. Imagine a vessel familiarization course which begins with some online self-study followed by on-board instructor-led training. The on-line study would likely focus on foundational knowledge about the vessel, equipment, layout, routines, and so on. The instructor-led on-board training would then continue the process by developing the hands-on experience and skills to complete the learning.

There are many advantages over conventional training. First, the initial portion, being online, is very "trainee centered" meaning candidates can proceed at their own pace and on their own terms - increasing the likelihood that they will learn the required knowledge successfully. It is also a fortunate coincidence that on-line training can be comparatively inexpensive, especially since the need for travel is eliminated.

Second, the on-line portion is guaranteed to teach company-vetted best practices. Most other forms of training, whether they are classroom or (especially) job-shadowing, are subject to a wide degree of variation according to the personal experience, biases and abilities of the instructor. This lack of standardization can be dangerous in a safety-critical

Exam Name	# Taken Online	# Taken On Paper	Average Score %
DH Clearance Exam	369	812	91
DH Module 1 Self-Assessment	1427	0	94
DH Module 2 Self-Assessment	1885	0	91
DH Module 3 Self-Assessment	1732	0	91
DH Summative Exam	266	66	84
Environment Module Self Assessment	3347	0	94
Security Module Self-Assessment	2901	0	88

environment such as the maritime industry. Online training means you are in control of what is being trained.

Third, when the candidates arrive onboard or in class for their instructor-led training, all candidates now have a very uniform level of knowledge. This allows the instructor-led training to be much shorter because the "knowledge" portion of the training has already been covered. Secondly, the instructor-led training is far more efficient because the instructor has less variability to accommodate in the trainees.

If the maritime industry follows the successful path of higher education and other industries (and I see no reason to believe it will not), then blended learning will be a huge story over the next 5 years.

Analytics

Another trend that is sure to impact maritime training is the availability and use of analytics in training. A favorite business mentor of mine once said "if you can't measure it, you can't manage it". Nowhere does this apply more than it does in training. Yet until recently, most organizations had no mechanism to measure the effectiveness of their training program. This is where analytics comes in. Simply said, analytics are just measurements of the health of the training we provide. Examples of analytics include measurements such as:

- Average exam scores (determine how your trainees are doing overall),
- Average exam scores segmented by competency (determine whether some competencies are not being learned),
- Average time on learning materials or in classes compared to performance scores (determine the efficiency of your training),
- Or even performance segmented by employee background (determine which kinds of backgrounds yield better performers).

The point of knowing this type of information is two-fold. First, it allows you to find hidden training problems before they become performance issues or, worse, an accident. And second, knowing these numbers allows you to apply changes to your training and then determine whether the change made a positive impact. This is the essence of continuous improvement. Without it, you are shooting in the dark.

In the past, these analytics have been very time consuming and expensive to calculate and maintain - so very few organizations (aside from the most safety conscious) took the time. Now, however, sophisticated on-line training tools called learning management systems (LMS for short) provide a broad set of actionable analytics. So as LMSs continue to spread throughout the maritime industry over the next five years, analytics will help to transform training training insight and sophistication.

Adaptive Learning

Every vessel is a world unto itself - with different equipment, different routines, different layouts, and even different corporate and flag-state regulations. So the training for personnel on any vessel - especially familiarization training, is by necessity unique to that vessel. Until recently, the only way to accomplish this efficiently is through job shadowing - a staple in the maritime industry.

Sadly, job shadowing is one of the worst forms of training. It is difficult to standardize, almost impossible to measure, and highly variable in its effectiveness. Fixing these issues requires the creation of company-vetted, best practice training resources and programs for every vessel in your fleet. That would be a very daunting and expensive process - both in terms of the initial creation and the maintenance.

Fortunately, a relatively new technique called "adaptive learning" can help to solve this problem. Adaptive learning is a feature of some learning management systems. In essence, adaptive learning tailors the training program to each individual trainee - automatically. An LMS which supports this feature asks the trainee what role and vessel they are training for, and then automatically creates a set of company-vetted learning materials from training materials in the database. Each trainee receives an online, custom textbook targeted to that trainee. Adaptive learning has been in use in other industries to varying degrees and is already in use by some safety-conscious vessel operators. No other industry that I am aware of can make use of this feature as effectively as the maritime industry. Therefore, adaptive learning is an important innovation to watch over the next 5 years.

This is an incredibly exciting time in maritime education. Change is afoot - and there is a formidable arsenal of tools waiting to be deployed for the benefit of safety in our industry.

As indicated in the introduction of this article, if you are involved in maritime training in any way, it is time to take a hard look at your training practices because there are advances available that can significantly improve training outcomes, performance and safety.

Turkey Alive & Kicking

By Joseph R. Fonseca

Located on the periphery of two great continents, Turkey has benefitted from being in a favored position right at the center of an assertive and fast growing economic area. This geographical location finds Turkey in a very favorable position. Despite the general economic recession, the country's shipping ports and shipbuilding sectors have faced challenges resolutely and expanded consistently.

With a coastline of approximately 8,483 km, (1,067 km of which are island shores) Turkey is situated to the southeast of Europe, south of the former Soviet Union, northwest of the Middle East and northeast of the Mediterranean Sea where the European and Asian continents meet across the Turkish straits.

The distribution of the coastline according to the four seas rimming Turkey is:

- Black Sea 1,719 km (20.3%)
- Sea of Marmara 1,474 km (17.4%)
- Aegean Sea 3,265 km (38.5%)
- Mediterranean 2,025 km (23.9%).

A little more than half of the population (50.8%) lives in coastal areas (i.e. 37,965 million out of 74,724 million). And more than half of this coastal population lives along the Sea of Marmara.

The straits of Bosphorus and Dardanelles and the Sea of Marmara in the northwest of Turkey where the European and Asian continents meet, are known as the Turkish straits. In addition, the Black Sea meets the Aegean Sea through these straits, where Turkey and Greece have coastlines, and it then meets the Mediterranean Sea. Therefore, the Turkish straits play an important role in the geopolitical, geographical and strategic situation of Turkey.

Although the land of these straits belongs to Turkey, the water running through them and connecting the Black Sea and the Aegean Sea is considered as international waters for freedom of navigation according to some authorities. For instance, an annual total of 60 million tonnes of crude oil is carried by vessels through these straits. With 90% of Turkish foreign trade being carried by sea, shipping has been one of the more significant industries with direct impact upon the country's economy.

The Turkish merchant fleet of 1,000 grt and above consists of 690 ships. Three hundred and twenty three ships (7.8 million DWT) have been acquired by importation and 367 ships (2.2 million DWT) have been built in Turkey (as of January 2013). The average age of these ships is 26.5 years of which that of the container fleet and chemical tankers are 11 years (as of January 2013).

From 1980 the Turkish maritime industry has grown consistently. In fact, the industry maintains its position as one of the locomotive industries of the country. While the size of its shipping fleet has continued to grow the Turkish shipowners being able to gain greater access to funding were able to modernize their fleet significantly.

The Turkish ship owners clearly prefer to flag out using offshore registries for the benefits of low taxation and crew costs. The flagged out vessels operated by Turkish operators are approximately more than half of the national merchant fleet and are mostly under various flags, such as Malta, Panama, Liberia, the Ba-

A cruise liner docked at the Port of Istanbul

In the last decade, Turkish shipbuilding experienced an **increase in its shipbuilding and export capacity**, including a significant product diversification.

hamas or St Vincent and the Grenadines. As a result of flagging out, an increasing freight payment to foreign flag vessels of approximately $1.5 billion is lost annually. Therefore, a policy for an international ship registry is under consideration, since a second registry and a flag of convenience for Turkey, will serve both to prevent the loss of freight payments and to operate the vessels within cabotage trading.

Turkish State Railways operate the seven major ports in Turkey and privatization action is in progress, including the biggest container terminals at the Ports of Istanbul, Izmir and Mersin. In addition, privatization of the 12 secondary ports owned and operated by the Turkish Maritime Organization is also in line.

Shipbuilding in Turkey has evolved from an old traditional activity in Anatolia to an internationally recognized industry, especially since the early 1990s. The industry has modern, quality certified shipyards that can build ships, yachts, mega-yachts, and sailing boats, as well as carrying out extensive repair and conversion works. Turkey's shipyards are mainly located in the Marmara Region, namely Tuzla, Yalova, and İzmit, which have developed into dynamic shipbuilding centers. Also, in recent years the emerging Black Sea and Mediterranean Regions have increasingly attracted shipyard investments.

In the last decade, Turkish shipbuilding experienced a several-fold increase in its shipbuilding and export capacity, including a significant product diversification. Turkey has gained wide recognition for its expertise in megayacht building, for which it occupies the third rank in the world with a market share of 12%. In 2013, Turkish shipyards boasted of an order book which placed it in the top ten countries on the basis of its deadweight (dwt) production and in the top five countries by the number of ships. At present, there are 70 active shipyards in Turkey, while another 56 (most of which might be described as a medium size) are reported to be in the process of being built, although this number may be affected by the reduced demand for shipbuilding following the 2008 world economic slowdown. The number of jobs offered by the sector has considerably decreased with the world crisis, falling from 33,480 in 2007 to 16,000 in 2012. Most shipyards have turned to the repair activity since the industry had its big drop from 2007. The yards were not prepared to tackle competition from China and Korea, which are supported by subsidies. In Turkey the government offers small incentives but no cash, back payments or financing, or even the credit line support as is customary in some Far East competitors. Turkey is the world's fifth largest ship recycler, and the largest outside of South-Asia and China. Most of the ships recycled are foreign flagged, primarily from European Union members, and especially smaller vessels that may not be economic to sail to recycling yards in South Asia. Turkey is frequently chosen for recycling because it complies with ship recycling standards and its recycling yards comply with international practices promulgated by the International Maritime Organization, the International Labor Organization and the Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal, as well as with national legislation. Cruise tourism in Turkey is the second fastest growing activity and ranks 5th in the EU. As it is a young activity, cruise tourism is not among the seven largest activities, but it shows good potential for the future and investments under way, notably in Istanbul. According to the Tourism Master Plan issued in 2011, seven new cruise ports (out of which 3 home ports) will be built in the country by 2023.

Schmiedag and Wildauer Schmiedewerke

"We Forge Partnerships"

By Peter Pospiech, Germany

Olaf Wiertz, Sales Director at Schmiedag GmbH (SDG) and Wildauer Schmiedewerke GmbH & Co. KG (WSW) said: "We are more than just a supplier to our customers – we are their partner. Our engagement and our qualification in the developments of customer oriented solutions serve ourselves at the end of the day."

Based decades of experience and the accrued knowledge of its employees, SDG and WSW seek to set world standards in the forging technology. Both companies together (also including a facility in Homburg for machining) form the closed-die-forging group within the more the Georgsmarienhuette (GMH) group, which is more than 150 years old.

In its modern plants, SDG and WSW produce pre- and finished machined forged blanks, up to and including finished components. Today its most important market segments are components for large diesel and gas engines (e.g. crankshafts, conrods, pistons and camshafts), the automotive industry, railways (high speed sector), commercial vehicles and mining applications.

A Long History

The roots of Schmiedag goes back to

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the year 1824 when entrepreneur Peter Dahlhaus founded the company, transferred some 50 years later into the Gruentaler Eisenwerke.

Since 1999 SDG belongs to the GMH group, while Wildau was already within the group since 1997. Today, the company is specialized on die forging of unalloyed up to high-alloyed steel and special materials, which in part come from the GMH groups own production.

With 40 companies belonging to GMH the production portfolio is broad, encompassing raw-material recycling; steelmaking and processing; forging technology; railway technology; iron, steel and aluminum casting; as well as crane technology and plant engineering. The closed-die-forging group, with SDG and WSW, was founded in 2004.

"SDG and WSW are the evidence that German quality is worldwide recognized and appreciated," boasts Olaf Wiertz. "For sure our technical expertise and advice play an important role. We provide our knowledge, which we gathered during all these years to support our partners at their projects. The importance of the international business keeps increasing; currently approximately 40% of our revenue comes from outside Germany. With a total of 450 employees in the three facilities Hagen, Homburg and Wildau, SDG and WSW we are producing for approximately 100 customers worldwide, including main players such as Caterpillar, MAN Diesel & Turbo, GE Power & Water, GE Oil & Gas, Wärtsilä, RR MTU and Niigata. The most important foreign markets are the U.S., China and Russia."

Increased Innovation

The smithie experts of SDG and WSW feature modern, computer-controlled forging technologies and machines for manufacturing, heat treatment as well as mechanical processing of forgings. The company claims to be the ideal partner for small- and large-scale series production because of its high automation level with a flexible process-design. Schmiedag in Hagen manufactures forgings within a range of 5 to 500 kg. Heavy forgings with a maximum piece weight of 3,500 kg are the profession of the Wildauer Schmiedewerke. A special field of manufacturing at the Wildau plant is the production of crankshafts using the TR-device (upsetted pressing) with a maximum length of 6m on the 2,000-ton press.

And when it comes to even bigger engine component forgings the Groeditzer Kurbelwelle Wildau GmbH comes into play. The manufacture and repair of ready-to-install, monolithic, heavy four-stroke crankshafts from 5 to 12 m long and weighing up to 25,000 kg is the special field of activity..

Together, SDG and WSW are well known as leading manufacturers of die forgings for large combustion engines and commercial vehicles.

"With future investments and innovations based on the strategically planning SDG and WSW will further improve their position in the market," said Wiertz. "Our R&D department is linked very closely with the corresponding partners from our clients. In that way, we can offer a complete solution from one source. From the outset of discussions, our clients benefit from the knowledge of our experts in all areas. For instance we are not only a forge-shop but also able to realize all steps of the mechanical pre- and finish processing. This in-

At the end it will be a **crankshaft.**

Large conrods
for four-stroke engines.

Engine components
ready for dispatch.

"SDG and WSW are the evidence that German quality is worldwide recognized and appreciated," said Olaf Wiertz.

cludes also well-established methods of heat treatment or welding procedures," Wiertz explains.

Strict Control

The head of engineering and R&D at SDG, Klaus Pfeiffer, said: "Safety and reliability of our products are critical criteria for our customers. Therefore we put quality on top of our company philosophy. Based on our quality management we perform stringent controls on all our materials and products in all relevant processing-stages. This is supported by our own laboratory where the material tests are performed." This procedure has been rewarded with certificates by classification societies including DNV GL, LR, ABS, RINA, PRS, RMRS, BV, NKK and KRS."

Investments in the Future

"As mentioned before, the foundation of our success are our employees. They have a tremendous level of self-initiative and creativity," said Wiertz. "Their contribution to the success and development of both, SDG and WSW, is invaluable. With on-going training measures and target-oriented support of young potentials we, the management, take care for keeping our leading position also in the future. We always give young people the opportunity to see what we are doing and let them stick their nose in our business. This is done by practical trainings."

"During the next years we will focus our sales activities on the BRICS-Countries (Brazil, Russia, India, China and South Africa)," said Wiertz. "We see potential for growth in big bore engine components, including crankshafts, conrods, camshafts and steel pistons."

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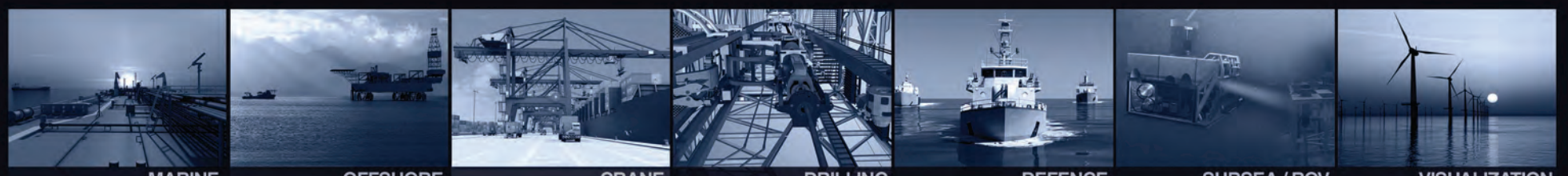

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Building Capacity, as Deadline for Trained Crews Nears

SimCity

By William Stoichevski

"You see that ship. That's our ship," says Karsten Saevik, as he directs our attention to the virtual image of one of his platform supply vessels on a computer screen in a darkened room. Saevik is one of four shipping bosses whose crew skills needs will be met at the new Faasnavaag Ocean Academy. We arrive five days from its opening, and with the drywall still drying, we look move closer to a giant white sphere indicating a bridge simulator in the wide-open reception.

"Definitely, this is our human capital development center for marine skills," said Saevik.

Before long we're at the DP-room, where candidates and crew train to use a vessel's dynamic positioning controls and thrusters or earn a DP Licenese. New European Union and International Maritime Organization rules from 2016 will prohibit the performance of tasks for which crews have not received this type of training.

Although, there's a Ship Modeling & Simulation Center in Trondheim some 220 km to the northwest, Faasnavaag is "the northernmost (sim-center) in the world," a nod to the Arctic's increasing importance offshore Norway.

Faasnavaag's relative remoteness makes it prescient to build a concert hall, hotel and cinema on the same spot, the very quay at Vaalsnes Yard, where the first Norwegian supply vessel was converted from a fishing vessel back in '72. The Academay with urban amenities is a $59.2m investment by 9,000 local taxpayers, the fleet owners and a property magnate. The four local shipowners whose combined fleets are worth $5.3 billion — Olympic, Havila, Bourbon, Remoy — contributed with $7.9m in share capital. In all, there are eight offshore and coast guard (Kystvakt) companies in the area who own or operate 128 vessels and whose crews live in the area.

"It's a privelage to be able to do something bigger together," said Saevik of the "partner-competitors."

Fast-track

One of the Academy's offerings is a five-day bridge-management course aimed at the hardest skills gap to overcome for ship owners. It's understood to cost $45,925.00 and one of Bourbon Offshore or Remoy Shipping with its Blueship X-bow PSVs seem to have first dibs on training.

Despite a pressing need for captains qualified in bridge management and trained via simulator, the Academy is open "to anyone" and "not just the owners." Other courses include engine resource management, crane use ($4,600) and deck operations. Subsea and offshore construction courses, we learn, "are on the way", as is captaining, navigating, chief engineer, ROV and engine room controls. "They're working on it," says Bourbon Offshore's Bjørn Remoy about the Univesity of Ålesund which oveseees the curriculum and runs the courses, including those at the Norwegian Centre of Excellence, another trainer, on the outside of town. After the campus tour, local legend and Olympic Shipping managing director, Stig Remoy, invites us and three shipowners to his head office conference room. There he tells us the Academy will become a "trendsetter" for equipping people to work on the most advanced designs.

New School

"The goal is to build magnificent people," Remoy said, adding, again, that it won't just be for offshore crews. The focus will be on sharing experiences between seafarers and companies.

"The next generation is entirely computer educated and they learn very fast," said Remøy, himself a fast-learning former trawler captain. In his disarming way, he reminds us that four Faasnavaag vessels were at the Deepwater Horizon accident in the Gulf of Mexico "watching the leak there."

With that, he notes that no training station at the Academy is ready for work-ROVs. The WROV simulator is "missing," but Oceaneering is in contact and already involved in the design of a simulator-driven course at the NCE not far away. Other important training on offer is for "extreme situations" for the parallel courses, a simulation, at times, of loosing an engine or having to work with

Decision time:
High school students simulate offshore job hunt.

Sim-deck:
Able seamen training.

(Photo: William Stoichevski)

outside experts. “(The extreme training) is about, “How do you lead,”” Remoy adds. He admits the Academy is “similar” to one in Perth Australia but says Faasnavaag is unique “because competitors work together to be best in the world on the newest technology.”

“It’s not just about buying steel anymore. I think you’ll see more hands-on owners, and we can create much more change here than in an ordinary school.” He adds that “ice-management” likely for ship stability training will also be added. Pressure to be compliant with European Union and IMO strictures and a need “to get the right number of people onto ship systems” has encouraged the school’s founders.

There are 3,000 seafarers represented in this room who in one way or another need to go through that training,” Remoy asserts. It’s clear the training has been something of a burden, and the Olympic boss admits his people already endure some 600 course types and 80 audits, about half of which are Class. “This will continue to grow. It’s a neverending story,” he said.

Extra Capacity

The Academy is managed by the same company, AKP, that runs the NCE, which also offers simulator training and sits on the other side of town, just across-the-street from a large area high school.

The “industry campus”, as its CEO Per Erik Dalen calls the NCE, “tests the equipment of the future”.

“This year we financed a subsea simulator, and then state-owned (Statoil) subsidized a second,” said Dalen.

“Statoil does all their training here for their Aasgaard (subsea compression project) heavy lifts,” he adds. Upwards of 40 NCE simulators are the same versions as at the Academy.

“A screen, a chair … some basic software. That’s what it is,” said Dalen.

“What hasn’t been done before is connecting crane, deck, subsea, ROV and the rest in one place,” he said, and that’s what Faasnavaag and the NCE can do. It is understood they can also connect a vessel in Perth online to training at Aalesund. He admits “this house is full” and could use more square feet for extra marine focus in the curricula. Simulators, he says, could also speed innovation and virtual prototyping done locally.

As we leave the NCE and Aalesund, we drop in on the high school across the street, where a major “career awareness” event is underway and is part science fair. We see teenagers wearing simulator helmets and watching simulated operations on the screen. They put career questions to “recruiters” from the maritime community. Among the hundreds of students, one kid has built a wooden X-bow painted like a U.S. Coast Guard vessel.

School founders
Olympic Shipping MD Stig Remoy & Bourbon Offshore MD Bjorn Remoy (background).

The New Reality

Investment in Maritime Simulation Surges

The proliferation of increasingly sophisticated and realistic maritime simulation facilities is taking the market by storm, with investment globally to train new and old mariners alike to exacting new standards.

By Greg Trauthwein, Editor

"Simulation technology has continued on a more or less steadily upward trajectory over the last ten years," said **Sam Pecota**, Director of Simulation, California Maritime Academy, "The clarity and fidelity of our current full mission simulators is significantly superior to that which was possible at the turn of the century. But this improvement is mainly a matter of degree, not a total revolution. That sort of paradigm shift in simulation training may by coming soon however, with the introduction of wearable devices like Google Glass and Microsoft HoloLens."

Pecota is not alone, as there has been a palpable advancement and investment in next-generation simulation technology globally.

"Twenty years ago simulation was an extremely limited, extremely complex, and extremely expensive training tool," said **Capt. Ted Morley**, Chief Operations Officer of Maritime Professional Training. (MPT) "Advances in technology have sparked tremendous improvement in the quality of simulation and in what simulation can do. MPT installed the first privately owned simulation facility in 2002, in the ensuing years we have had an ongoing upgrade system that has allowed our systems to grow and stay at the cutting edge. The biggest changes we see now is integration of systems, the ability of today's simulators to take very complex real-world systems and rather than simulate them, today's simulators can generate and feed the necessary data to stimulate that equipment."

While certainly not the only game in town, Transas has been a driver in delivering latest simulation technologies, integrated in increasingly complex models to deliver as real of a feel as a mariner can get without actually getting wet.

"From our perspective there has been an increase in simulation activity in the last months, and in fact a general upward trend in demand for some time now," said **Neil Bennett**, Sales, Transas Americas, Inc. " I think there is an ever widening acceptance of the value of simulation as part of maritime training."

Pecota agrees. "Simulation training is no longer a luxury in the maritime education and training business: It is vital that through carefully controlled and effective simulation training maritime students develop 'bridge-mindedness' to a very high degree well before being turned loose to operate multimillion dollar vessels capable of causing catastrophic environmental disasters after simple navigational or collision avoidance errors. The same applies to engi-

Maritime Professional Training

A DP Lab at Maritime Professional Training. According to Captain Ted Morley (above right), MPT has invested about $5 million in expanding its training capacity at MPT's four campus'.

(Photo: Microsoft)

"Simulation technology has continued on a more or less steadily upward trajectory over the last 10 years," said **Sam Pecota**, Director of Simulation, California Maritime Academy, "The clarity and fidelity of our current full mission simulators is significantly superior to that which was possible at the turn of the century. But this improvement is mainly a matter of degree, not a total revolution. That sort of paradigm shift in simulation training may by coming soon however, with the introduction of wearable devices like **Google Glass** and **Microsoft HoloLens** (pictured)."

neering and cargo handling simulation."

The Drivers for Growth

Drivers for the growth in simulation depends on a number of factors, as the simulation market mirrors the diversity of maritime itself: blue water, brown water, offshore, engine room and every specialty in between, if it is run on a commercial ship or boat it can be simulated.

"The underlying driver is of course International maritime regulations, STCW, which in turn results in new national requirements, as well as associated standards," said Bennett from Transas. "But the technological capabilities of simulators, as well as the equipment used aboard ships, is clearly advancing on a steeper curve than the regulation. This has allowed industry to advance its own applications of simulation, beyond STCW, to meet specific needs. The offshore industry is a good example, where independent standards, such as the Nautical Institute Dynamic Positioning Operator Training Scheme, which incorporates simulator training extensively, has become an internationally recognized standard of high quality, and has responded to the increasing demand for DPOs worldwide."

Up until the middle of last year the Offshore market was still running hot, and capacity to train a new generation of offshore workers was proceeding at a brisk pace. Fast forward six months and the global price for oil is still stuck in neutral, but at least one who invested to this end doesn't feel the money spent was for naught. "Certainly the recent (but now diminished) boom in the offshore sector was a big factor," in recent investments made in simulation training, explained **Dave Boldt** of Resolve Marine Group in Ft. Lauderdale, Fla.. "But Dynamic Positiioning (DP) is becoming nearly ubiquitous in several sectors of the market. Including ferries, tankers, small cargo, cruise and even yachts, and we all know the offshore sector will rebound which is a steady source of training requirements. We are confident in the long term outlook offshore. Even if this slow down is a relatively long one there is nothing to suggest that the industry will not rebound strongly in time."

MPT's Capt. Morley agrees: "Offshore Industry Training is one of five key market divisions at MPT. The recent downturn in the price of oil, and the geo-political issues surrounding it, we believe will be short-term."

Investments

Maritime Professional Training (MPT) has been particularly active in expanding, investing $5m in the expansion of four bustling facilities. According to Capt. Morley, the jewel of the expansion is a new 25,000 sq. ft. facility, with more than 15,000 sq. ft. dedicated to simulation. In addition to the new building, an additional 9,000 sq. ft. of existing space will be remodeled with new classrooms, meeting areas and a conference center.

"All four of our Broward County campuses will receive significant technology upgrades allowing for live streaming and cloud-based data sharing between them," said Capt. Morley.

The technical specs on the new equipment housed in the new facilities is equally impressive, with a total of four full mission Class A simulators; three navigational bridge simulators and one Engine Control Room simulator; 30 partial task desk top simulator stations; upgrades to the DP lab and ECDIS labs; as well as new equipment for the Radar/ARPA lab.

In total, Morley said the enhancements represent an approximate 50% increase in seats and facility size. Total number of seats available will exceed 350 in all classrooms, not including the conference center or meeting hall.

On the West Coast, Cal Maritime and its partners have invested more than $1 million in new simulation equipment and upgrades to existing facilities, according to Pecota.

He said an L3 engine simulator was installed in the Engineering Building Power Lab, a simulator that was donated by Chevron Corporation. For its part Cal Maritime provided a newly constructed space within the larger Power Lab to house the L3 simulator, and professional training courses using the new facility are due to begin in April 2015.

"Chevron needed a good location for its preferred type of engine room simulator (L3), one that can be linked to our Transas full mission bridge simulators to provide simultaneous deck/engine integrated training for its employees," said Pecota. "Cal Maritime will use the new simulator in its undergraduate engineering courses when not being used by Chevron."

Cal Maritime is unique in another sense in that its Training Ship Golden Bear features a simulator, and the Navigation Laboratory's full mission and part task simulators are receiving a $50,000 upgrade to the Instructor Operation Station. **"Cal Maritime's Golden Bear is the only maritime academy training vessel in the U.S. with advanced simulation facilities that greatly enhance the cruise experience for cadet students,"** said Pecota. The upgrade includes expanded space for the instructor's operating room and server room, and additional workstations and monitors to allow for better simultaneous operation of the full mission bridge and classroom part-task simulators.

Resolve Marine Group in Fort Lauderdale has also invested recently in its simulation facilities, to the tune of approximately $1 million, according to Boldt. RMG has added an additional 7,000 sq. ft. to include new classrooms, DP Class, office space, flex-use tug/DP bridges and relocation of the full mission bridge. In addition, there is a new two story, four compartment wet trainer next to the Fire Trainer, the Gray Manatee, in Port Everglades. Attracting business from the offshore sector was a driver for the most recent expansion, and to that end the new facilities include a DP Class featuring 8 x DP 1 or 4 x DP2 desk top trainers. The system and simulation is Transas NTPro and DP units are MT. The Tug/DP Bridges will also be Transas NTPro and allow Resolve to create courses specific for the

(Continued on page 39)

Resolve Marine Group

(Photo: Resolve)

California Maritime Academy

(Photo: California Maritime Academy)

California Maritime offers a simulator on its training ship Golden Bear.

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Maritime Simulation *"A-to-Z"*

ARI offers simulation solutions for most every conceivable maritime & offshore need

Headquartered in New Delhi, India with operations in the U.S., ARI Simulation's business for more than two decades has been to design and deliver world-class simulation solutions across multiple maritime sectors. MR spoke with Shravan Rewari, CEO, for his insights on technologies and technique moving the maritime simulation markets.

By Greg Trauthwein, Editor

ARI Simulation provides simulation products and solutions across a broad range of industries including marine, offshore, oil and gas, exploration and production, naval and strategic, airports, and construction. Its simulation products exceed the standards prescribed by various International statutory and industry bodies, and its marine and offshore simulators are certified by DNV-GL.

"ARI's marine simulation product portfolio includes the entire range of marine operations including Bridge, Engine, Cargo and Communication operations," said Shravan Rewari, CEO, ARI Simulation. "ARI's offshore products include simulators for drilling rigs, offshore cranes, offshore vessel handling, dynamic positioning, anchor handling, subsea support, ROVs and more. ARI offers a broad range of crane simulators for operational training in all essential aspects of container, offshore and bulk handling operations across more than 20 crane types."

Rewari is a co-founder of ARI with a background in marine engineering (MERI, Calcutta) and robotics and control systems (Stanford University, CA). He has long specialized in virtual reality and robotics technologies and their application in the creation of innovative, immersive learning solutions.

To that end ARI Simulation today offers scalable simulation solutions that range from standalone table top simulators to fully integrated, large scale simulation systems that allow for combined training across multiple simulators.

Bright Future for Simulation

"The demand for virtual reality and simulation based training solutions for the marine and offshore industries are only expected to grow on account of the increasing legislative requirements, safety, challenging measures, and complexity of equipment," said Rewari. "The demand for virtual reality and simulation based training solutions for the marine and offshore industries are only expected to grow on account of the increasing legislative requirements, safety, challenging measures, and complexity of equipment."

Shravan Rewari, CEO ARI Simulation

While the quality of the simulation image and graphics itself are essential ingredients, Rewari sees the propagation of new technologies placed at the fingertips of instructors to make the process of mission coordination and assessment much more sophisticated. "The use of wireless technologies, blended reality technologies, motion tracking and other new

(Continued on page 72)

(Continued from page 36)

harbor and escort tug markets, ship handling, pilotage, Boldt explained.

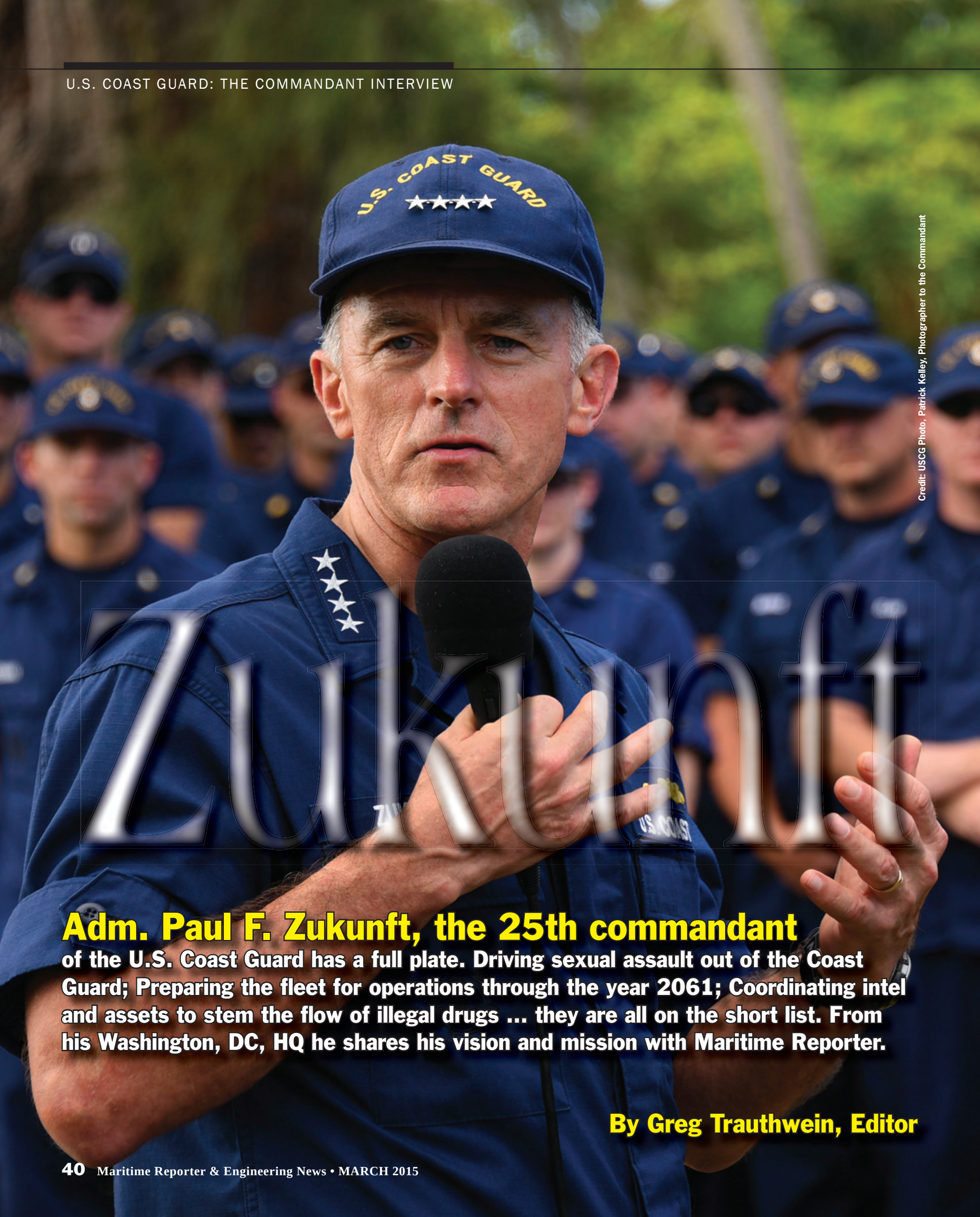
While offshore training was a driver for recent expansion, Boldt believes that there is a pervasive movement within much of maritime that is going to make simulation training a cornerstone for many maritime companies. "There is a trend in the entire industry toward understanding the value and importance of simulator training," said Boldt. "It is not the end all be all, and it is not a replacement for hands on training, but it is absolutely proven to be a vital piece of the puzzle when training and assessing competencies that are difficult or impractical to practice at sea."

To this end, Boldt looks to the top of Resolve Marine Group as the ultimate driver of the company's recent simulation training expansion. "**Joe Farrell** is an innovator and a visionary," said Boldt. "He has a great sense of the industry and a great belief in his team to put his vision into practice. Certainly we look at traditional (market) indicators and read *Maritime Reporter* religiously but Joe is the driver."

Late last year **Morton S. Bouchard, III** helped to officially open The Bouchard Transportation Co., Inc. Tug & Barge Simulation Center on the campus of the State University of New York (SUNY) Maritime College. In explaining the decision to invest in the simulator, Bouchard said, "The way it came about was really simple: we always had a simulator in New York Harbor, and the company that was operating that simulator moved it down to Houston. So we partnered with SUNY Maritime to build a first-class simulator on campus that would not only benefit cadets, but would benefit our employees. We're going to do our training here with our captains and mates."

The Bouchard Transportation Company, Inc. Tug and Barge Simulation Center is the latest in Kongsberg Polaris Bridge simulation technology, utilizing an industry-inspired bridge console arrangement, with the latest hydrodynamic ship models and exercise areas. The Center offers full mission bridge simulators, instruction stations and a de-briefing area where instructors can discuss topics including navigation, seamanship and bridge resource management skills required in the operation of tugs and barges. Training on this state-of-the-art Center ensures that students enrolled at the College, and professional mariners alike, are well-educated and trained in a controlled environment. Attention will be given to the complexities of operating tugs and barges, ranging in size from 3,000 to 12,000 horsepower, which carry all types of commodities. The Center creates new opportunities and better prepares future and current professionals for successful careers in the maritime industry. While the simulation center was funded by Bouchard, features replica simulation models of the Bouchard fleet and will serve to train and maintain Bouchard seamen, the center is a critical resource for SUNY Maritime cadets and is open for business industry companies and professionals.

Putting simulation training in perspective, Bouchard said, "Training and education is 200% more today. You cannot be profitable in this industry unless you are safe. You cannot be safe unless you train, but that's not only in the simulator, it's every day on these vessels. The captains in our company are held to the highest standards to be safe, and that is the only way that you can be profitable."



Credit: USCG Photo, Patrick Kelley, Photographer to the Commandant

Zukunft

Adm. Paul F. Zukunft, the 25th commandant

of the U.S. Coast Guard has a full plate. Driving sexual assault out of the Coast Guard; Preparing the fleet for operations through the year 2061; Coordinating intel and assets to stem the flow of illegal drugs ... they are all on the short list. From his Washington, DC, HQ he shares his vision and mission with Maritime Reporter.

By Greg Trauthwein, Editor

Every Commandant has a defining moment, and for me it's going to be the **Offshore Patrol Cutter.**

This will be the largest investment in our acquisition history, but this is a decision where 40 years from now this cutter will still be in service. I can't predict what the year 2060 has in store for us, but the first ship will be delivered around 2021. So that means in 2060, this ship will still be operating, and the people operating that ship should be able to look back and say, **'Thank God they got this one right.'**

You are almost a year in this position as the Commandant of the United States Coast Guard. Looking back, critique year one.

When we (started) we stood up a "continuity team." Oftentimes we call it a transition team, but words matter, (and we called it continuity) because what we didn't want to do is turn the Coast Guard on its side, especially among our workforce. We set out some very clear objectives and shared them with our field units, and said, "Here's my Commandant's direction. Does everybody understand where the Coast Guard needs to go?" I would liken it to the old NASA model, where if you asked a janitor, "What do you do at NASA?" he would say, "Well, I'm going put a man on the moon." (I wanted people to feel) connected to the mission that had three straightforward goals. We have already checked a number of these goals off:

- We had a clean financial audit, which was one of my immediate objectives. If you want to grow your budget you want to make sure that you're a good steward of it.
- We wanted to make sure that we're in complete alignment with the Department of Homeland Security, and I would say we've checked that block off, as well. So I'm delighted with where we've gone in the first 12 months, but through 2018, I will own the '16, '17, '18, and '19 budgets. So that's the big challenge going forward as we look at the demand for our services, (and determine how to best) sustain our great record of performance.

So coming into the job in May of 2014, what were your top three goals and what progress has been made in achieving these goals to date?

Our first goal was "service to nation." What does that mean? First, we better be aligned with the Department of Homeland Security. It combines Coast Guard, CBP, and Immigrations & Customs Enforcement, looking at all things maritime. Within "service to nation" was also "having intelligence drive our operations." One of the first things I did was I moved our Intelligence Directorate into Operations, and so we clearly have intelligence driving operations today to the point where in the drug threat transit zones, we have about 80% awareness, at least one layer of intelligence of all the drug flow. But out of all the great intel we have, 60% of the intel we can't take

Credit: USCG Photo, Patrick Kelley, Photographer to the Commandant

A MK-127 parachute flare is fired from aboard a Coast Guard high endurance cutter. The legacy 378-foot high endurance cutters are being replaced by being replaced by the new National Security Cutters.

USCG's 11 Statutory Missions

By law, the Coast Guard has 11 missions (listed in order of percentage of operating expenses):

- Ports, waterways, coastal security
- Drug interdiction
- Aids to navigation
- Search and rescue
- Living marine resources
- Marine safety
- Defense readiness
- Migrant interdiction
- Marine environmental protection
- Ice operations
- Other law enforcement

action upon because we don't have the resources to do so. But intel clearly is driving our operations.

So what is the second goal?

The second goal is "duty to people." And the one that's going to be a work in progress is driving sexual assault out of the Coast Guard. We had 254 reports last year. Some of these reports go back several years, so one positive aspect is those who have been victimized are more forthcoming for a crime that is probably the most under-reported crime in our country. For me it's (about) changing the culture.

Another aspect of duty to people is diversity. For the longest time, the Coast Guard has not reflected the society we serve, and this year our Coast Guard Academy in New London is probably one of the most diverse, if not the most diverse military service academy in terms of gender and ethnicity.

The other duty to people piece is how and why we assign people. Just recently we extended tour links for more than 2,000 people in the Coast Guard, recognizing there's a long learning curve, and right when they get proficient at what they do, maybe we move them into a different occupation field and start that learning curve all over again. it erodes our proficiency; it's hard on our families. And then there's a real cost savings if you don't move people as often, so if I'm dealing with a flat line budget or less, and I need to manage my human resource capital better.

What is the key to being more proficient with the human assets under your command?

That's the other part, more specialization within the Coast Guard. Take aviators for example. If you are a qualified pilot, we send you to flight school, you become a pilot in training, eventually you become an aircraft commander and an instructor pilot. We don't pull those people out of a cockpit and say, well, okay, now you are going to go drive ships, or something completely different. But we do that in some of the other fields within the Coast Guard and we need to look at having that more of a closed-loop community, as well, especially our marine inspection program. The industry we regulate has also become much more complex with dynamic positioning systems, alternative fuels, for example, and simply many more ships in our inventory, driven by the "oil renaissance."

And the third goal?

The third one is what I call "commitment to excellence," which is sustaining our record of outstanding performance. One area that's been a challenge for us is how we manage our financial management system. It's very labor-intensive, as we have nearly 20,000 people in the Coast Guard that have access and require access to our financial data.

We need to squeeze that down. We are generating a new financial management system so that we can better track what's in our checkbook. And then we need to look at efficiencies. We have Rescue 21, we've got more capable aircraft and boats, yet we still operate in many of our locations as we did when we used to have to roll out to rescue people before we had power-driven vessels.

So in looking at all of your responsibilities, do you have one that stands above and beyond all else?

Every Commandant has a defining moment, and for me it's going to be the offshore patrol cutter (OPC). This will be the largest investment in our acquisition history, and 40 years from now this cutter will still be in service. I can't predict what the year 2060 has in store for us, but the first ship will be delivered around 2021. So that means in 2060, this ship will still be operating, and the people operating that ship should be able to look back and say, "Thank God they got this one right."

We designed a ship that can operate in all domains. Right now our medium endurance cutter fleet can't operate in heavy sea states. I was the commanding officer of a 270-ft., medium endurance cutter, and my orders were to take the ship to the Bering Sea, and instead of evading storms, steam into them so we could assess the ship's seakeeping capability. When we came back and they ran all the modeling, they said, "We cannot have these ships operating in the Bering Sea. We will lose ships and we will lose

... And then I look at our main console: we've got two diesels, we've got two turbine engines, and I said, 'Okay, I probably don't know how to maintain either one of them, I can call somebody in the engine room and say, 'Hey, I need 30 knots and I need it now, they can fire up the turbine and away we go.' And then I look at the white paint and said 'Out of all these things on here, about the only thing that I could really do is paint the ship.' **Everything else you do through others.**

So you need to make sure that you know who those people are and that you value them, as well.

But if you think that your self-important hand on your hip makes you all-knowing, you are kidding yourself ... **You're an emperor with no clothes.**

Adm. Paul Zukunft gets a first-hand-look at the engineering spaces aboard the Coast Guard Cutter Paul Clark.

A Coast Guard Cutter Joshua James crewmember chains a buoy to the deck.

Adm. Zukunft talks with boat crewmembers aboard a Coast Guard Station Washington, D.C., small boat during a patrol.

Adm. Paul Zukunft gets a first-hand-look at the engineering spaces aboard the Coast Guard Cutter Paul Clark.

Photo Credits: USCG Photo, Patrick Kelley, Photographer to the Commandant

people." But that's an area of operations where the Coast Guard has been operating, and will need to operate well into the 21st century. So we need to make sure that we design a ship that can safely operate in the most harsh environments.

Obviously, there's a lot of interest in the offshore patrol cutter. So where exactly are we at with the OPC?

We are down to three bidders and we will down-select to one in the fourth quarter of 2016. We have built in affordability as an underlying criteria in the design of this ship, but not at the expense of some of the key operating requirements. It's not a race to the bottom. We have a really great track record with our national security cutter and our fast response cutter programs where once these roll out, we don't redesign it after the fact. There are huge cost penalties incurred when you change your requirements midstream.

(OPC must meet) the sea-keeping needs and the cruising range that that platform will require well into the 21st century. Our acquisition program has done a tremendous job, line item by line item, to validate each and every one of those requirements. As a two-star, I actually wrote the operating requirement document for this class of cutter, so it is one that I'm quite familiar with. I am confident that industry is going to provide us an affordable model.

With all of the variables in designing and building a platform that will operate to 2061, what do you count as the greatest challenge?

(In regards to) acquisition, 'don't go it alone.' Look for commonality in systems, take advantage of economy of scales. We know in 2061 we will still be interoperable with the United States Navy, so we've got to have compatible systems. We have that right now on our aging fleet, but those are systems that the Navy is phasing out. Technology evolves faster than we can produce ships. Oftentimes, if you're buying something today, by the time it's fielded, you're already in the 2nd or 3rd spiral development of the technology that's being put on that ship. So you probably want to reserve space, weight, and power for whatever the new technology is going to bring on board. But in all likelihood, it will be smaller, it will probably be more capable, but at the end of the day it is going to require more bandwidth.

Most everyone who reads our pages are keenly interested in what the Coast Guard is thinking. Looking on the big ship side, one of the biggest concerns is regarding USCG approval of Ballast Water Management Systems. What is your take on this on this specific program, and where are we at as far as getting approved systems?

We have two regulatory projects on the table right now: Ballast Water Technology is one and Subchapter M, uninspected towing vessels, is the other. With ballast water we have been working with independent labs to make sure that, first of all, the technology exists to meet some of the stringent standards that have been proposed, because quite honestly, the technology hasn't quite caught up to where some of these standards are. So where we're at right now is making sure that we have the technology that can meet the requirements. Once we get that technology box checked, we can move forward pretty briskly in putting forward a final rule. This has been a concerted effort for the Coast Guard: to make sure that the technology exists through an independent lab where we can finalize this rule-making product.

The Arctic presents many opportunities and many challenges. Can you give your overview of the current Coast Guard position on the Arctic, and moving forward, do you have the assets that you need to operate there effectively?

First and foremost, we don't have the capacity we need to operate in the Arctic. We are an Arctic nation, and for the next two years we chair the Arctic Council. This year, there is a cruise ship that's scheduled to transit the Northwest Passage, while (only about) five percent of the Arctic is charted to "modern day standards."

Today we continue to fly the "International Ice Patrol," a mission that the Coast Guard took on after the Titanic's sinking. We can't afford to wait for a catastrophe (again) to finally invest in what our nation needs to be a viable Arctic nation. Russia has about one eighth of our GDP, and they have a fleet of 27 ice breakers. They clearly see an imperative to be an Arctic nation, and they have made that investment. The one area I lose sleep over is the fact that the Polar Star is down in McMurdo, Antarctica. It is a 39-year-old ice breaker, and God forbid they suffer a major engineering casualty (causing it to become) set in ice because the United States doesn't have another ice breaker that can go into a heavy ice environment (for the) rescue.

Further north as we look at more human activity in that area, there's little to no shore infrastructure. So your "command and control," is at sea. And so for the Coast Guard, and the United States, if we are going to exert influence, in all likelihood you are going to have to do that from ships. We've done independent studies called a "high latitude study," and out of that a determination was made that the United States requires

A Marine Safety and Security Team 91109 San Diego small boat and the Coast Guard Cutter Hawksbill conduct training in San Francisco Sept. 17, 2014.

Credit: USCG Photo, Patrick Kelley, Photographer to the Commandant

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The Commandant on the Arctic

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Credit: USCG Photo, Patrick Kelley, Photographer to the Commandant

The Canadian Coast Guard Ship Louis S. St-Laurent makes an approach to the Coast Guard Cutter Healy in the Arctic Ocean.

3 heavy and 3 medium ice breakers. Today we have one heavy and one medium. So it's an investment that needs to be made.

So what is the realistic prospect of expanding the ice breaking fleet while you sit in this seat?

It's my job to sell it. There are some that would say "Let's just zero out all your other major acquisitions and then repurpose that and just build icebreakers." But we have 50-year-old ships that will be 55 years old before the first offshore patrol cutter takes their place. We do a pretty good job taking care of the ships that we have, but they have lead dust, they've got asbestos. So they're not just old, but now they do pose a hazard to our folks operating them. So I need to continue that program of record in that I need the top line relief in our budget to take on board another major acquisition, specifically for a heavy ice breaker.

What is the potential for collaboration, with the Navy for example, to jointly build and operate icebreakers?

We work very closely with the Navy and the Navy has a road map for the Arctic, but when you look at their military equities in the Arctic, there's not an emerging cause for action when you look at all the other competing demands that the Navy has; the biggest one being recapitalization of the Ohio class submarines, a huge investment. It really comes down to an issue of political will to make that level of an appropriation to fund. They are U.S. assets, so it really is whole of government; there are a number of entities that have a stake in the Arctic domain.

You covered it a bit when we discussed the OPC previously, but acquisition and recapitalization would seem to be one of your ongoing missions for the financial responsibility. Looking at the job you're doing today with your acquisition program and your recapitalization program, how would you term the job being done? What work still needs to be done?

On a positive note, our acquisition directorate received five of roughly eight awards last year among all entities for best acquisition practices. We were criticized a number of years ago for not having our acquisition house in order. I'm here to say that today, that house is built on a very solid foundation. The challenge is that our acquisition budget over the last four years has dropped nearly 40 percent. Yes, we need new ships. Yes, we purchased 174 response boat mediums, capable boats operating somewhat near shore. Our fast response cutter, we just took delivery of 12 and we're on a good timeline right now to build out all 58. And our national security cutter, we'll finish contracting out the final (eighth) of those.

In addition I have an $850 million backlog in shore infrastructure: old buildings, old piers, leaking roofs. I can't vector where hurricanes go, but right now my best recapitalization effort for shore infrastructure is through disaster relief funding. If you're at the Coast Guard Academy today, it's almost like being at a shipyard with all the scaffolding. But we would not have been able to do some of that work had it not been for a hurricane that that got to the point where it really started to compromise habitability. But I can only allocate about $40 million a year towards an $850 million backlog.

I guess that's the key question … how do you do it? What's the trick? That may sound a little flip, but what's the secret to making it all work?

We've done our part, and maybe we need to take more credit for what we've done. By that, I mean for the second consecutive year the Coast Guard has a clean, financial audit opinion: the only armed service that could make that statement. The fact that we're running ships, you know, 50 plus years old: when you make that investment you are going to take good care of it. We're taking good care of the dollars we're trusted with, as well as the capital plan. So in terms of our stewardship of capital – whether it's fiscal or real property – our record is on solid ground, yet there has been this reluctance to make that added investment as we look at the challenges that are, literally, right out our window.

Twenty years from now what is the Coast Guard fleet going to look like, and what are some of the big drivers shaping that?

If you can envision, we are flying at 45,000 feet, and you look off the coastal areas of the United States – what I say "inside the sea buoy" – the Coast Guard's got a lot of capability, we have a lot of authorities there, but so do state and other federal entities. So inside the sea buoy, we've got a lot of partnerships that we can trade off missions, we work seamlessly with our federal, state, local, tribal partners inside the sea buoy. As soon as we get outside that sea buoy, who has authority to enforce U.S. law outside the sea buoy, and how far offshore do your authorities go? And when you start looking at the world from 45,000 feet, the only one who's out there with all these authorities is the United States Coast Guard – not just for the United States, for the entire world. There's no entity that has the authorities like us. There's a lot that copy us. Right down to our paint scheme, our racing stripe, but the other thing they can't replicate is the people we have. We're getting the best talent that I've ever seen come into this service.

We actually had a work release program, you know, back in the early 70s. It was right after the draft, and folks could either join a service, or depending on what crime they committed, they would have to serve time. Today we don't have a work release program. In fact, we have the very best talent that I've seen in an all-volunteer service. And I'm a little biased, but I think they gravitate to the Coast Guard because we empower people at such a very junior level.

So if I were to look out 10 years, these 60 bilateral agreements that we have that protect everything from attacking drugs, to weapons of mass destruction, to fisheries, and remote economic exclusive zones; I don't think organized crime is going to go away; I don't think human trafficking or illegal migration is going to go away. As our country's economy grows there are other countries that are going in the exact opposite direction, and

so I think, for years to come in terms of people wanting to find a better life than where they live now, and that place will be here in the US. So who is going be the enforcement? The United States Coast Guard.

But you don't want to do it (enforcement) inside the sea buoy. You want to make sure that you can operate well offshore and meet these challenges before they really show up on our shoreline.

Looking back on your career, what do you count as your most influential or defining moment?

It probably goes back to 1980. I was the Commanding Officer of the Coast Guard Cutter Cape Upward, a 95 foot patrol boat. I'm a seasoned lieutenant JG, which means I've got all of three years of experience under my belt. And I was probably the youngest crew member on the vessel, but it was right there in the Mariel boatlift. Over a span of several months, we rescued well in excess of 1500 people. (And one time) we just stumbled on this vessel. It was about 60 feet in length with well over 200 people on it. And as soon as we came alongside, the women were literally throwing their babies to these complete strangers, but they saw "U.S. Coast Guard." They thought their boat was going to sink, and at least their children would survive. With this crew of 16, and all of my three years of experience, we got all 200 onto our boat. For me, it was, "Wow. I could never do this job by myself." This crew, the mission; I was hooked and from that point on, I said, "I have found my calling and this is what I want to do for the rest of my life."

Who or what inside – or outside – the Coast Guard do you consider the greatest influence on your leadership style and why?

Just before coming into this job, I looked at all of the Commandants that I had served for while I have been on active duty, and it was about eight of them. But there is one that I've always looked up to, and not just because he's 6 foot 6: Admiral Jim Loy. He was my Area Commander when I was in command of a medium-endurance cutter, and he was on a leading edge of bringing this "culture of leadership," to all levels in our Coast Guard. He was also the Commandant during 9/11 which was a defining moment for the Coast Guard. He went on to become senior administrator, actually the TSA administrator, to create that organization, so there's a lot to learn from him, from his watch.

Ultimately, you have to be humble in what you do and say, but what does that mean? I talked about my first command afloat. My last command afloat, was on the Coast Guard cutter Rush. It was just taken out of service last year, old beyond her years. But when I was on there as a captain, and we're on the bridge wing, and we're getting ready to get underway. I've got my self-important hand on my hip, and the other is holding a cup of coffee, and then I looked back and I'm looking at our fire control radar, and I look back at our air search radar, I look at our gun weapons system, I look at all the other antennae arrays up there, and said, "I think I know about what two-thirds of those do. I can't fix any one of them."

And then I look at our main console: we've got two diesels, we've got two turbine engines, and I said, "Okay, I probably don't know how to maintain either one of them, I can call somebody in the engine room and say, 'Hey, I need 30 knots and I need it now, they can fire up the turbine and away we go." And then I look at the white paint, and said, 'Out of all these things on here, about the only thing that I could really do is paint the ship. Everything else you do through others.' So you need to make sure that you know who those people are and that you value them, as well. But if you think that your self-important hand on your hip makes you all-knowing, you're kidding yourself. You're an emperor with no clothes.

A very good point. From the time you entered the Coast Guard to today, how is it the most the same and how is it the most different?

I think what hasn't changed is the mission. And that mission accomplishment when I go back to making our first big drug bust, a search and rescue case, and how the crew rallies around those big events. You know you are part of the winning team. So what hasn't changed is that we're still very much a winning team. What has changed is where we've gone with diversity, especially where women have come, then and now. My last year at the Academy was the first year that women came into the Coast Guard Academy, or any of our service academies. They were treated as a novelty. Today, our women are treated as peers, as professionals, and so the pioneers back in the 70s shouldered an immense burden to bring women to where they are today, as peers, as equals, and quite honestly, our very best leaders, as well. And we're seeing that in diversity, as well. That it is a Coast Guard for all.

USCG Makes Headway in Challenging Waters

By Edward Lundquist

Day after day, the U.S. Coast Guard continues to conduct its 11 statutory missions with its limited resources. It is challenged to Invest in long-term operational capacity while continuing to carry out its daily missions.

"We're a small service, but as always, we do punch above our weight class," said Coast Guard Commandant Adm. Paul Zukunft during the 2015 Surface Navy Association symposium in Arlington, Virginia.

While the Coast Guard may have drifted off course with its ambitious and holistic Deepwater recapitalization effort, the service is now on track to replace its high and medium endurance cutters and patrol vessels with three new classes of ships. Construction for two of the three replacement programs are underway. The 12 Hamilton-class 378-foot high endurance cutters will be replaced by eight Bertholf-class 418-foot National Security Cutters (designated as WMSLs). The Coast Guard's aging 110-foot Island-class and 87-foot patrol boats are being replaced with the 154-foot Sentinel-class fast response cutters. That leaves the replacement for the 14 210-foot Reliance and 270-foot Famous (also known as the Bear class for the lead ship of 13 ships) medium endurance cutters, which will be the yet-to-be-determined Offshore Patrol Cutter or OPV.

National Security Cutter

Four of the new NSCs have joined the fleet, with three based on the Pacific coast at Alameda, Calif., and the fourth and most recently commissioned, USCGC Hamilton, commissioned in December 2014 and now homeported at North Charleston, S.C. All eight of the NSCs are being constructed in Pascagoula, Miss., by the Ingalls Shipbuilding division of Huntington Ingalls Industries. While there are many differences between the NSCs and the earlier 378s, the biggest difference the ship's information systems capable of handling classified information, and advanced sensors and combat management capabilities.

The NSC is the largest and most capable general-purpose cutter in the Coast Guard fleet as is designed for long-endurance independent operations. According to the Congressional Research Service, the NSC procurement cost averages about $684 million per ship.

The NSC is specifically designed to launch and recover both long range interceptors and short range boats, helicopters and unmanned aerial vehicles at high sea states. The ship features an aircraft hangar and stern ramp for launch and recovery of boats.

The NSC is armed with the MK110 57mm gun, which is also found on both variants of the Navy's littoral combat ship. The NSC also has the Phalanx Close-in Weapon System (CIWS) for point defense.

The combined diesel and gas turbine (CODAG) propulsion system uses a GE LM2500 gas turbine and two MTU 20V1163 diesel engines delivering nearly 50,000 shp, with a top speed of 28 knots and a range of 12,000 and endur-

The Coast Guard Cutter Waesche conducts at-sea refueling operations. The Alameda-based cutter is named in honor of former Coast Guard Commandant Adm. Russell Waesche.

(Coast Guard photo by Petty Officer 1st Class Adam Eggers)

ance of 60 days at economical cruising speeds.

High Endurance Operations

Bertholf and her sisters can operate independently or be fully integrated in fleet operations. USCGC Wasche took part in the RIMPAC 2014 multinational fleet exercise in the waters off Hawaii and southern California.

The WHECs and now the NSCs are able to conduct extended fisheries patrols, which is vital to protect the vast U.S. economic exclusivity zones (EEZ), particularly in the Pacif. Altogether, the total U.S. EEZ is the largest in the world, and includes 200-mile limits around such far flung possessions as American Samoa and the Northern Marianas. Transiting between those zones takes the cutters through neighboring EEZs of countries without the reliable means to patrol their waters, so the Coast Guard takes shipriders aboard who have law enforcement authority. The U.S. has shiprider agreements with the Cook Islands, Kiribati, the Federated States of Micronesia, the Marshall Islands, Nauru, Palau, Samoa, Tonga, and Tuvalu.

Offshore Patrol Cutter

The Offshore Patrol Cutter will be the replacement for the 270 and 210 foot medium endurance cutters (WMECs) of the Famous and Reliance classes. These ships are old, especially the 210s, some of which have seen 50 years of service.

Three companies were selected to produce preliminary and contract designs for the OPC. Of the three, Bollinger Shipyards of Lockport, La., has experience building ships for the Coast Guard. General Dynamics Bath Iron Works in Maine makes destroyers for the Navy, but the OPC is a much smaller ship. The third company, Eastern Shipbuilding of Panama City, Fla., hasn't built ships for either of the sea services. Each of the contracts, awarded in February of 2014, are worth about $22 million. While we know what will go on the ships—the 57 mm gun and government-specified C4ISR systems, we don't really know what the three design will look like yet.

When the contract awards were announced, then-Coast Guard Commandant Adm. Robert Papp said that The OPC program, "is the most important — not just shipbuilding — but the most important acquisition program that the Coast Guard has done in its history."

Fast Response Cutter

The Coast Guard's 154-foot Sentinel-class Fast Response Cutter is based on the successful Damen Stan 4708 patrol vessel design, which was key to the low-risk acquisition strategy (Damen has delivered a number of similar ships to other navies and coast guards). The construction contract was awarded to Bollinger Shipyards of Lockport, La. A total of 58 FRCs will be built. Most recently the 11th (USCGC William Trump), and 12th (USCGC Isaac Mayo) ships of the class were commissioned or delivered, and will be based at Key West.

The 353-ton vessels are armed with a remote-control stabilized 25 mm Bushmaster machine gun and four, crew-served.50-caliber machine guns. They are equipped with a stern ramp boat launch and recovery system and can achieve speeds of more than 28 knots. The FRCs have a 22-person crew and have a range of almost 3,000 nm. And an endurance of five days.

(Photo: Ned Lundquist)

USCG patrol boats forward deployed to the Arabian Gulf.

The Coast Guard Cutter Polar Star, a heavy icebreaker homeported in Seattle, breaks a parallel channel in the ice beside a previous channel near the National Science Foundation's McMurdo Station, Antarctica in January 2015. As the area of broken ice widens, southerly winds will push the ice out to sea, allowing supply vessels to deliver cargo to McMurdo Station.

(USCG photo by Petty Officer 1st Class George Degener)

A patrol boat manned by members of Port Security Unit 311 deployed to Joint Task Force-Guantanamo Bay, Cuba, escorts the Coast Guard Cutter Bertholf as it sails into Naval Base Guantanamo Bay.

(U.S. Coast Guard photo by Petty Officer 1st Class Matthew Roache)

Forward Deployed Patrol Boat Os

While a part of the Department of Homeland Defense, the Coast Guard is a military force with a global presence, with bilateral and multi-lateral agreements with over twenty-nine maritime nations in the Caribbean and in Central and South America to help conduct Coast Guard missions of law enforcement, fisheries protection, search and rescue and environmental and pollution response

Like the U.S. Navy coastal patrol boats (PCs) in the Arabia Gulf, the six forward deployed Coast Guard 110-foot patrol boats (WPBs) are operating in a high threat environment every day conducting VBSS (visit, board, search and seizure) boarding and "approach and assist" engagements with the many fishing and trading dhows. Until the mission was turned over to the Iraqi Navy in 2011, PCs and the WPBs also protected the large oil terminal platforms in the northern gulf, and they still conduct various types of maritime infrastructure protection, freedom of navigation exercises, and escorts of high-value units. Compared to stateside WPBs, the forward deployed cutters assigned to US Coast Guard Patrol Forces Southwest Asia in Bahrain have twice the "op tempo," meaning more days at sea. Speaking at the Surface Navy Association symposium, Zukunft said that the same patrol boat squadron model being employed in Bahrain would be very beneficial in Central America.

The Coast Guard frequently worked with the Navy to embark USCG law enforcement detachments (LEDETS) on USN ships supporting counter drug operations for the Joint Interagency Task Force South at Key West, operating in the Caribbean and eastern pacific. But the last U.S. Navy Oliver Hazard Perry class deployment is under way now, and the Navy's presence in the region will be reduce, along with the opportunity to vary the LEDETS. To pick up that mission, the Coast Guard will have to deploy more ships.

Icebreakers

Ironically, the diminishment of multi-year ice in Arctic has increased the need for ice breaking and ice capable vessels. Less ice means more traffic and activity that could require a response by the Coast Guard. And "ice diminished" doesn't mean "ice free." The Arctic is still an unforgiving place. There are more things that can go wrong in polar waters, and when they do the consequences are greater. The Coast Guard's newest polar icebreaker—the Healy—was commissioned in 2000. It's a medium polar icebreaker, but more appropriately it should be considered a research ship with icebreaking capability.

The Coast Guard's two heavy polar icebreakers—Polar Star and Polar Sea—have served beyond their originally intended 30-year service lives. Polar Star was placed in caretaker status in 2006 but returned to service in 2012 following extensive repairs which should give her another 7 to 10 years of service, and is now in Antarctica supporting the National Science Foundation mission there. The Polar Sea suffered a major engineering casualty in 2010 and is now in an inactive status, but studies are being undertaken to see if she can be repaired and reactivated. In FY2013, the Coast Guard ini-

tiated a new project for the design and construction of a new polar icebreaker. The project received $7.609 million in FY2013; $2.0 million in FY2014; and requested $6 million more in FY2015. The new polar icebreaker would replace Polar Star at about the time Polar Star's 7- to 10-year reactivation period ends.

But despite the discussions and budget analysis about repairing, extending service life, or beginning design and construction of a new icebreaker, the U.S. will be in need of more icebreaking capability than the Coast Guard can afford to provide to meet requirements in polar waters.

Small Craft

Small craft have a big role and a sizeable presence in the Coast Guard, including quite capable boats carried aboard larger ships. The Bertholf-class NSC carries three boats, including the 35-foot Long Range Interceptor (LRI) and the Cutter Boat Over the Horizon IV (OTH-IV), carried aft in the stern boat deck. The third boat, an OTH IV or MK 3 Zodiac RHIB, is carried amidships and launched and recovered over the side utilizing a standard two-hook davit.

The Coast Guard plans to procure up to 101 of the 26-foot OTH-IVs. The Long Range Interceptor II (LRI-II) from Metalcraft Marine US Inc., of Cape Vincent, N.Y., and Brunswick Commercial and Government Products, of Edgewater, Fla. SAFE is the manufacturer of the USCG OTH-IV. The service is also procuring the Response Boat - Medium (RB-M), being built by Marinette Marine (the prime contractor) and Kvichak Marine. Half of the boats are being built by Marinette's ACE Marine, a wholly owned subsidiary of Marinette Marine, i in Green Bay WI. Seattle-based Kvichak is building the other half.

The response boat-medium is designed to meet a broad spectrum of Coast Guard mission requirements, including search and rescue; ports, waterways and coastal security; smuggler and illegal migrant interdiction.

Kvichak Marine is building the 32' Transportable Port Security Boats (TPSB), an all-aluminum vessel operated by a 4-person crew and featuring shock mitigating seats, ballistic armor protection and up to four mounted weapons. The Coast Guard currently operates more than 400 Defender-class Response Boat – Small (RB-S) boats, and is now working to bring the RB-S II into the fleet to replace the Defender-class RB-S.

The RB-S replacement—which could eventually reach as many as 500 boats—is one of the largest boat buys of its type for the Coast Guard. Metal Shark Aluminum Boats of Jeanerette, La., is the contractor for the production of 29-foot Defiant-class RB-S IIs. The contract allows for the procurement of up to 500 boats for USCG shore stations and options for orders from Customs and Border Protection and the U.S. Navy.

While this article focuses on new construction, the service must also keep the existing fleet maintained and repaired. The Coast Guard's ship yard at Curtis Bay, near Baltimore, has provided much needed maintenance to keep the 270-foot Medium Endurance Cutter fleet operating and is conducting a service life extension project for the service's 140-foot ice breaking tugs.

The U.S. Navy is responsible for the Coast Guard's "Navy Type Navy Owned" weaponry, which can also include sensors, combat management systems, ammunition, training and sustainment. Examples include the AN/WLR-1 and AN/SLQ-32 electronic countermeasures systems; the AN/SPQ-9B radar; MK 46 torpedoes; and the MK 75 76mm/62 caliber gun weapon system, to name a few. This ensures the Coast Guard will be ready to fight alongside the Navy in time of war, and that the systems will be interoperable with each other. The U.S. Coast Guard's Hamilton-class and Famous-class cutters have the same MK 75 gun system and MK 92 fire control system as the Oliver Hazard Perry (FFG 7) guided missile frigates. As the Perry's are being decommissioned, engineers at Naval Ship Systems Engineering Station (NAVSSES), Naval Surface Warfare Center Carderock Division are harvesting weapon system components from decommissioned FFGs for re-use on the cutters, with an expected cost avoidance of more than $24 million.

Fixed-wing Maritime Patrol Aircraft

The service was able to take possession of 14 new C-27J Spartan medium-range transport aircraft that the Air Force didn't want. Although the Coast Guard hadn't planned or budgeted to take this new aircraft into its inventory, it was too good a deal to pass up. There's significant commonality (avionics, engines) with the services larger four-engine C-130J Super Hercules,

Although the Coast Guard had evaluated the C-27 previously, the service selected the Airbus North America HC-144A Ocean Sentry for its maritime patrol aircraft. The Ocean Sentry is based on the CN235-300M twin-turboprop. But getting the C-27s essentially for free changed the "total life cycle cost" equation. Now the Coast Guard is halting the HC-144 acquisition at 18 aircraft. The C-27s require some slight modifications, such as adding radar and EO/IR sensors, but are otherwise ready for maritime patrol, drug and migrant interdiction, humanitarian assistance and search and rescue missions.

Unmanned Systems

The service has evaluated unmanned systems such as the Puma and Scan Eagle unmanned aircraft system (UAS). USCGC Bertholf's UAV testing actually contributed to a significant drug bust when the UAS detected and `tracked a go-fast vessel and helped direct Bertholf's cutter boats and embarked helicopter for to interdict the suspects with 600 kg of cocaine.

Leveraging Smart Ideas

How can the Coast Guard properly execute the service's 11 missions in the current austere budget climate? "It means that we need to get creative," says Bert Macesker, executive director of the Coast Guard Research and Development Center (RDC) in New London, Conn. "Innovation is hugely important to the Coast Guard. It involves looking at better and new ideas—both technology-based as well as non-material approaches—that offer improved solutions to requirements that we have."

Innovation Program Manager Cmdr. Tyson Weinert says a new software platform will soon connect the service's targeted problems with the Coast Guard's active duty, civilians, reservists, and auxiliarists. He says new innovation-based methods will bring stakeholders together—from the people on the deckplates to the acquisition community. "We're pairing up these innovators with the program and platform managers so they can actually be part of a process."

USCG Tank Barge Reg Looms

Laborde Presses Mitsubishi's "Mechanical Advantage"

Owners of tank barges eye November 15, 2015 with trepidation, as by then they must ensure that tank barge power units meet USCG Class 1, Division 1 requirements for non-sparking machinery in a hazardous environment. Laborde Products – with the "mechanical advantage of the Mitsubishi" – claims to have the solution.

By Greg Trauthwein

Covington, La.-based Laborde Products is not your standard diesel engine distributor. While Laborde Products was founded in 1998 by Tracy Laborde, the Laborde family has been heavily involved in the marine industry since 1954, when Alden "Doc" Laborde was responsible for the design and construction of the first offshore submersible drilling rig, Mr. Charlie, a rig which today stands as a museum in Morgan City, La. Doc and his partners formed the Offshore Drilling & Exploration Company (ODECO), which became the world's largest offshore drilling company. With offshore rigs came the need for specialized support vessels, so Doc teamed with his younger brother, John P. Laborde (Tracy's father), and founded Tidewater Marine Services, building the world's first offshore supply boat designed specifically for the support of offshore drilling. Both ODECO and Tidewater became the dealers in this new offshore drilling business with Tidewater becoming the world's largest offshore supply boat company.

In short, the Laborde family – starting with Doc and running to and through Brian Laborde, President and second generation leader of Laborde Products – knows the marine business inside and out.

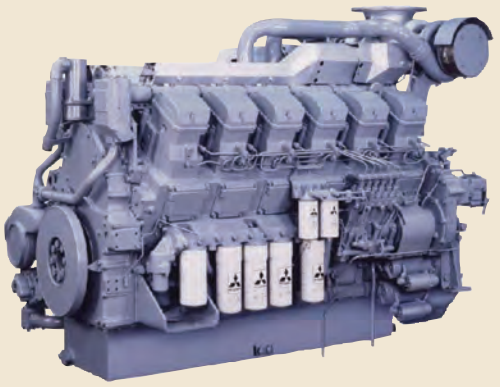
November 15, 2015

November 15, 2015 is the deadline for tank barge power units to meet the United States Coast Guard 'no spark' requirement, said Douglas Oehrlein, Vice President, Laborde Products, Inc.

"Inland barge operators who are operating barges with an 835 for a non-compliant barge power unit must remove that electronic controlled barge power unit and replace it with a compliant power unit or move the existing barge power unit outside of the hazardous zone, or 10 feet from the nearest opening or flanged surface," said Brian Laborde, President, Laborde Products. "We are working with several large inland marine barge companies to prove a mechanical barge power unit that can be installed in place of its existing non-compliant power units with minimal if any modifications to the barge. We have customized our barge power units to fit the skids of most non-compliant power units, providing an easy solution for operators."

While defining the ultimate size of the market is elusive, many owners have delayed installing the new solution, presenting a ripe market to Laborde which with its mechanical version Mitsubishi engines has developed Class 1 Division 1 tank barge power units that fit the need. "This allows Laborde customers to install the mechanical Mitsubishi power units within the hazard zone, without the redesign of the barge, which is required if electronic engines are used with much longer drive shafts," said Oehrlein.

"We are the only engine company in the market to offer a fully mechanical USCG Class 1 Div 1 barge power unit," said Laborde. "The key to our power units is the mechanical Mitsubishi engine that provides power and performance while maintaining the simplicity of a mechanical engine."



Mitsubishi is able to achieve Tier 3 emission standards with a mechanical solution. Pictured above is a typical tank barge set-up

Pictured left is the Mitsubishi S12R.

Planning Ahead

While the looming tank barge business is expected to be brisk for Laborde Products in 2015, Brian Laborde admitted that the sudden, dramatic drop in oil pricing will present challenges to the company and its clients this year.

"We expect to see our marine markets slow down in the coming year, as we have seen a substantial pull back in the offshore marine market, and we are beginning to see the effects in the inland market," said Laborde. "We believe that the new build programs of the inland operators will slow down as a result, and we have heard that our customers are experiencing downward pressure on their day rates from the charterers, as well as continued upward pressure from the crews due to a lack of supply of qualified crew members." But while the near term looks challenging, Laborde is swift to point out that marine and offshore markets have historically weathered hard cycles up and down, and ultimately its clients play a critical, long-term roles in the world economy. Short term gyrations are not a time for panic, rather strengthening the team and facilities, planning for busier times to come. To that end, Laborde is currently investing in its Covington, La., headquarters to increase efficiencies.

"Our production capacity cannot keep up with the demand for our products so we are going to triple the production capacity of our facility to increase our production capabilities. We will be substantially expanding the production capabilities of Laborde Products to continue providing our customers with quality products in a timely fashion. While we are watching the markets very closely we believe that this slow down will give us time to strengthen the core of our business and prepare ourselves for future growth as the markets recover. We look at challenging times as opportunities to improve and refine our business and our team."

A Measure of Support

Coast Guard Foundation Supports USCG Men, Women, Families

"A lot of donors, particularly individual donors, are interested to support the Coast Guard in their own communities ... **the regional approach is working.**" Anne Brengle, president, CGF

The Coast Guard Foundation is a Connecticut-based non-profit organization – originally started by a trio of Coast Guard veterans who wanted to give back to their chosen service – which aims to provide support and comfort to the men and women in the Coast Guard, and their families.

At the helm of the Coast Guard Foundation is Anne Brengle, a New York City native with a passion for non-profits and all matters maritime. When Brengle was recruited eight years ago to lead the Coast Guard Foundation, she wasn't looking to change jobs. But following a meeting with the group, she was hooked. "I think it's the way that, as an organization, they reflect the culture of the Coast Guard itself: a wonderful group of people who are selfless in their mission," said Brengle.

2007: A Tough Time to Raise Money

The world was on the precipice of economic meltdown on the eve of Brengle taking the helm at the Coast Guard Foundation, perhaps not the ideal environment to raise money. Yet the foundation, like the group it serves, acted quickly and surely to shore up its footing and future.

"We made a strategic decision at that point to expand its pool of donors," said Brengle, noting that at the time the entire donor pool database included about 2,500 names.

Fast forward eight years and it appears the strategy has paid off.

The foundation normally raises between $5 to $7 million per year, but more recently it has been at the $8m level and the new goal is $10m.

In tandem the number of donors has grown exponentially, with about 10,000 active donors each year, and more than 20,000 names in the donor database.

Part of this strategy was a twist on the saying "Think Global, Act Local," as today the CGF has a national profile, but it also has three regional directors of philanthropy (with the aim to add more). "A lot of donors, particularly individual donors, are interested to support the Coast Guard in their own communities … the regional approach is working," said Brengle.

Helping the Helpers

"The Coast Guard Foundation supports the men and women of the Coast Guard and their families in ways that really help their quality of life and ability to serve the nation," said Brengle. "We are very connected to Coast Guard headquarters, and we work closely with the Coast Guard about what is needed beyond appropriated dollars to help with education expenses, to make serving on duty in remote locations more palatable and to make serving in the Coast Guard more of a community experience."

In tangible terms, the Coast Guard Foundation tackles projects large and small, and it assists Coast Guard men and women and their families with something as simple as sporting equipment to building a gym; to providing college educations to the children of Coast Guard personnel who have lost their life in duty, to supporting Coast Guard members in their own quest for higher learning.

Participation in the Coast Guard foundation can be as simple as making a donation, to a more hands-on role in volunteering for one of the many CGF events held annually.

"We've even had people 'adopt' Coast Guard stations, throwing parties and annual cook outs to help raise money and awareness," said Brengle.

www.coastguardfoundation.org

Marine Salvage & Oil Spill Response

ASA takes the lead to advance the business of marine salvage

*Last month Maritime Reporter had the good fortune to receive insights from a trio of maritime salvage leaders – **Paul Hankins, Tim Beaver & Jim Elliott** – garnering insights on one of the most challenging and ever-changing sectors of the maritime market.*

By Greg Trauthwein

It was recently written "salvors have become more closely tied to Oil Spill Response Organizations (OSROs)." Why?

Hankins The Oil Pollution Act of 1990 (OPA90) defines how all stakeholders will respond to potential or actual oil spill responses. Where salvors are the tip of the spear to keep that oil in the ship, the OSROs try to collect the oil once that oil has spilled. The response organizations are indeed intertwined, and both response groups often work side by side because of the nature of their work. It only makes sense to know the people with whom you might be working one day.

Elliott While salvors and oil spill responders have traditionally worked together during marine casualty response operations, the U.S. Salvage and Marine Firefighting regulations, implemented within the past few years, specifically require Vessel Response Plan holders to "identify how salvage and marine firefighting assessment personnel will coordinate response activity with oil spill removal organizations." With these new regulations, salvors are required to be contacted immediately when the Vessel Response Plan is activated, to conduct an initial assessment within one hour, and then actively move forward with a coordinated response with both OSROs and public response agencies.

Beaver In the United States virtually all maritime casualties of any consequence inevitably becomes of interest to the U.S. Coast Guard. One of the several key functions of the Coast Guard is the protection of the marine environment from oil pollution. This function naturally comes to the fore during a maritime casualty when there is a pollution release or even a potential for the same. This function therefore becomes the driving force behind a very active coast guard involvement in such operations. Immediately there is a coast guard imperative that the OSRO's be notified if not activated, and an incident command system stood up. This is simply a fact of life for salvors working in the US, and through persistence and education, much of it by the ASA, salvors have become embedded into this system.

How does this materially impact the business and capabilities of salvage companies?

Elliott Salvage and marine firefighting service providers are now working side-by-side with OSROs within a Unified Command during U.S. salvage operations and also regularly participating in large-scale exercises. Historically, salvors were often not called until the marine casualty was in a critical state. Today, salvors are recognized as leading the effort to prevent oil from entering the water – keeping it inside the ship or safely lightering the oil and fuel to a receiving vessel – and achieving the national goals of safety, environmental protection and keeping waterways open.

Beaver In many cases the ability of the salvor to mitigate or eliminate the pollution release related to a specific casualty is a key function of the salvage operation. This constitutes a broadening of the scope of work of the salvor. A competent salvor is not only expert at all the various aspects of maritime salvage such as harbor clearance, demolition, survey, heavy lift, emergency towing operations, strandings, etc., but also oil removal operations such as hot tapping, de-fueling, pumping and containment operations. Therefore I would say the capabilities of the salvor have naturally grown to include these pollution mitigation operations which has subsequently increased the business of the maritime salvage industry.

Paul Hankins, American Salvage Assoc.

The biggest salvor challenge with these heavier-than-water oils is keeping the oil in the ship. If there is a tear in the bottom of a tank, lighter-than water oils will generally stay in the tanks.

Tim Beaver, Global Diving & Salvage

There is the relatively new upswing in the use of LNG for fuel aboard ferry boats and cargo vessels. It will interesting to see how the salvage industry responds to this.

Oil in the water is always a major concern in casualties and salvage operations. Briefly describe any new or specific concerns for the ship owner today.

Elliott Given the current record on Vessel Response Plan activations, ship owner's should recognize the benefit of contracting a qualified salvor immediately upon notification of a marine casualty. Unfortunately, once oil enters the water, it is a losing battle since, even with the latest technology, typically OSROs cannot clean-up more than 10 to 25% of the spilled oil.

Beaver There is the relatively new upswing in the use of LNG for fuel aboard ferry boats and cargo vessels in the marine transportation industry. It will interesting to see how the salvage industry responds to this.

Hankins The difference between the salvor and other responders is an important one. The salvor's primary goal in the environmental response part of the salvage triad (protecting people, property, and environment) is nearly always keeping the oil in the ship or offloaded safely to another vessel. If we are effective at that, the OSRO fortunately (from an environmental perspective) becomes unnecessary. So the more oil that is kept in the ship (100% recovery rate), the less will be spilled to the environment (on water oil recovery generally is 10-50% of the amount spilled). If anything, the ship owner should be less concerned. We are more ready to respond now than ever and more in tune with the organizations meant to oversee that response.

We noted with interest a recent article in your ASA magazine on the Response Challenges with non-buoyant oils. Please describe the challenge from the salvor perspective?

Hankins The biggest salvor challenge with these heavier-than-water oils is keeping the oil in the ship. If there is a tear in the bottom of a tank, lighter than water oils will generally stay in the tanks. They simply can't sink through the water pressing on the tank tear. On the other hand, if the oil is heavier-than-water, the oil will sink immediately through the water column, potentially emptying the contents of a tank.

Beaver The ability to respond to non-buoyant oils has been included under the OPA 90 requirements. Just as salvors often have use for subsea intervention techniques such as ROV's, divers and manned submarines during the execution of a particular salvage project, the pollution industry needs to have an awareness of what capabilities exist for the recovery of sinking oils. This is not really a new or challenging issue, but one that does kind of cross the bounds from typical oil cleanup operations

Elliot Bottom line: Whether the oil floats or sinks, the salvor should be the first call to keep the oil inside the ship or to safely lighter the stricken ship to a receiving vessel.

How do you invest to meet this challenge?

Beaver The salvage industry generally carries in house diving capability, or has a well respected and capable sub sea contractor available to tackle the removal of non-buoyant oils. It is doubtful that this wheel needs re-inventing or duplicating at this time, however the experience level of the salvor or sub sea contractor needs to be closely considered.

Hankins Fortunately the problem isn't widespread. As we all know, most ships these days operate using lighter-than-water fuels. The main challenge comes with those tankers that transport heavier type oils and asphalts. The problem is twofold – the water depth and the ability to pump to the surface. Neither problem is particularly complex, just time consuming.

Elliott The salvage industry continues to make advances in both subsea oil detection and recovery. For example, as part of the subsurface effort to locate oil in the wake of the Deepwater Horizon event, T&T Salvage in association with Braveheart Shipping developed a multi-beam echosounder system to detect oil in the water column and on the sea floor. In contrast to the systems used on historical submerged oil response operations, data and imagery is now interpreted in real-time by onboard technicians facilitating the immediate direction of tactical assets to recover submerged oil.

(Continued on page 59)

Helix Oil Skimmer being deployed off the USCGC HEALY.

Oil Under Ice

The U.S. Army Engineer Research and Development Center's Cold Regions Research and Engineering Lab

By Edward Lundquist

How did an urgent requirement to build a road to Alaska end up helping to design submarines and to recover oil spills in the Arctic ice?

The Army Corps of Engineers was faced with a monumental challenge of building a highway to connect the "lower 48" to Alaska during World War II to keep America's northernmost territory secure from invasion. The road crossed hundreds of miles of wilderness, and much of the roadbed sat up permafrost, presenting challenges to America's roadbuilders. So a special research facility was created to better understand the cold environment of extreme latitudes, and later to encompass virtually all the challenges of building and maintaining infrastructure along the roads, waterways and territory where temperatures could make life difficult.

Even today, the U.S. Army's Corps of Engineers (USACE) Engineer Research and Development Center (ERDC) Cold Regions Research and Engineering Laboratory (CRREL) in Hanover, New Hampshire, continues to study the phenomena and effects of low temperatures. Staffed with a world-class team of expert scientists, engineers and technicians the lab continues to develop new ways to successfully and safely operate in the cold.

For the Corps of Engineers, that expertise includes many areas that impact mariners, such as the effects of ice on dams, locks and waterways. The lab also works closely with and for the Navy and Coast Guard to help the sea services better understand and deal with the cold and ice.

"The USACE has a wide range of authorities to do work supporting others and partnering. This extends to the EDRC—and CRREL's—research, which gives us a diverse portfolio of projects ranging across DoD services, to other Federal organizations, industry and academia, all based on our unique expertise and facilities," said CRREL Director Bert Davis, PhD.

In October 1986 the Navy moved the Polar Oceanographic Branch of its Naval Oceanographic Research and Development Activity (now NRL) to CRREL, which effectively consolidated the Navy's and CRREL's sea ice expertise. The Navy disbanded that team after a number of years due to waning interest in the Arctic, which has since resurged.

"Other partnered polar work with the Navy and Coast Guard also has its roots in the 1990s Project Reliance, now Reliance 21, for maintaining the U.S technological edge through an overarching joint planning and coordination process that enables information sharing, coordination of priorities, and support for scientists and engineers across DoD.," Davis said.

Located in Hanover, N.H., next door to Dartmouth College, the lab has impressive specialized research facilities, including 24 low-temperature research cold rooms with a temperature range down to -35 degrees Celsius; the 73,000 sq. ft. Ice Engineering Facility; and the 27,000 sq. ft. Frost Effects Research Facility. CRREL also has a 133-acre permafrost research special purpose ice test facilities near Fairbanks, including a low temperature materials laboratories and a research permafrost tunnel. The facilities create and duplicate environments for testing and scientifically measure and accurately document test results, which can often be something not possible otherwise.

For example, to better understand how ice jams may affect a river, it is possible to build a model, such as the scale model of the jam-prone Cazenovia Creek in West Seneca, NY, built in the lab's facilities, to enable testing of a low-cost solution to ice jam formation.

Recently, CRREL scientists have deployed to Barrow, Alaska, to participate in a field experiments to better understand Arctic Ocean sea ice and snow features using aerial- and ground-based LiDAR (Light Detection and Ranging).

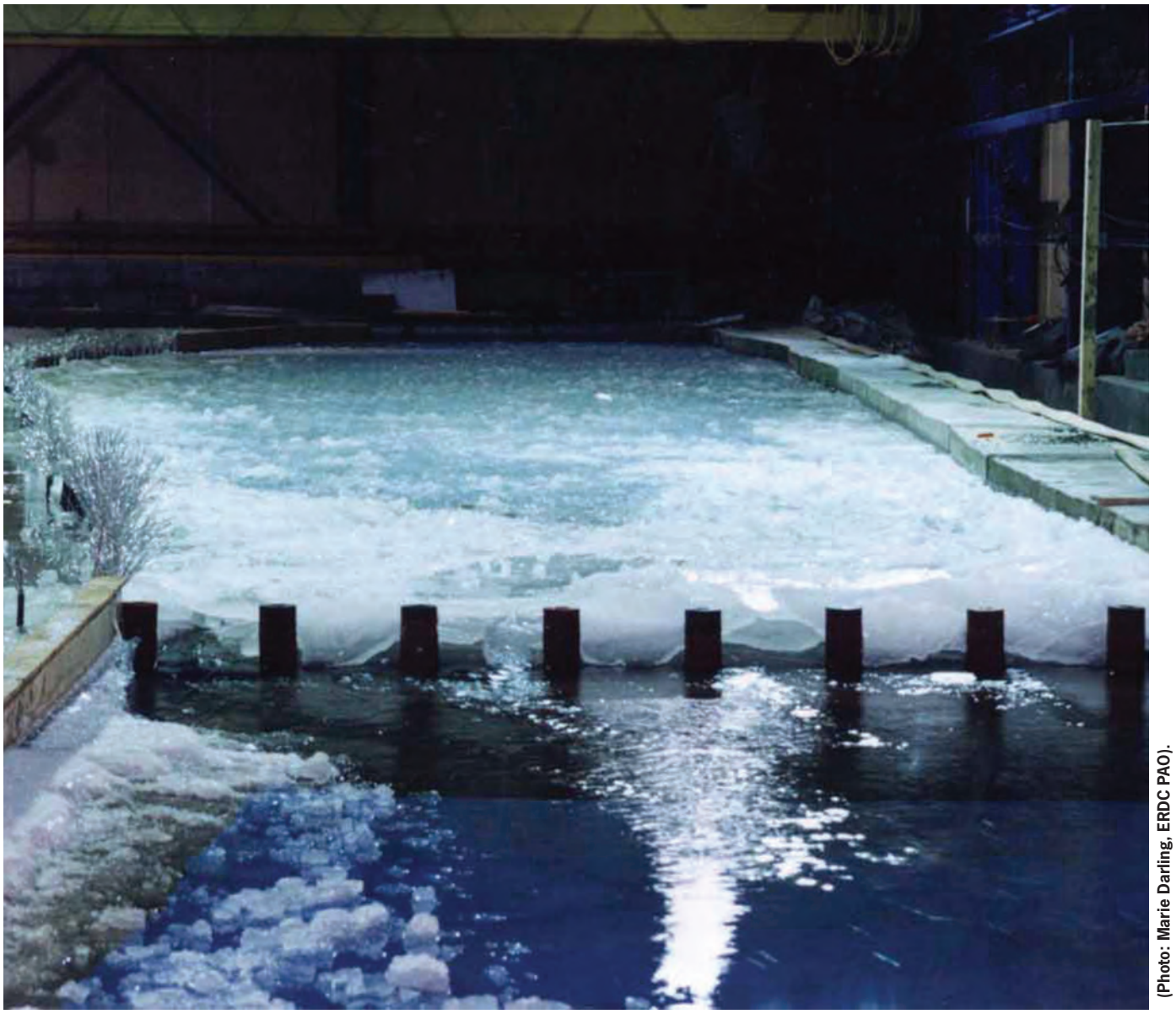
CRREL has been involved significant research on how to respond to oil spills in ice-covered waters. The current conventional methods involve drilling holes to expose oil trapped in or under the ice. This hit-or-miss process is costly and labor-intensive. So CRREL has been at the forefront of investigating new ways to find and mitigate oil spills, including under ice detection and the use of different chemical agents to thicken and collect oil so it can be recovered or burned. In order to eliminate the oil by burning it must be thick enough, so "herding" techniques continue to be improved so the oil can be ignited and burned off.

While the lab's scientists are frequent visitors to the Arctic regions, the lab's engineering facility can replicate a wider variety of conditions than could be found in one place and permit the close observation of the various parameters of the testing.

There are many variables, including the extent, type and thickness of the ice; wind, temperature and sea state, not to mention the type of oil. The use of a controlled environment can help narrow down which "proof of concept" testing needs to be done in actual Arctic waters.

According to Leonard J. Zabilansky, a CRREL research civil engineer, the CRREL engineering facility can duplicate the full spectrum. In fact, testing can be accomplished with the actual type

Cazenovia Creek model shows a low-cost solution to ice jam formation.



(Photo: Marie Darling, ERDC PAO).

(Photo: U.S. Navy)

Researchers from CRREL and the Naval Research Lab conduct comparison testing of different methods to determine ice thickness.

of oil that might be expected, such as North Slope crude.

Researchers from the Woods Hole Oceanographic Institution (WHOI) and the Scottish Association for Marine Science (SAMS) joined with CRREL scientists to evaluate techniques to detect and map oil spills beneath a cover of sea ice. The 2012 studies were sponsored by the Oil Spill Recovery Institute.

"The Woods Hole and Scottish researchers used our GRF to experiment with detection of oil from below the ice cover to optimize the sensor suite strategy for deployment on an autonomous underwater vehicle platform for use as an alternative, or as a complement, to methods such as airborne or surface-based methods that may be impractical in some ice environments or weather conditions," said Zabilansky.

The suite of sensors, which includes a black and white camera, color camera, multi-beam sonar, single beam sonar and lasers, were pulled under the ice by means of a trolley, so the sensors could monitor the sea ice as well as the oil located under the surface ice.

"Evaluating this technology adds another tool to the responders' toolbox for protecting the delicate Arctic environment," said Zabilansky.

Training

CRREL has conducted training for oil recovery teams. Although the annual Alaska Clean Seas (ACS) Advanced Oil Spill Response in Ice course training was focused on Trans-Alaska pipeline system, many of the skills can be applied to maritime incidents.

The training took advantage of CRREL's outdoor test basin, the Geophysical Research Facility, a 60 x 25 x 7 ft. concrete, refrigerated in-ground tank, covered with a retractable roof. The training was made possible—and realistic—by injecting North Slope crude oil into and under a 22-inch-thick layer of ice.

"This was a very comprehensive class – giving all the spill responders an opportunity to experience oil mitigation techniques and tools," said Zabilansky, who provides logistical oversight and technical assistance to ACS. "Training included ice safety; delineating an oil spill under ice; deploying and using grooved drum, brush and mop skimmers; and oil burning. This year (2014), we incorporated ice melting technology using jets and bubblers – a method to melt ice and recover just the oil residue."

"CRREL provides Alaska Clean Seas the opportunity to train the North Slope Spill Response Team members on tactics for response to oil spills in solid ice conditions," said Alaska Clean Seas Planning and Development Manager Lee Majors. "This practical controlled experience with actual oil under ice is invaluable and only obtainable at the CRREL facility."

Ice bridge

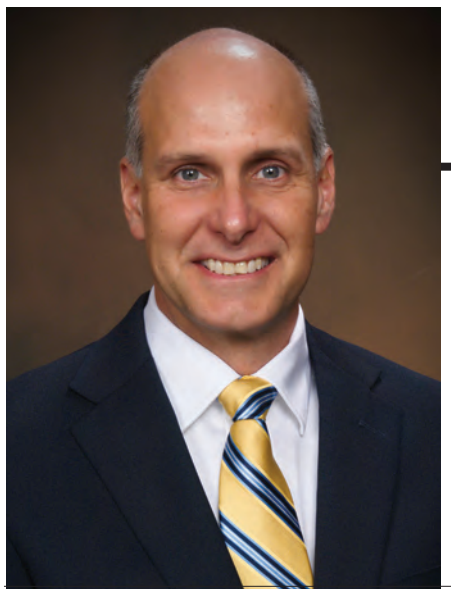
Sometimes, CRREL expertise is needed practically in their backyard. And sometimes the cold weather can be an advantage.

The management of the Missisquoi National Wildlife Refuge (NWR) in Vermont, located on the eastern shore of Lake Champlain at the Canadian border, needed to move some heavy equipment to a remote site on the Missisquoi to protect a Native American cultural site from erosion. They decided to move the construction vehicles and 2,200 ton of rock fill during winter, when the Missisquoi froze over.

They could attempt to barge materials over during the warmer months, but the marshy conditions at the site would have caused significant damage, and been more time consuming. So Zabilansky was called in to make sure the ice was thick enough and the conditions safe for ice crossing prior to and during the project.

By early January, the river ice cover was 15-17 inches thick. Water was pumped over the "bridge section," increasing thickness to 21 inches. Over three days, large trucks with oversized tires safely carried the rock and avoided damaging the habitat at the site.

"They [NWR] were able to do more with the limited budget they had," said Zabilansky. "Because they decided to use the ice bridge to haul the rock, they saved both time and money. They saved approximately 45 minutes per round trip. This was a really nice, successful project taking advantage of the cold temperatures we are having. So, they were able to do more with less."



Jim Elliott, T&T Salvage

Historically, salvors were often not called until the marine casualty was in a critical state. Today, salvors are recognized as leading the effort to prevent oil from entering the water – keeping it inside the ship or safely lightering the oil and fuel to a receiving vessel.

For submerged oil recovery, ASA members also continue to develop new technology to better recover submerged oil. For example, Marine Pollution Control has developed a two-person submarine fitted with an underwater suction nozzle. The submersible unit houses a pilot and one operator in a spherical acrylic cabin to provide visibility in all directions. The system is also capable of hovering over the surface to minimize disturbing the oil impacted area. The American Pollution Control Corporation (AMPOL) developed the "Oil Stop Bottom Oil Recovery System" (OSBORS) submerged oil recovery system, in coordination with Coast Guard Research and Development, a remote controlled track-driven dredging vehicle designed to remove oil that has settled on the bottom. T&T Marine Salvage also developed a shallow-water dredging system for near shore and inland submerged oil recovery operations. These systems dredge the oil and discharge the pollutants into top-side support equipment for separating recovered oil and treating water and solids.

The Arctic: Though energy markets are stalled, invariably exploration and production activity will pick up in the future as prices rebound, even in high-cost, technically challenging environments such as the Arctic. Looking at the Arctic from both a salvage/ops perspective and in terms of oil spill recovery, what do you count as the greatest challenge(s)?

Beaver There needs to be investment made in techniques and equipment that is particularly designed for arctic conditions. Taking the experience from the GoM and transplanting it to the much different and often harsh Arctic will lead to very long learning curve. Taking the experience of others working in theses extreme environments as well as supporting research and design of best in class, fit for purpose salvage and response equipment seems to me to be a much better approach. That being said, probably the biggest challenge to working in the Arctic for salvage and oil spill response is the lack of infrastructure in this vast area. There is a lack of airports, deep water ports, communication facilities and support services that makes any efforts much more difficult. Development of the resource will need to include the development of this infrastructure.

Hankins From a salvors perspective, it's remoteness and ice. Either one is a challenge but combined they make for a nearly impossible response. And again, neither is particularly technologically challenging, it just takes a lot of resources and commitment. One has to go with his entire toolbox.

Looking at the ASA agenda for 2015 and beyond, what is on top?

Hankins The ASA's top three objectives this year remain relatively U.S-centric, but with implications that go well beyond the U.S. borders. Those issues are (1) the insertion of a responder immunity clause in the Oil Pollution Act of 1990; (2) Coordination with Coast Guard and other relevant agencies on the development of a salvage exercise program; and (3) Ensuring the existing salvage regulations are adequately enforced when a vessel is placed at risk through some peril to the ship, its crew, or cargo.

Greek Fleet (still) Rules

By Joseph R. Fonseca

Since ancient times, maritime trade has been a backbone of Greece's economy with shipping playing the dominant role. Today, it is the second largest contributor to the national economy after tourism. It is the country's geography with a coastline almost that of the U.S. (including Alaska) in length together with the mountainous nature of the landmass with 85% of Greek population living within 30 miles of the sea, that has been responsible in creating a strong influence on this industry.

Although the country's shipping experienced regression during the late Roman period, it grew in prominence during the last few centuries of Ottoman rule, when Greek traders dominated the grain trade between southeastern Europe and the West. The emergence of powerful ship-owning families located on the Aegean islands proved an important source of financial strength for the early Modern Greek state, which in turn provided strong support to the shipping industry.

Though Greece is a small nation of 11 million, it has more than 86 ports that play a major part in helping the trade of the country; 19 of these are considered busiest maritime ports for passenger transport; 21 for cargo traffic. Even more remarkable is that with its small population it maintains the largest merchant fleet of ships in the world, which as of December 2014 comprised of 4,894 vessels with 291,735,318 deadweight tonnage (dwt) and 168,922,455 gross tonnage (gt), leaving Japan second, and China third. Specifically, while Greek ship owners have fewer ships than either the Chinese or Japanese ship-owners, the Greek-owned fleet is the largest in the world in gross tonnage.

Most of the ship owners are well-known names in the world of shipping. Spearheading the list of major ship owners is John Angelicoussis (owner of Angelicoussis Shipping Group which included Anangel, Maran Tankers, Maran Gas, etc., with a total of 114 vessels aggregating 20,581,974 dwt and 12,088,789 gt.

According to figures published by Eleftheros Typos, Greeks remain at the top of the pile with regards to tankers (1,217), second in dry bulk cargo ships (1,878) and second in ships transporting Liquefied Natural Gas (LNG). Greek ships supply 60 percent of China's raw material transport needs. It accounts for 4.5% of GDP, employing about 160,000 people (4% of the workforce). Shipping is said to have brought about $186 billion into the Greek economy. The Greek fleet flies a variety of flags, however some Greek shipowners gradually returned to Greece following the changes to the legislative framework governing their operations and the improvement of infrastructure.

Last year, the ruling government intro-

Maran Gas Asclepius, and (inset) John-Angelicoussis, Maran Tankers Management.

Greece maintains the largest merchant fleet of ships in the world, which as of December 2014 comprised of 4,894 vessels with 291,735,318 deadweight tonnage (dwt) and 168,922,455 gross tonnage (gt), leaving Japan second, and China third.

duced a number of changes to Greece's tax laws, including some specific to the shipping industry, such as repealing the law imposing mandatory triple tonnage tax on Greek-flag ships and foreign-flag vessels managed out of Greece, replacing it with the voluntary contribution of double tonnage tax payments for the next four years.

Another measure with a potential impact on the shipping community included the introduction, for the first time in Greece, of Controlled Foreign Companies Rules covering the concept of effective management and criteria for determining it.

The core of the shipping cluster consists of more than 800 ship operators, tightly clustered around the port of Piraeus in Athens, Greece's largest port. The key contributing factors to the cluster's competitiveness are the high degree of firm rivalry fostered by the large number of small companies, a highly favorable tax regime, strong informal networks and institutions for collaboration, as well as the presence of specialized maritime educational institutions.

However, the cluster's greatest weaknesses are the absence of local demand for its services, in contrast to competitors such as China and Japan, as well as weak linkages with related and supporting industries.

The Greek economy suffers from serious competitiveness problems. In fact, Greece stands out as the least competitive economy in the EU. Greece has high labor costs for its level of productivity. Worse still is that its labor productivity, 12% lower than other Western European countries.

As a result the shipbuilding industry is in shambles, with ship owners preferring to place orders with shipyards in China, Korea and Turkey, where labor costs are much lower and minimally regulated. The Hellenic Shipyards and the Eleusis Shipyards were well-known names employing 3,150 and 2,350 workers respectively in 1995. The Hellenic Shipyards at Piraeus on the Gulf of Saronikos was the largest shipbuilding, ship-repairing, and rolling-stock operation in the eastern Mediterranean and one of the largest in Europe. Greece's second major shipbuilding firm, the Eleusis Shipyards (also located on the Gulf of Saronikos near Athens), had a wide range of activities, including shipbuilding, ship repairs and conversions, and industrial construction. Today the country's ship building industry is in a sorry state, on perpetual decline. The area around shipyards including that of Perama and nearby Eleusis and Skaramagas, resemble ghost towns.

Shipyard workers lament, "The downturn has prompted shippers to look elsewhere for cheaper vessels. This is because the shipowners want to save some money, and therefore they go somewhere else. To find jobs, local workers must therefore become migrant workers themselves."

All of which means that as Greek shipping companies rebound, and buy more vessels than anyone else, the yields are not benefitting Greece's job market or, in particular, its shipbuilding economy.

Push Boats: From Turkey to Brazil

The shallow draft market in South America continues to strengthen, powered by orders such as Hidrovias do Brasil S.A. 2013 deal for eight HB Pushboat ASUNCION-PYs, which represents a new generation of powerful Shallow Draft River Push Boat designed specifically for South America inland waterways logistics. Robert Allan Ltd. (RAL) designed and Vienna Model Basin optimized, the total deal for eight push boats is customized for Hidrovias do Brasil S.A., a river iron ore transport subcontractor company for Vale. The boats are designed to meld power with maneuverability in a 69 ton bollard package.

The main concern of the ship operator were shorter river voyage times with sophisticated power management technology, shallow draft with increased deadweight of speed, improved sea keeping ability, increased crew comfort, higher escort force performance, high propulsion technology, greater endurance, low emissions and low fuel consumption. The vessels will be used for inland waterways logistics from Colombia in Brazil to Argentina and/or Uruguay through the Paraguay-Parana waterway. The total distance is over 2500 km, much of it navigating through extremely curvy river sections which make excellent maneuverability a necessity.

An additional crash stop requirement of 2.5 flotilla length proved to be a guiding factor. The flotillas will consist of one push-boat pushing 16 barges, with a total capacity of 40,000 dwt. The boats will be pushed hard, operating 24 hours per day, 11 months per year.

UZMAR worked with Robert Allan Ltd., which conducted extensive CFD analysis to meet demands for maneuverability maximized fuel economy and to comply with the crash stop requirement. As a result, the hull shape, tunnel geometry and propulsive components have been optimized for those specific requirements. This was then verified by a series of model tests conducted at the Vienna Model Basin in Austria.

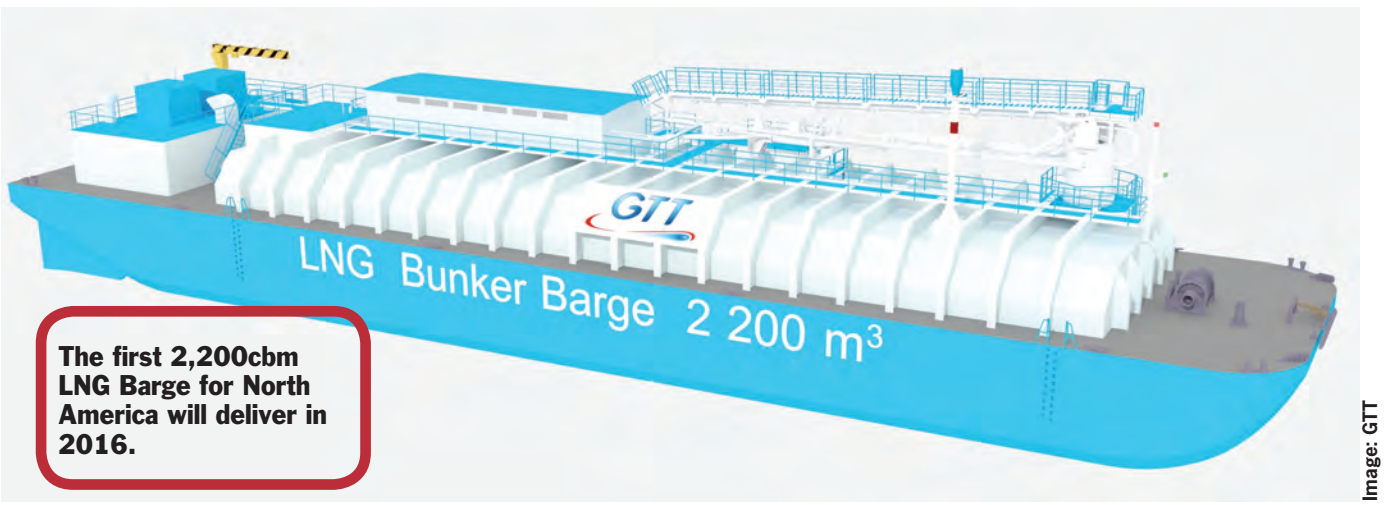
The result of the deep researches created the new generation pushboat which is a 45.6 m length overall, a 16.5 m beam, a 2.1 m draft at the dry season and a 2.4 m draft at the wet season, with a 7200 bHP diesel-electric HFO powered push-boat with azimuth drives and propellers in nozzles configured for shallow water operation. The DE system is an AC variable rpm controlled designed and integrated by approved ABB system integrator Elkon/Imtech with complete ABB components. During the sea trials, maximum bollard pull (69 tons) and speed of 13.2 knots were displayed performed.

UZMAR SDP 4600 Pushbaot is a strong contribution to Hidrovias doBrasil's dedicated strategy of developing a modern and internationally competitive inland waterways logistics.

The diesel electric system is designed and manufactured by Turkey's leading ship electrical engineering and manufacturing company ELKON with ABB power electronics and supervision, which is a member of IMTECH Group. These push boats are propelled by a state-of-the-art diesel-electric propulsion system, with three main diesel generator sets providing 3 x 1,710 ekW of power to 3 x 1,600 kW motors, each driving a Schottel SRP 1215 Z-drive with nozzle modified for shallow draft operation. The major electric components (AFE drives, propulsion motors, generators, etc.) are ABB components, supplied by Elkon. The generator engines are three Wärtsilä 9L20, medium speed diesels, each producing 1,800 bkW at 1,000 rpm. When a low level sailing speed/power is required on board, the first engine starts at full load where the Verified Frequency Drivers separates the power to the propellers evenly. If the power requirement reaches up to 40%, the second engine starts to feed the propellers, and the third engine follows this routine when the power requirement reaches to 70%. This modification is designed to provide high fuel efficiency and longer life circle for the main engines and low CO2, NOx, SOx and PM emissions. These push boats will run on HFO, with the ability to operate on MDO, if needed. Each push boat has a total fuel capacity of 500 cu. m. of HFO and 30 cu. m. of MDO, and a ballast capacity of 400 cu. m. The potable water capacity of 34 cu. m. is supplemented by two onboard flash evaporator units.

Builder:
UZMAR Workboat and Tug Factory
Designer: ..... Robert Allan Ltd.
Operator: ..... Hidrovias do Brazil
Country: ..... Brazil
Flag: ..... Paraguay
Total number of sister
ships completed already: 6
Contract date: 2013
Delivery Date: Q1 2015
Length, oa: 45.6m
Breadth, moulded: 16.5m
Design, draft: 2.1m
Service Speed: ..... 13.2 knots
Bollard Pull: ..... 69 tons
Classification: ..... BV
Navigation area: ..... Inland Waters
Main engine(s): ..... Wärtsilä 9L20
Make: ..... Wärtsilä
Number: 3
Fuel: ..... HFO, with the ability
..... to operate on MDO
Output of each engine: ... 1,800 bkW
..... at 1,000 rpm
Propeller: ..... Schottel SRP
..... 1215 Z-drive
Number: 3
Propulsion: ..... Diesel-electric
..... propulsion system
Propulsion Power: ..... 3 x 1,710 ekW
Complement: 18
Crash Stop Requirement with adopting the Frequency Mode Effect Analyses

LNG Barge: Conrad to Build Historic First



The first 2,200cbm LNG Barge for North America will deliver in 2016.

Image: GTT

WesPac Midstream LLC (WesPac) and its affiliate Clean Marine Energy LLC (CME), announced a construction contract with Conrad Orange Shipyard, Inc., a division of Conrad Shipyard, LLC, to build the first dedicated LNG bunker barge for the marine market in North America. The first 2,200 cu. m. (cbm) barge is expected to be delivered in early 2016 and planned to initially be deployed in Tacoma, Wash., to service shipowner Totem Ocean Trailer Express's Orca class RoRo vessels, in addition to other LNG-powered vessels. Subsequently the barge will be relocated to Jacksonville, Florida to serve TOTE's (parent company to Totem Ocean) newbuild Marlin class container vessels and other LNG-powered vessels in the Port of Jacksonville.

The LNG barge will feature one tank equipped with MARK III Flex cargo containment technology, from the French engineering and technology company GTT (Gaztransport & Technigaz), to be constructed by Conrad Orange Shipyard under GTT license. Bristol Harbor Group, Inc. will be responsible for the vessel's design, with the American Bureau for Shipping (ABS) acting as the classification society.

This initial bunker barge for TOTE is part of the WesPac/CME plan to provide an integrated LNG solution for engine conversion, infrastructure, supply and delivery logistics to the shipping industry. As more U.S. Jones Act shipowners and operators seek to meet stringent 0.1 percent sulfur limits within ECAs by converting to LNG as a cleaner bunker fuel, WesPac/CME plans to exercise its options with Conrad to construct additional LNG fueling barges to serve other North American ports.

Light-Off for Pasha's New ConRo

ConRo vessel M/V Marjorie has attained main engine light off while under final construction at VT Halter Marine, Pascagoula, Miss., signaling that the ship's complex network of systems is complete and functional prior to delivery to Honolulu-based Pasha Hawaii. Sea trials are now anticipated before the end of the month, with vessel delivery to follow in March. "This critical milestone celebrates the culmination of three and a half years of hard work and dedication by the men and women at the VT Halter Marine shipyard and Pasha Hawaii," said George W. Pasha, IV, President and CEO of The Pasha Group.

The addition of the Marjorie C to Pasha's Mainland/Hawaii trade lane represents a long-term investment to the future of serving Hawaii, the company noted, adding that its commitment of more than $200m to the Hawaii trade is also a large success for the Jones Act, exemplifying the growing trend of introducing modern vessels into the U.S. shipping industry and strengthening the economy with domestic maritime jobs.

Image: Pasha

Imabari Invests in Shipbuilding

Japanese Yard to Build World's Largest (20,000 TEU) Containerships

Imabari Shipbuilding Co., Ltd. secured newbuild orders with the cooperation of Marubeni Corporation for eleven 20,000TEU Ultra-Large Container Carriers, when delivered the largest containerships in the world.

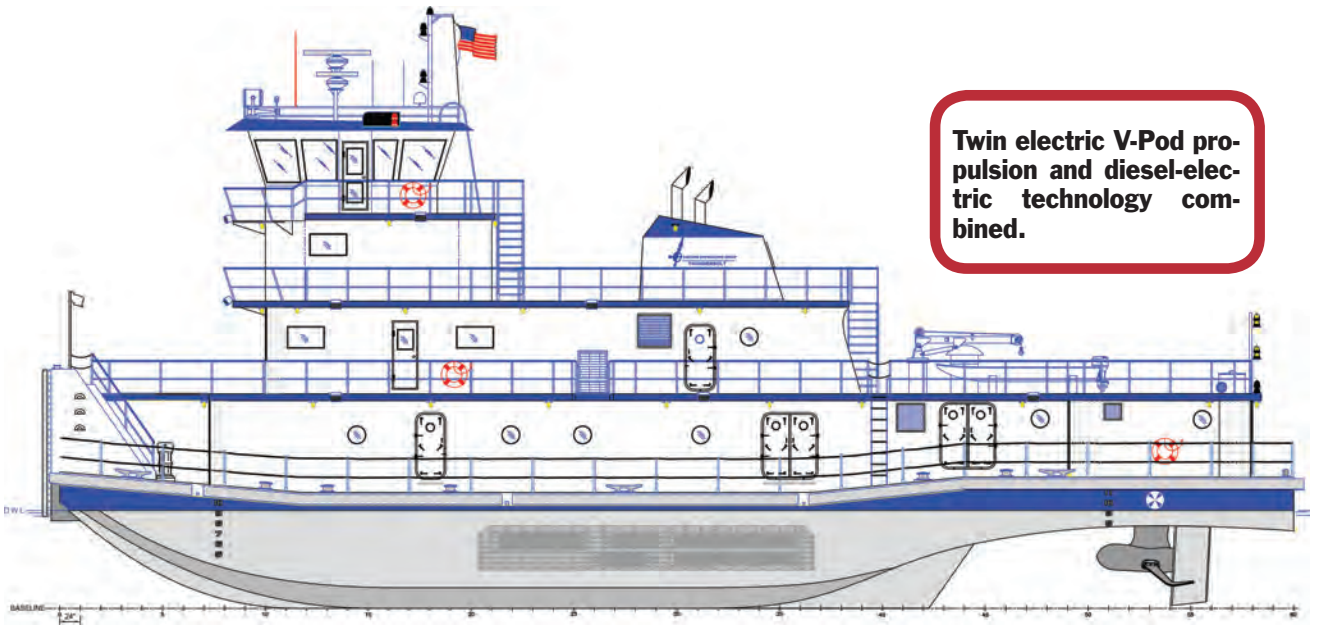
The new ships, the first of which is scheduled to be completed in early 2018, will measure approximately 400m long and 59m wide. Imabari has built more than 200 container carriers, including the 4,800TEU Over-Panamax type in 1995 that was then the largest in the world, as well as the 8,100TEU type in 2008.

In March this year, 14,000TEU type, now the largest in Japan, is scheduled to be completed. Imabari explained it has been developing large size container carriers in response to increasing oceangoing cargo movement globally.

In order to accommodate construction of Ultra-Large newbuilding vessels including recently secured 20,000TEU Mega container ships (about 400m in length and about 59m breadth), Imabari Shipbuilding Co., Ltd. has decided to construct a large newbuilding drydock measuring 600 x 80m on 100,000 sq. m. of reclaimed land located next to its Marugame Headquarters (Marugame City).

A permit has been granted by the Ministry of Land, Infrastructure, Transport and Tourism cor the construction to be completed by the consortium of Rinkai Construction Co., Ltd., Obayashi Corporation and Toyo Construction Co., Ltd. Construction is slated to begin next month and conclude in October 2016.

Imabari said it intends to invest about $331m for the Marugame new drydock including block factory and three units of goriath cranes each having 1,200ton hoisting capacity.



Twin electric V-Pod propulsion and diesel-electric technology combined.

Image courtesy of Eastern Shipbuilding

Thunderbolt

Eastern Delivers Innovative Towboat

Eastern Shipbuilding Group, Inc. introduced its new 120-ft., 4,200-hp Inland Towboat design, Thunderbolt, combining twin electric V-Pod propulsion and diesel-electric technology for what the builder calls its "vision of the future for the U.S. inland waterways."

Eastern said the idea for the Thunderbolt came from a conversation at a trade show. On the rivers, thruster propulsion systems are starting to get noticed and are outperforming conventional nozzle propeller propulsion systems with main/flanking rudder steering. Eastern Shipbuilding Group, Inc. and Verhaar Omega, B.V. began discussions and realized they were driving towards a more refined towboat thruster propulsion system design. Eastern has delivered 19 diesel-electric offshore supply vessels starting in 2010 and 74 inland towing vessels since 2007. The Thunderbolt design joins Eastern's history of building reliable vessels and is now integrating its Tiger Shark Class diesel-electric technology into a refined, environmentally friendly, highly maneuverable Inland Towboat design, the shipbuilder said.

For more than a year Eastern Shipbuilding worked with Gilbert Associates, Inc. developing its new hybrid Thunderbolt diesel electric design. The Thunderbolt has been designed using ABS Class Rules for Building and Classing Steel Vessels for Service on Rivers and Intracoastal Waterways-2014. It is also designed to the Proposed U.S. Coast Guard 46CFR (Sub-Chapter M) Towing Vessel Rules and IEEE 45 2002 Standards.

Thunderbolt is a 120-ft. Inland River Class Towboat with 690VAC diesel-electric and twin azimuthing Verhaar Omega electric V-Pod Propulsion Units. Cummins Mid-South, LLC provided the generator package with three identical diesel-electric power plants, Cummins QSK38-DM. Each engine is rated EPA Tier 3, V-12 Cylinder, 38 Liter, 1,400HP at 1,800RPM Marine Diesel Engine. These three engines provide optimal fuel consumption with 4,200 total installed horsepower. Each engine also powers a Cummins AVK DSG-74 water-cooled generator, which can supply at 990kW, 690 VAC at 1,800 RPM. This system performs with the Power Management System (PMS), provided by Beier Radio, LLC to optimize fuel consumption with superb efficiency without sacrificing power and performance. The IEM Marine, Inc. switchboard automatically starts and closes the appropriate main bus generator breakers with load-sharing controllers. The pilot is free to utilize the automated power management systems as much or as little as the pilot determines, allowing the pilot full control of the entire power management system at all times. The enhanced performance of V-Pod propulsion, diesel-electric with constant speed generator engines offer less vibration and noise along with power management and automation all result in lower operating costs, system redundancy, increased safety, increased crew comfort and less crew fatigue.

Thunderbolt is equipped with twin Verhaar Omega 690VAC electric V-POD units and twin Omega Propulsion AFE/VFD Drives. The twin independent Verhaar Omega V-Pods have 360 degree rotation and can rotate 180 degrees in approximately 14 seconds. In addition for superior maneuverability and precision, the twins V-Pods have VFD-Reversing Induction Motors each at 1,320kW (1,770 HP). The V-Pods are installed from the top, avoiding emergency dry-docking if a unit is damaged. Sewart Supply, Inc. has been the U.S. Representative for Verhaar Omega for over 10 years, providing sales, parts and repair services.

MLP3 AFSB NASSCO Delivers for the Navy

"The MLP is really like the Ford F150 pick-up truck; you can put anything you want in the bed," said Kevin Graney, NASSCO

General Dynamics National Steel & Shipbuilding Co. (NASSCO) christened the USNS Lewis B. Puller (MLP 3 AFSB) in early February in San Diego. USNS Lewis B. Puller, the third vessel of the Mobile Landing Platform (MLP) class, is the first of which to be configured as an Afloat Forward Staging Base (AFSB).

While the Lewis B. Puller is the third in the series, in some respects it has lead ship qualities as it is designated MLP 3 / AFSB, the first to be equipped with a flight deck, a hangar and accommodations for about 250 people.

This variant is designed to conduct mine countermeasure warfare with the Navy, with space available to support special ops.

The third ship's flexibility and affordability comes courtesy of its flight deck, a flight deck which is geared towards helicopters, but can also support as many as four MV22's, according to a recent study of the space. So with its lift capacity, flexibility and price tag, the ship is viewed as a tremendous value for the investment.

According to the builder, the MLP AFSB is capable of supporting missions including counter-piracy operations, maritime security operations, humanitarian aid and disaster relief missions and Marine Corps crisis response.

Martha Puller Downs, daughter of General Puller christens USNS Lewis B. Puller.

(Photo: General Dynamics NASSCO)

"The MLP is really like the Ford F150 pick-up truck; you can put anything you want in the bed; in this case we put a flight deck on it," said Kevin Graney, Vice President and General Manager of NASSCO in an interview with *Maritime Reporter*. "It is a versatile platform, and it's exciting for us because the demand signal looks in our favor. This was a three-ship program a few years ago; we're in the process of negotiating the fourth ship; and this year the Navy put in a fifth ship. We're keeping our fingers crossed on that fifth ship."

Be the Hammer, not the Nail when it comes to

Maritime Cyber Security

By Luke Ritter & John Baskam

Maritime security professionals understand the value of a layered approach to risk management. Cyber security posture continues to develop as a critical component of a maritime security strategy, and cyber security insurance has become a valuable layer of protection that risk managers must consider.

While the insurance industry has decades or more of actuarial data on various kinds of risk (typhoons, tornados, earthquakes, etc.), no such substantive data exists yet for cyber risk.

In June 2014, the Center for Strategic and International Studies [CSIS] cited statistics that should get any risk manager's attention in the maritime industry: at least 3,000 U.S. companies were the victims of some kind of cyber crime last year, and the global cost of this problem is estimated to exceed $400 billion. The bad news is that in reality, these numbers are likely higher, since some of these costs are difficult to measure. The good news, if there is any, is that C-Suite executives and corporate boards are beginning to focus on cyber risk management in a meaningful way. Since the maritime industry is truly a data-driven environment, cyber security has to be part of the risk management equation.

The Three Things

The basic approach to incorporating cyber security insurance into any maritime risk management portfolio has three primary components. These essential elements are:

INFORM When the right questions are asked, and intelligence resources are tailored to a firm's discreet business profile, those resources can expose and illuminate weaknesses and vulnerabilities. Significant capabilities are currently available to risk managers to manage security intelligence through world-class field operators. The best front-end information management solutions will provide firms with the input required to identify and respond to actual global threat activity. When cyber threat responses are tailored by specific intelligence relevant to a particular business, maritime security executives can optimize the impact of their security operations and cyber risk management programs.

ASSESS There are multiple assessment tools and methodologies being offered in the marketplace which can come bundled with a virtually endless combination of deliverables and assessment output. This has caused some confusion with regard to what constitutes an appropriate cyber security assessment. Unfortunately, the current approach to risk assessment often gets reduced to a "check-the-box" exercise. Firms are better served to assess actual versus general risk. Reviews of internal policies, governance, and operations, as well as a gap analysis focused on accepted industry standards and best practices should be included in any assessment. Additionally, it is important that firms evaluate all network endpoints to look for exposures. It is important to include a firm's technology team as a risk assessment partner. Including key stakeholders directly into the assessment process enhances the results. The CISO / CTO, or equivalent, are often armed with the best possible real-time data and informed business cases that are directly relevant to C-Suite executives and other key corporate leaders. Once the entire network is evaluated, expert assessors can determine whether companies are prepared to deal with the specific threats and risks that are likely to impact the firm.

ACT By using assessment output as a risk management work list, firms can work with their insurers to directly manage their specific risk profile and, subsequently, lower their premiums. Risk managers should suggest this kind of collaborative effort to their insurers. Because a world-class assessment process will typically identify actual vulnerabilities, exposures, and potential network problems, this information can also be used to inform an insurance underwriting decision. When a collaborative effort is made to assess vulnerabilities, firms can begin to immediately work with their insurer to take action focused on risk mitigation. Like in other maritime insurance specialties, the cyber liability insurance carrier will demand that both parties work together in this way. Establishing a regular and open dialogue, allows for ideas to be shared, and actively builds on mutual trust.

Manage Risk Before it Manages You

The goal should not be to completely eliminate cyber security risk, because that isn't possible. A realistic objective is to manage risk rather than to eliminate it. This means that cyber risk management initiatives start with leadership. Many firms lack the time and resources to study the profiles, capabilities and motivations of all potential adversaries. But resources are available in the security market to help corporate leaders of any sized organization prepare for disruptive events. By working with experts to understand risk appetite (tolerance for risk), and the corresponding level of preparedness, maritime industry leaders can make informed risk management decisions about cyber security.

In the maritime industry, intellectual property and proprietary data about shippers, carries, commodity types and consignees can truly be a firm's crown jewels – their prized possession that ensures a competitive advantage and anchors their ability to survive disruptive events. So what does it mean in terms of corporate viability when those crown jewels are at risk? There are numerous, recent examples where a single cyber security-related incident proved to be catastrophic.

Insurers need to understand the risk profile of a particular candidate insured in order to inform their underwriting decisions. But how do they predict the unpredictable? Cyber threats are developing and being identified at a very rapid pace. And inherently unpredictable behavior presents a dilemma for most insurance companies as they try to evaluate cyber risk in the maritime industry. Insurers and insureds who place emphasis on cyber security intelligence, and assessment data, are best positioned to collaboratively mitigate risk. Firms that subscribe to this Intelligent Cyber Insurance approach have the greatest potential for success.

Corporate Boards and Chief Executives should be asking the hard questions: If a cyber security breach does occur, is the firm prepared to rapidly remediate and re-constitute business operations? Who will be the lead agent in charge of the various aspects of the response and remediation? Which executive has been assigned to provide timely and accurate information to employees, customers, and to the press? Is the firm prepared for the various legal and regulatory compliance tasks that may result from a breach? And when was the last time that the IT, security, legal, and human resources teams met to plan for contingencies? Cyber security should not be treated as just another Information Technology [IT] challenge in the maritime industry. That approach over-simplifies and under-estimates the threat…and has a high probability of failure. Maritime firms are better served to cultivate a culture of security and resiliency and to counter cyber threats by investing in a layered approach to risk management.

Dress for Success

A "well-dressed" risk manager should be looking to include as many of the following cyber security insurance policy features and benefits into their risk management approach as possible:

General protections: Do you have coverage for loss in profits as a result of negative press? Is the jurisdiction of your policy worldwide, with a provision that claims can be brought outside of the U.S.? Does your policy include coverage for accidental damage or destruction, and administrative mistakes? If your reporting period doesn't extend to 3 years, you should think about re-negotiating your coverage.

Regulatory and Compliance Coverage: Are you covered for expenses related to voluntary customer notifications? Can you claim losses related to exposure of

commercial, corporate and employee confidential information?

Business Interruption Coverage: Does your policy cover privacy liability and losses related to cyber extortion? Can you claim expenses related to crisis event management, and dependent business income lass? Can you get reimbursed for digital asset restoration expenses? Are security breach response costs covered?

Collaborative risk partnership: Are you and your insurance carrier in consistent dialogue over Cyber Liability issues? Is the carrier assisting you in driving the firm's culture towards active cyber security.

Exclusions: Finally, what is truly covered and what is excluded in your policy? Many policies exclude Terrorism, Acts of War, and State-Sponsored Criminal Activity. Does the Cyber policy you currently have or do the policies you are currently considering cover these emerging and destructive risks? Risks driven by a "Lone Wolf" hacker are now a small portion of cyber criminality. Sophisticated, "state-sponsored" cyber attacks have become increasingly more common and devastating to global businesses.

Commercial survival may depend upon the ability to rapidly reconstitute business operations following a major disruptive event. If your insurance broker hasn't already provided you with cyber coverage that facilitates follow-up procedures for discovered threats; access to rapid, post-incident response resources; implementation/integration of monitoring and enterprise forensic tools; and regular analysis of security policies including physical security, internal controls, and data backup, then you may need to reconsider your coverage options.

Be the Hammer

While short-term consequences of a breach are usually fairly obvious, the long-term consequences are not as clear. According to the U.S. House of Representatives, Small Business Sub-Committee on Health and Technology, approximately 60% of small businesses close their doors within half a year of being victimized by cyber crime. Costs associated with finding & fixing vulnerabilities, updating systems, as well as public relations expenses and legal fees, can conspire to destroy previously viable enterprises.

There are four words that no corporate executive wants to hear: "the network is down." Stakes may have never been higher related to the financial and reputational risk tied to cyber security threats. Target's fourth-quarter earnings release in February 2014, revealed that it incurred $61 million in breach-related expenses following their very public cyber problem. After the company received insurance payments, its net expenses for the hacking incident still totaled approximately $17 million. Few companies can afford this type of "shock" loss and must look to the insurance industry in order to transfer some of their risk, and to tap into industry expertise that can provide risk mitigation support.

Maritime professionals will continue to be held accountable by customers, shareholders, and the general public for their security decisions. A comprehensive cyber insurance program can serve as focal-point for closing cyber security gaps, and investing in resiliency. The right underwriting process can lead to assessing, correcting, and even predicting cyber exposures and their potential business impact in the maritime industry. In order to position their firm to be insurable, risk managers must have access to the requisite cyber risk mitigation expertise, be able to identify and understand cyber risk profiles, and be familiar with existing cyber security insurance coverages and exclusions. Deciding how much cyber liability insurance to invest in, prior to experiencing a significant breach, requires informed and inspired leadership. Corporate risk management policies, plans, procedures and governance are incomplete without a consideration for cyber security insurance. Be the hammer, not the nail.

The Author

Luke Ritter (pictured) is Executive Vice President at Ridge Global, a firm affiliated with Ridge Insurance Solutions Company (RISCO). John Baskam is Chief Underwriting Officer at Ridge Insurance Solutions Company (RISCO).

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Terragon: Next-Step in Ship Waste Handling

By Josh Keefe

Terragon Environmental Technologies Inc., a developer of waste-to-resource technology solutions, has entered into a strategic partnership with Green Marine Capital (GMC). Terragon CEO and Co-founder Dr. Panayotis Tsantrizos said the partnership will allow the company to commercialize its products in the marine sector. Terragon's first commercially available product, the Micro Auto Gasification System (MAGS), is designed to convert each kilogram of organic waste generated by a habitat into 2kWh of thermal energy by using gasification technology the company says is clean and simple to operate. The technology was the winner of a recent award for Technical Innovation in North America. Currently, MAGS is commercially available in multiple market sectors, and has been used by the military and isolated communities in the Canadian Arctic. A second product, the Wastewater Electrochemical Treatment Technology (WETT), converts sewage into clean water. Tsantrizos said that WETT is currently in the field evaluation stage of development, but expressed hope that WETT will be commercially available in 2016. The company said the combination of the two technologies will be able to eliminate waste discharge from any habitat while reducing energy and water needs.

Sverre Prytz, Managing Director of Oslo and Singapore-based Green Marine Capital, noted that regulatory changes in 2013 increased the importance of waste management technology onboard commercial vessels. "[Terragon's] unique onsite waste-to-resource solution coupled with a growing market makes this a compelling opportunity," said Prytz.

"Terragon's technologies are not designed for the reduction/elimination of waste streams, but for their use to generate resources within any habitat," said Tsantrizos. "As such, they have to be very clean, safe, simple and have exceptional resource recovery efficiency. MAGs meets all land based environmental regulations." Tsantrizos expressed hope that the IMO would create a new class of equipment for the technology his company is developing; a class that would have stricter performance requirements, but also be allowed to operate in port. Initial funding for the development of Terragon's waste-to-resource technology came from the U.S. and Canadian Navy and from Sustainable Development Technology Canada – a foundation created by the Canadian government.

www.terragon.net

> An important challenge for all companies offering technologies that enable a cleaner and more efficient ship, is the separation between the owner and the operator of the ship, since in some cases, the owner does not currently have a way to recover the cost of building a better ship through reduced operating costs.
>
> **Dr. PanayotisTsantrizos, CEO of Terragon**

The company said the combination of the two technologies **(MAGS & WETT)** will be able to eliminate waste discharge from any habitat while reducing energy and water needs.

Left:
MAGS Cutaway

Right:
V7 HMI
Loading Drums

Photo: Omega

Omega USBH Output Pressure Transducer

Omega's high speed USBH output pressure transducer is a transducer with an all stainless steel construction, available in gage, sealed gage and absolute pressure models. The PX51 high speed USBH Series connects directly to your computer. Free downloadable PC software takes the data from the transducer directly to the digital domain, turning a laptop or Windows tablet (with USB connection) into a virtual meter, chart recorder or data logger. Also included are .NET APIs, and a command set for command-line access. A 2 m (6') USB cable is standard.

omega.com

Photo: Blue Sky Network

Blue Sky Updates SkyRouter Web Portal

Blue Sky Network (BSN) announced upgrades to SkyRouter's extensive Alert Notification system. SkyRouter is Blue Sky Network's cloud-based web portal and mapping solution, which communicates with remote devices over the Iridium Satellite Network. It provides a secure interface for tracking, managing and communicating with globally dispersed assets in real-time. The new Alerting system empowers fleet managers by delivering customized, pertinent asset information directly to smartphones and tablets.

www.blueskynetwork.com

Photo: MetalLube

New Biodegradable Steel Wire Rope Lubricants

METALUBE launched Rope-Tek WRD, a new range of biodegradable lubricants specifically designed to protect steel wire ropes. According to the manufacturer, each product is formulated from high-performance base oils and thickeners, and contains an advanced additive system that minimizes friction and wear, delivering corrosion protection.

www.metalubeinc.com

Photo: Wärtsilä

Scrubbers for Two Stena Line Ferries

Stena Transit and Stena Transporter, two Ro-Ro ferries owned and operated by Stena Line, are to be retrofitted with Wärtsilä in-line closed-loop scrubber systems in Q4 2015 and Q1 2016. The scrubber systems will enable the ferries to comply with the regulations covering SOx emissions while running on HFO, as the operating routes of these two ferries fall within the North Sea's SECA.

www.wartsila.com

Photo: Navtor

Odfjell Implements e-Navigation

Odfjell will roll out NAVTOR e-navigation solutions throughout its fleet, a move that aims to increase operational efficiency while reducing the number of man-hours spent on administration across the ship owner's 50 deep-sea vessels. The 40,000 dwt Bow Sky is the first ship to adopt NAVTOR's AVCS service, with a further roll out planned throughout Q1 and Q2 2015.

www.navtor.com

Ecochlor BWTS Chosen for Bulkers

Times Navigation, Inc. has selected Ecochlor, Inc. to provide ballast water treatment systems (BWTS) for installation on a fleet of eight new CROWN63 (63,500 DWT) ultra-max bulk carriers that will be constructed at SINOPACIFIC Shipbuilding Group.

www.ecochlor.com

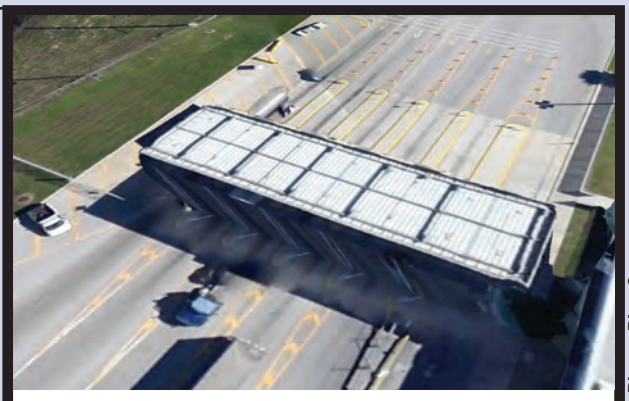


Photo: PlateSmart

PlateSmart

Port Tampa Bay is Florida's largest maritime port and the 16th largest in the U.S. and it recently implemented PlateSmart's ARES enterprise license plate recognition-based video analytics system to enhance security. Overseen by the Tampa Port Authority, the port handles both commercial and passenger traffic on a daily basis. In addition to being a major hub of the shipping industry with several million tons of cargo are shipped in and out of the port in any given year, the port is a departure point for several cruise lines, and also runs and maintains its own ship repair facilities. Port Tampa Bay requires the ability to track the volume of traffic entering and exiting the port and understand what times of the year see the heaviest traffic. It also needs complete documentation of each instance where a vehicle enters or exits the property for forensic purposes.

Because Port Tampa Bay is effectively a U.S. border, the Port Authority maintains a close collaboration with local law enforcement. Port personnel need to be able to tell police whether or not a suspect vehicle has entered port property and how long it stayed there, and they also count on law enforcement to provide them with background checks on entering vehicles when necessary.

PlateSmart said the Tampa Port Authority was not able to fulfill any of these needs reliably prior to installing the camera systems. PlateSmart's ARES Enterprise Video Analytics System was determined to improve the port's security processes by automatically scanning and documenting the license plates of all vehicles entering the facility, thus automatically providing a complete and accurate count of vehicles entering the property. It also provides a complete record of each vehicle entry, complete with location, date- and time-stamp and full-color image of the plate as well as a larger image of the vehicle itself. Any information law enforcement needs on vehicles entering port property is available, and the port has complete documentation to provide for background checks. Future expansions of the system would enable even more complete coverage, including the ability to know how long a vehicle remained on the premises and when it left. Also, the product architecture enables the port to implement future enhancements such as facial capture and thermal imaging capture. PlateSmart installed five Axis megapixel IP dome cameras at each of the five incoming traffic lanes at Port Tampa Bay's entry gate. Expansion plans include the installation of cameras at the exit gate as well.

www.platesmart.com


Exova

Ure


Crowley

Left to right: 2014-2015 Thomas B. Crowley, Sr. Scholarship Recipients Callie Hamilton, Joshua Banks, Irah Dizon and Jason Cisneros.


Corvus

Hauso


Irish Continental Group

Ledwidge

Exova Names GM for O&G Labs
Exova has appointed Campbell Ure as general manager of its Edinburgh and new Aberdeen laboratories.

Newport News Names Hogan VP
Rob Hogan was named VP of manufacturing at Huntington Ingalls Industries' Newport News Shipbuilding division. Hogan will be responsible for manufacturing and manufacturing planning in support of all shipbuilding programs, assuming his new role February 23 following a transition into the job with the help of Becky Stewart, who will retire from the position March 1.

Victoria Shipyards' Barker to Retire
Seaspan's vice president and general manager of Victoria Shipyards Co. Ltd., Malcolm Barker, will retire Spring 2015, following more than 21 years with the company. Succeeding Barker will be Joe O'Rourke who has joined Victoria Shipyards as its new vice president and general manager, Seaspan announced.

Crowley Scholarships
Crowley Maritime Corp. has awarded Thomas B. Crowley, Sr. Memorial Scholarships to four students at the University of Washington's (UW) Michael G. Foster School of Business. The students, Jason Cisneros, Callie Hamilton, Irah Dizon and Joshua Banks, were chosen to receive the $2,500 scholarships for the 2014-2015 academic year based on their demonstrated financial need, community involvement and leadership skills.

Corvus Energy Names Hauso EVP
Corvus Energy has appointed Halvard "Hal" Hauso as executive vice president of sales and marketing.

WCI Honors Senators Alexander and Vitter
The Waterways Council, Inc. (WCI) recognized Senator Lamar Alexander (R-Tenn.) and Senator David Vitter (R-La.) for their "steadfast championship of the inland waterways" at its 14th Annual Leadership Service Awards.

Hooker, Marschner Join CWind
CWind has appointed two new sales managers, Ben Hooker in the U.K. and Stefan Marschner in Germany.

Ledwidge Named CFO of Irish Continental Group
David Ledwidge has been appointed to chief financial officer at Irish Continental Group Plc (ICG). Ledwidge has held various financial positions within the group, first as group risk accountant followed by his appointment as Irish ferries financial controller, and in 2013 was appointed Irish ferries finance director.

Keith Named VP at Tesla Offshore
Tesla Offshore LLC has promoted Matt Keith to vice president, geoscience manager and an officer with the company,.

Suarez Named VP at Voith Turbo
Javier Suarez will be Voith Turbo's new vice president Americas for the power, oil and gas division's marine group, based at the division's regional headquarters in Houston. Suarez will also be a member of the global Voith Marine management team. His experience includes four years at Voith Turbo as sales area manager for Voith Schneider Propellers in Germany.

Appointments at Moran Iron Works
Moran Iron Works announced its latest staff promotions, appointments and credential advancements, naming William (Bill) Halstead as project operations manager, Thomas McNamara as director of human resources, James Woodworth as manufacturing process manager and Kirk R. Gibson as account manager for industrial fabrication.

RSC Bio Solutions Adds VP
Asuama Yeboah-Amankwah has been appointed as RSC Bio Solutions' new vice president of operations. Yeboah-Amankwah will be responsible for leading operational activities including logistics, warehousing, blending partnerships, purchasing and order management.

Tero Marine Names Staubo VP
Erik Sarmento Staubo has been promoted to vice president of sales at Norwegian software company Tero Marine, assuming the role from February 1.

CEO Named at Global Maritime Group
Created by merging four companies belonging to HitecVision, Global Maritime Group is a worldwide enterprise with its head office in Stavanger, has appointed Peder Sortland as its first CEO.

Murray to Lead Thuraya's Product Management
Thuraya Telecommunications has appointed Keith Murray as Maritime Product Manager, based in Dubai.

Brindley Joins Tentec's Sales Team
Tentec Ltd. announced the appointment of Andrew Brindley to its internal sales team.

Sætre Appointed President & CEO of Statoil
Statoil's board of directors has appointed Eldar Sætre as the company's new president and CEO. Sætre, who has 35 years' experience from Statoil and the oil and gas industry, has been acting as president and CEO since October, and assumes the role with immediate effect. He has been a member of the Corporate executive committee since 2003. He started as CFO, and later became executive vice president for the business area Marketing, processing and renewable energy (MPR).

Sheen Named ICG MD
Andrew Sheen has been appointed by the Irish Continental Group (ICG) to the position of Managing Director of its Irish Ferries division, assuming the role with effect from the beginning of April.

Volvo Penta Marketing Director
Previously director of marine sales for Latin America, Marcelo Puscar has been appointed as director of marketing at Volvo Penta of the Americas.

JRC, Alphatron Open in Houston
JRC and Alphatron Marine will open a 7,500-square-foot industrial building in Houston to offer sales and support, marketing, training, technical support, onboard service (repair and inspection) and distributor management for the Americas. Alphatron Marine USA will be headed by Vittorio Pepe and Scott Bilbe, who have worked with JRC and Alphatron Marine for over a decade.

MHI Consolidates R&D Facilities
Mitsubishi Heavy Industries, Ltd. will reorganize its research and development structure, creating a new R&D Center in Kobe consolidating the five existing centers. Yoji Kawamoto, currently Deputy Head of the Technology & Innovation Headquarters (Executive Officer), will concurrently serve as General Manager of the new center.

Atlantic Offshore Rescue Appoints UK MD
Atlantic Offshore Rescue has appointed Matthew Gordon as managing director for its U.K. division to lead the organization from its Aberdeen base, replacing John Bryce, who is retiring but will continue to be involved in Atlantic Offshore Rescue in a consultancy capacity.

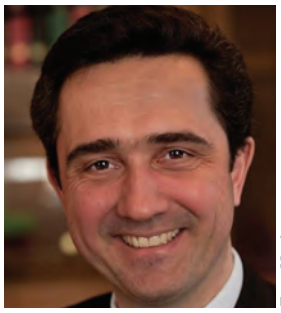
Rolls-Royce Middle East Subsidiary
Rolls-Royce has set up MTU Middle East as a new regional sales and service subsidiary with head office in Dubai to support distributors and business partners of MTU, MTU Onsite Energy and Bergen Engines in 21 countries in the Middle East and North Africa.


Tesla Offshore

Keith


Voith Turbo

Suarez


Tero Marine

Staubo


Global Maritime

Sortland


Thuraya

Murray


Stratoil

Saetre


ICG

Sheen


Volvo Penta

Puscar


Piloting the fastest speedboat in HK

From left to right: Johann Geldenhuis and Kim Junge Andersen standing outside Hempel's first factory in Africa. (Photo: Hempel)

Hempel Opens Factory in Africa

Hempel has opened its first factory in Africa, its 26th worldwide, to manufacture coatings for the marine as well as decorative and protective industries to serve customers in Sub-Saharan Africa. Hempel acquired its South African toll manufacturer, The Coatings Manufacturing Company (TCMC). Since 2011, Hempel South Africa has partnered with TCMC, which is located close to Johannesburg, to better serve customers in the region; the partnership covered the HEMPATEX and HEMPALIN range of products.

100 Years for ZF

2015 marks the 100th anniversary of the foundation of ZF Friedrichshafen AG, founded in 1915, and through a 100-year history, the company has developed into a leading technology company in driveline and chassis technology with a global network of 71,600 employees at 122 locations worldwide.

Raytheon Anschütz Opens Panama Service Center

Raytheon Anschütz established its new subsidiary Raytheon Anschuetz Panama, S. de R.L., in Panama City, positioned as the regional customer support and service coordination center, including service training capabilities and a large spare parts depot for Panama, Middle and South America and the Caribbean. Raytheon Anschuetz Panama will be led by Kim Topp.

SENER's FORAN Celebrates 50

With 50 years of active service, FORAN is the longest standing CAD/CAM/CAE software on the market and a technological asset for the engineering and technology group SENER, which has placed its trust in this project throughout its history as a hallmark of its identity. To commemorate this anniversary, SENER will host an event in Spain with the presence of FORAN customers worldwide.

FORAN, an acronym of FORmas ANalíticas (ANalytic FORms), is a complete CAD software for the design, construction and engineering of all kinds of ships and marine units. FORAN allows for the efficient creation of a complete and detail 3D virtual model of the vessel, from which it is possible to automatically obtain all the information needed for its manufacture and assembly. In addition, this 3D model can be reused as a data source for other tools, such as Product Lifecycle Management (PLM), procurement management or planning applications.

Currently, FORAN is used in 30 countries around the world.

MAN, CSIC Extend Two-stroke Agreement

MAN Diesel & Turbo renewed its contract with Chinese two-stroke licensee, China Shipbuilding Industry Corp. (CSIC). Signed at a ceremony in Beijing on February 3, 2015, the agreement runs for the next 10 years and covers the production of low-speed engines at CSIC affiliates: Dalian Marine Diesel Co., Ltd (DMD), Yichang Marine Diesel Engine Co., Ltd (YMD), Qingdao Haixi Marine Diesel Co., Ltd (QMD).

DA-Desk Names New MD

Hans-Christian Mordhorst has been promoted to Managing Director of DA-Desk, assuming the role February 10, 2015.

Schottel Opens Colombia Subsidiary

Schottel has opened a new subsidiary in Cartagena de Indias, Colombia. Serving as managing director of Schottel de Colombia is Julio Carrasquilla Martínez who previously worked as a sales agent for Schottel do Brasil.

Obituary

Captain George Backwell 1937-2015

Captain George Backwell was born in England on August 11, 1937, an Englishman, a mariner, a valued contributor to MarineLink.com, MaritimePropulsion.com and *Maritime Reporter & Engineering News*. Backwell passed away January 17, 2015 following a short bout with lung cancer.

Backwell lived in Macau since August 1981 until October 2004, and during his time in Macau, Captain Backwell was a senior captain of the Far East Jetfoil from the 1980s to the 1990s. After his retirement, he served as a project manager of the fledging Anglican Missionary Area of Macao, and played a key role in putting the physical infrastructure of the Missionary Area in place.

George was was a true friend to all: the Filipino community, newcomers, tourists, and old-timers. He was there for all in need, and those closest to him knew him as honest, generous, tenacious and compassionate.

He moved to Thailand (Hua Hin) with his wife in 2004, spending quality beach time with his golden retriever Leo and his wife Miko.

Maritime Simulation "A-to-Z"

(Continued from page 38)

technologies will begin to make their mark … we have been very active researching projects in these areas and will have product releases during 2015-2016 in these domains," he said.

In addition he said that the area of automated assessments will grow exponentially, as more sophisticated algorithms for instructors to create assessment parameters and have the systems support their work in assessing risks and risk zones during live missions is a growing area.

"We are already supporting a large amount of automated assessment guidance provision to instructors," Rewari said. "For example, our systems have the ability to switch in and out different sets of operating parameters for different oil company policies, different regional rules and regulations etc., and so to be able to take a bridge team and put them into an exercise where they are automatically assessed against the parameters applicable for offshore operations for oil company 'A' in region 'B'. We see this as a big growth area in the industrial and offshore simulation space."

"The tools available in full mission environments to further improve the level of realism is another area we see considerable advanced being made in the coming years. Motion bases are becoming more powerful and more affordable, and the introduction of 6-DOF motion into simulators on a wider scale will afford a new level of realism and functionality.

Simulation for MOL Synergy

In late October 2014, MOL Synergy inaugurated one of India's largest Maritime Training Centers in Chennai, India, a training center equipped with a complete range of maritime simulators from ARI including full mission navigation, engine room operations and cargo handling simulators among others.

The Full Mission Ship Maneuvering Simulator is characterized by a 'near-real' level of visualization over a 240 degrees field of view. The visual scenario is made up of a large array of 29 channels of display, that provide a fully synchronized continuous display of the horizon, both from the bridge center and from the bridge wing.

The simulator is equipped with a 'bridge wing' system that adds a new dimension of realism to ship maneuvering training for masters, pilots and other personnel, as the trainee can 'step into' the bridge wing and get a closer look at the ship side and berth for mooring exercises or to observe buoys at close quarters during channel transit.

- **The Full Mission Engine Room Simulator** is a comprehensive immersive simulation of an engine room onboard a merchant vessel. The system comprises an engine control room with associated systems and subsystems under control from this space, a full scale simulated model of a typical switchboard for power management and distribution, a switchboard for handling emergency power supply, a complete mimic pipeline system of machinery spaces, and an independent station for local or emergency control of main engines and auxiliaries.
- **The Full Mission Liquid Cargo Handling Simulator** comprises digital operating and monitoring controls displayed on screens embedded in a full size Cargo Control Console (CCR).

NUSI Offshore Training Institute

ARI Simulation unveiled an advanced offshore training simulation suite at the NUSI Offshore Training Institute (NOTI) in an inauguration event presided over by E. Mitropoulos, former Secretary General of the IMO. According to ARI it includes one of the world's largest visual 360 degree offshore vessel bridge simulators, India's first ROV simulator, a full mission offshore vessel engine simulator, an offshore crane simulator, a DP-2 bridge simulator and an eight-station multifunctional DP, ship handling and oilfield navigation classroom. NUSI Chairman Nand Hiranandani called the facility "the missing link in training for Indian seafarers working in the offshore sector today."

Virtual Crane Simulator

A new Virtual Crane Simulator was unveiled at Korea Port Training Institute (KPTI), Busan in early 2014. Delivered by ARI Simulation, the virtual crane simulator is equipped with a motion platform based on six degrees of freedom and is capable of operating multi crane models including quay crane, rubber tyred gantry & rail mounted gantry.

This full mission crane simulator is installed with five visual channels, fully enclosed replica cabin and a motion platform. It simulates a real crane cabin with controls accessible on either side of the operator's chair, an out of cabin view and a microphone for communication. The installation also includes four sets of desktop based configurations, each with two visual channels.

The simulator was customized to include the virtual world of the Busan Port, quad lift operation and tandem lift operation of the QC crane to give a 360-degree learning experience to the crane operators. **Another special feature includes head movement tracking via Kinect sensor** which rotates the visual of the simulation in the direction of the movement of the operator's head. The visual system is completely integrated with the simulation scenario, motion, sound system and crane controls and thus provides the necessary depth in the visual perspective.

ARI's 240 Degree Full Mission Bridge Simulator

Virtual Crane Simulator

BUYER'S DIRECTORY

This directory section is an editorial feature published in every issue for the convenience of the readers of MARITIME REPORTER. A quick-reference readers' guide, it includes the names and addresses of the world's leading manufacturers and suppliers of all types of marine machinery, equipment, supplies and services. A listing is provided, at no cost for one year in all issues, only to companies with continuing advertising programs in this publication, whether an advertisement appears in every issue or not. Because it is an editorial service, unpaid and not part of the advertisers contract, MR assumes no responsibility for errors. If you are interested in having your company listed in this Buyer's Directory Section, contact Mark O'Malley at momalley@marinelink.com

ANCHORS & CHAINS

DCL Mooring and Rigging, 4400 North Galvez Street, New Orleans, LA , USA , tel:504 941-4116, fax:504 947-8557, codys@dcl-usa.com contact: Cody Schnuriger, www.dcl-usa.com

ANTI-CONDENSATION COATINGS

Mascoat Products, 4310 Campbell Rd., Houston, TX , USA , tel:(713) 465-0304, fax:(713) 465-0302, wconner@mascoat.com

AUTOMATIC IDENTIFICATION SYSTEM

Saab TransponderTech AB, SE-589 41 Linkoping , tel:46 13 180000, fax:46 13 182377, Info.transpondertech@saabgroup.com

COATINGS/ CORROSION CONTROL/ PAINT

Hempel A/S, Lundtoftegårdsvej 91 2800 Kgs. Lyngby , tel:45 4593 3800, fax:45 4588 5518, marine@hempel.com , www.hempel.com

Tri-State Coating and Machine Co. Inc., 5610 McComas Road, PO Box 296, Salt Rock, WV V4W 3S8, USA , tel:1-800-477-4460, fax:304-736-7773, brichmond@tscminc.com contact: Beverly Richmond, www.tscminc.com

COMMUNICATIONS

David Clark Company (Wireless Headset Communication Systems), 360 Franklin Street, Worcester, MA 77060, USA , tel:(800) 298-6235 , www.davidclarkcompany.com/marine

CORDAGE

Helkama Bica Oy, Lakimiehenkatu 4, KAARINA FI-20780, Finland , tel:+358-2-410 8700, sales@helkamabica.fi

FILTERS/FILTER SYSTEMS

UT 99 AG Oil Mist Separators, Schaubenstrasse 5 CH-8450 Andelfingen , Switzerland , tel:+41 52 397 11 99, fax:+41 52 397 11 90, info@ut99.ch , www.ut99.ch/en

INSURANCE SERVICES

WQIS (Water Quality Insurance Syndicate), 60 Broad Street 33rd Floor, New York, NY 18974, USA , tel:1-800-736-5750, fax:212-292-8716

LIFESAVING EQUIPMENT

CM HAMMAR AB, CM Hammar AB August Barks Gata 15 421 32 Västra, Frölunda, Sweden , tel:+46 31 70965 50, fax:+46 31 497023, info@cmhammar.com , www.cmhammar.com

MARINE TRANSPORTATION

Central Boat Rentals, Inc., P.O. Box 2545, Morgan City, LA , USA , tel:985-384-8200, fax:985-384-8455, earl@centralboat.com or gary@centralboat.com

MECHANICALLY ATTACHED FITTINGS (MAFS)

Viega, 100 N. Broadway 6th Floor, Wichita, KS , USA , tel:904-315-3899, fax:888-782-6188, paul.switzer@viega.us contact: Paul Switzer, www.viega.us

Viega, 100 N. Broadway 6th Floor, Wichita, KS 77042, USA , tel:904-315-3899, fax:888-782-6188, paul.switzer@viega.us contact: Paul Switzer, www.viega.us

Viega, 100 N. Broadway, 6th Floor, Wichita, KS V6A 1E1, USA , tel:904-315-3899, fax:888-782-6188, paul.switzer@viega.us contact: Paul Switzer, www.viega.us

MILITARY PATROL CRAFT MANUFACTURERS

Brunswick Commercial & Government Products, 420 Megan Z Avenue, Edgwater, FL 80204, USA , tel:(386) 423-2900, kelsey.nemeth@whaler.com , www.brunswickcgp.com

MOORING PRODUCTS AND SYSTEMS

DCL Mooring and Rigging, 4400 North Galvez Street, New Orleans, LA , tel:504 944-3366, fax:504 947 8557, codys@dci-usa.com

DCL Mooring and Rigging, 4400 North Galvez Street, New Orleans, LA , tel:504 944-3366, fax:504 947 8557, codys@dci-usa.com

NAVAL ARCHITECTS, MARINE ENGINEERS

Aveva Solutions Ltd, High Cross, Madingley Rd, Cambridge CB3 0HB, UK , tel:Tel +44 1223 556655 , www.aveva.com

Bristol Harbor Group, Inc., 99 Poppasquash Road Unit H, Bristol, RI 85714, USA , tel:(401) 253-4318, design@bristolharborgroup.com

Brunswick Commercial & Government Products, 420 Megan Z Avenue, Edgwater, FL 80204, USA , tel:(386) 423-2900, kelsey.nemeth@whaler.com

NAVAL ARCHITECTS, MARINE ENGINEERS & SURVEYORS

The Shearer Group, Inc., 3101 NASA Parkway Suite I, Seabrook, TX , USA , tel:(281) 532-2080, info@shearer-group.com , www.shearer-group.com

PRESS FITTINGS

Viega, 100 N. Broadway 6th Floor, Wichita, KS , USA , tel:904-315-3899, fax:888-782-6188, paul.switzer@viega.us contact: Paul Switzer, www.viega.us

Viega, 100 N. Broadway 6th Floor, Wichita, KS , USA , tel:904-315-3899, fax:888-782-6188, paul.switzer@viega.us contact: Paul Switzer, www.viega.us

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SEA AND AIR FREIGHT

Amerijet International, Inc., 3401-A NW 72nd Ave., Miami, FL 07001-0030, USA , tel:844-859-2016, sales@amerijet.com , www.amerijet.com

SHIPBUILDING-REPAIRS, MAINTENANCE, DRYDOCKING

Chesapeake Shipbuilding, Corp., 710 Fitzwater Street, Salisbury, MD , USA , tel:(203) 453-6800, fax:(203) 453-1877, carter.robertson@americancruiselines.com contact: Charles Robertson

Chesapeake Shipbuilding, Corp., 710 Fitzwater Street, Salisbury, MD , USA , tel:(203) 453-6800, fax:(203) 453-1877, cbrobertson@americancruiselines.com contact: Charles Robertson, www.chesapeakeshipbuilding.com

SHIPPING CARGO

Amerijet International, Inc., 3401-A NW 72nd Ave., Miami, FL 07001-0030, USA , tel:844-859-2016, sales@amerijet.com

SHIPYARDS

Bayonne Drydock & Repair Corp., Military Ocean Terminal Dock Yard, PO Box 240, Bayonne, NJ 07002 , USA , tel:201-823-9295, fax:201-823-9298, ksullivan@bayonnedrydock.com

SOUND DAMPING INSULATION COATINGS

Mascoat Products, 4310 Campbell Rd., Houston, TX , USA , tel:(713) 465-0304, fax:(713) 465-0302, wconner@mascoat.com

STEEL, PIPE, ALUMINUM & ALLOY SURPLUS - PURCHASING

Texas Iron & Metal, 865 Lockwood Drive, Houston, TX 36652, USA , tel:713-672-7595, fax:713-672-0653, maxr@texasironandmetal.com contact: Max Reichenthal, www.texasironandmetal.com

STEEL, PIPE, ALUMINUM & ALLOYS

Texas Iron & Metal, 865 Lockwood Drive, Houston, TX 36652, USA , tel:713-672-7595, fax:713-672-0653, maxr@texasironandmetal.com contact: Max Reichenthal, www.texasironandmetal.com

VACUUM TOILET SYSTEM

Jets Vacuum AS, Myravegen 1 6060 Hareid , tel:47 700 39 100, fax:47 700 39 101, post@jets.no , www.jetsgroup.com

WINCH MANUFACTURER

Patterson Company, 870 Riversea Road, Pittsburgh, PA , USA , tel:(412) 322-2012, fax:(412) 322-2785, russ.mayhew@pattersonmfg.com contact: Russ Mayhew, www.pattersonmfg.com

Summer Sea Term Crew 2015 - Various
Job Location: USA, New York

Job Description:
The State University of New York Maritime College is currently looking to employ officers and staff for this year's summer training cruise aboard T.S. EMPIRE STATE. Positions for watch standers, instructors and day workers are available for both Deck and Engineering. Additionally, there are specific opportunities available in the Steward's Department and as support staff (Librarian, Yeoman and as qualified members of both Deck and Engineering departments). This is a unique opportunity to assist with the at-sea, practical training of future mariners and the chance to participate in a great itinerary offered. Salary commensurate with licensure, certification and experience.
* The FULL Cruise appointment will begin May 4, 2015 and end August 12, 2015. However, you may apply and be considered for one of the following:
1.Cruise A (anticipated May 4, 2015 - June 24, 2015)
2.Cruise B (anticipated June 24, 2015 ? August 12, 2015)
3.Full Cruise (May 4, 2015 to August 12, 2015)
* Naval orders can be issued for MMR Officers
* Must have valid TWIC & Merchant Marine Credential (MMC) to stand watch
Requirements:
* Recent sea experience required along with medical clearances
* TWIC requirement or ability to obtain a TWIC prior to the cruise departure
* USCG Merchant Credential and appropriate STCW endorsement(s) required for the majority of positions
* Demonstrated ability in teaching applicable materials for academic positions
* Valid passport
Preferred qualifications:
* Senior USCG license or related industry experience
* Demonstrated effectiveness teaching professional topic matter
* Expired license for non watch standing positions only
Additional Information:
For those desiring additional information please contact:
* Ms. Joann Sprague, Office Manager
- jsprague@sunymaritime.edu
- (718) 409-7352
and/or
* Captain Richard S. Smith, Master of Training Ship EMPIRE STATE
- rsmith@sunymaritime.edu
- (718) 409-7350
This is a temporary appointment. FLSA Exempt position, not eligible for the overtime provisions of the FLSA. Internal and external search to occur simultaneously.
Travel and interviews expenses will not be reimbursed.
Salary/Compensation: The anticipated salary range for this position is $125 - $200 as a daily rate of pay. Salary will commensurate with licensure, certification and experience.
Application Instructions:
Persons interested in the above position should indicate which cruise period (Cruise A, Cruise B, or Full Cruise) option they prefer. When applying online, please submit the following:
* Resume
* Cover letter including cruise option (Cruise A, Cruise B, or Full Cruise)
* Copy of TWIC
* Copy of Passport
* Copy of Merchant Marine Credential (MMC)

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Risk & Insurance Manager
Job Location: USA, Federal Way, WA

TOTE Inc is a family of shipping and logistics companies that serve communities from Alaska to Puerto Rico. TOTE is committed to being a reliable, resourceful, and responsive in all that we do. Safety and respect for our employees is our top priority. TOTE is composed of six operating companies that focus on shipping, ship management and logistical needs for our customers. Regardless of the focus of the business, TOTE knows that great companies are built by great people who embody our company's values and vision.

TOTE Resources provides shared services to all TOTE companies. This includes information technology, finance and procurement services.

TOTE Resources has an exciting opportunity for a Risk & Insurance Manager in our Federal Way office reporting to the CFO & with a reporting relationship to General Counsel.
Job Purpose
This position is responsible for coordinating all risk management and insurance programs for the TOTE operating group; being the lead for the Totem Ocean risk and insurance program; identifying, measuring and managing insurable risks or hazards; supporting Legal and claims staff in the claims process; reviewing the accounting for insurance; approving budgets for all insurance elements; and coordinating with Saltchuk on all risk management and insurance issues.
Key Responsibilities
a.Identify risks and propose risk control measures, based on analysis of the company's activities.
b.Develop and recommend insurance coverage and

deductibles, based on analysis of risk exposures to operating companies.
c.Administer the risk management and insurance program, including gathering and analyzing loss and exposure data, facilitating insurance renewals, and maintaining relationships with brokers, under-writers and claims adjusters in partnership with Saltchuk.
d.Provide support to Legal for all injury, property damage (excluding cargo) and pollution claim settlements.
e.Provide support to Legal for worker's compensation claims.
f.Review accounting for insurance and claims with Corporate Controller.
g.Approve budgets for all insurance elements.
h.Coordinate all enterprise risk management activities throughout the TOTE operating companies and partner with Saltchuk on program updates.

Background Required

Bachelor's degree required in finance or business.
Seven years risk management and insurance experience.
Three years supervisory experience.
Background Preferred (but not required)
MBA preferred

Other Essential Abilities and Skills

...Excellent knowledge of risk management and insurance practices.
...Excellent analytical skills
...Excellent understanding of claims and loss control activities.
...Good understanding accounting and budgeting.
...Good verbal and written communication skills.
...Must be a team player.
...Good organizational skills.
...Ability to prioritize and multi-task.
...Computer literate, with the ability to utilize standard software applications and be proficient in Windows and MS Office Suite (Outlook, Word, PowerPoint and Excel).

Interested candidates should apply via the Totem Ocean website at http://www.totemocean.com/; About TOTE; Careers Or
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Donna Figueroa
TOTE Resources
32001 - 32nd Ave S, Suite 200
WA 98001 USA
Phone: 253-449-8141
Fax: 253-449-2133
Email: dfigueroa@totemocean.com
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Exp Mechanic Wanted
Job Location: USA, Oyster Bay

Exp Mechanic Wanted

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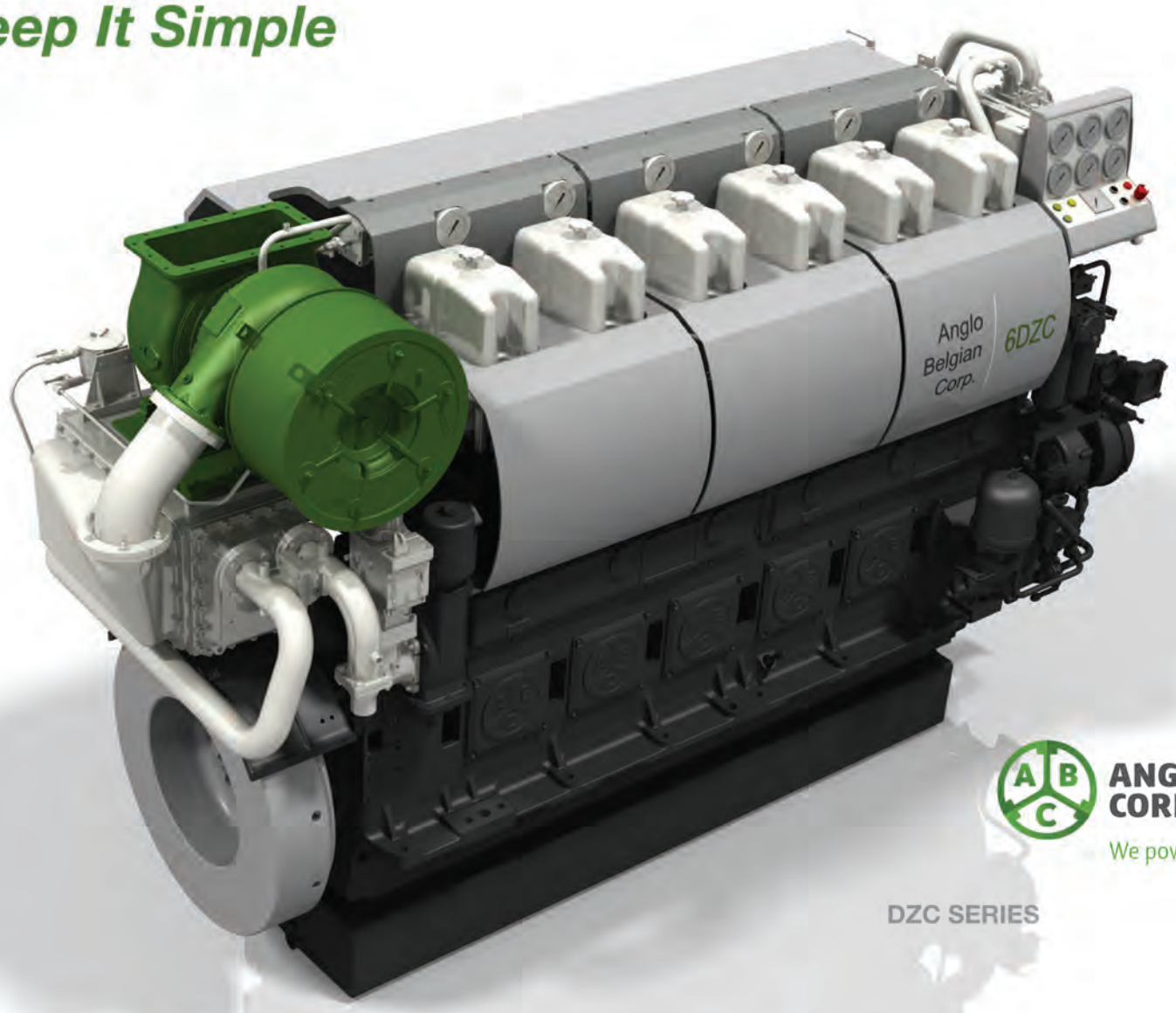

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