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Marine News

NOVEMBER 2014
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The Workboat Edition

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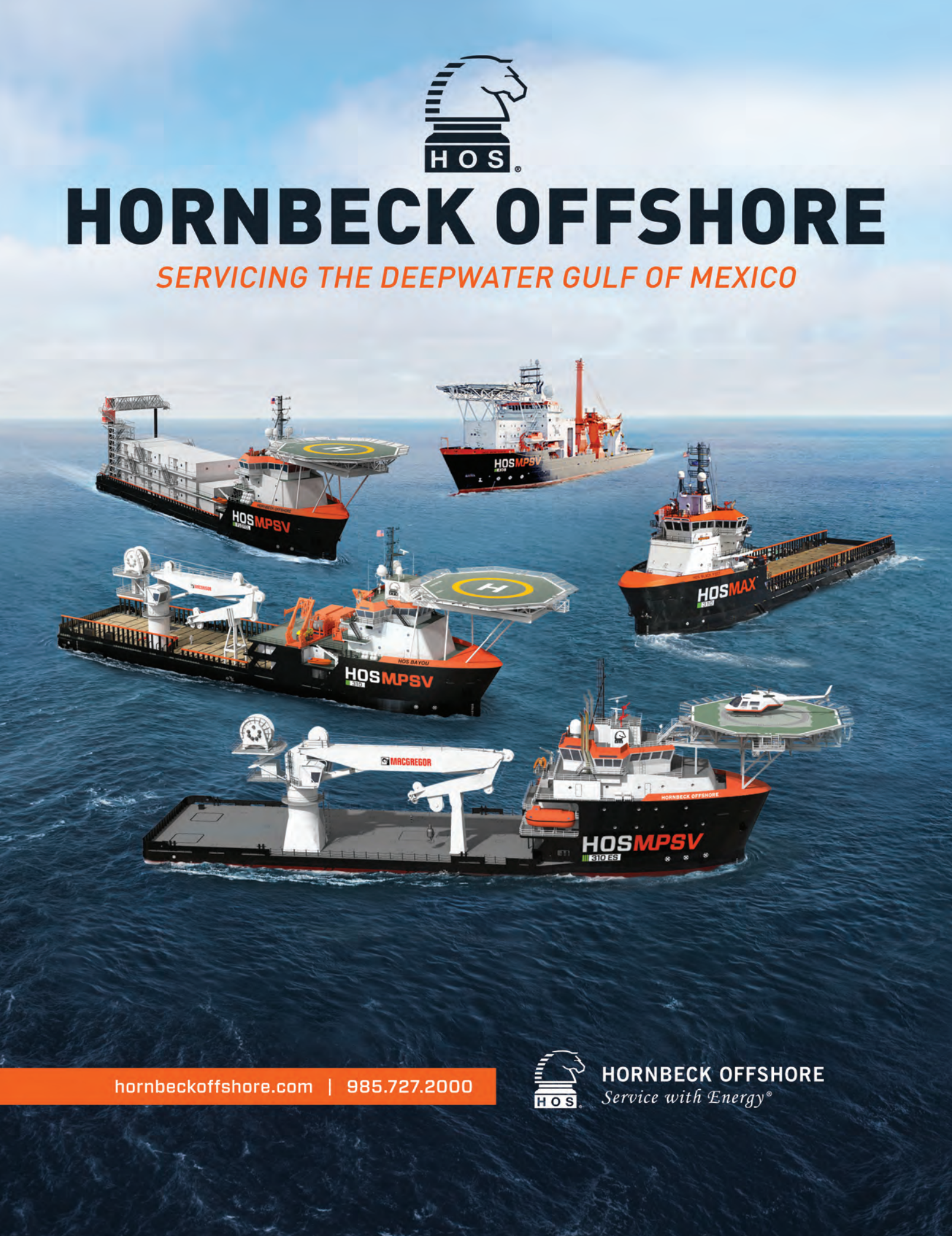
Features

The Workboat Edition

ON THE COVER

Bouchard.
Today, Bouchard Transportation Company's fleet is one of the most modern – and safest – on the water. Bouchard fourth-generation President & CEO Morton S. Bouchard III intends to keep it that way. His insights on the industry he knows so well start on **page 12**.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Departments & Analysis

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I recently attended an industry conference where, as part of one presentation, an industry expert put up a slide that flashed industry acronyms and abbreviations, one-by-one until the page was completely full. It was a striking montage, taking the better part of a minute to populate the entire page. The talk, of course, had everything to do with one sort of regulatory compliance or another. The visual helped drive home the gentleman's point nicely and with great emphasis. As I prepared to put together this voluminous edition of ***MarineNews*** – our Workboat Annual – I thought of little else as the articles came in, and as I prepared for each and every interview.

ECA, EPA, SubM, VGP, USCG, IMO, MLC, OPA90, BWT, ABS, DNV-GL, TIER III, CLASSNK, BV, ISO, ISM, STCW, SOLAS, NAVC, Fi-Fi, ISPS, PSC, AIS, VDR, BOEM, BSEE, NTSB, QI, IACS, LNG, LR, SAR, FMC, ATB, and AWO. The foregoing acronyms and abbreviations are but a few of the terms that you, no doubt, deal with on a daily basis in your line of work. That's because the world of workboats is as wide as it is varied, and at some point in your professional career, it is likely that each and every one of these terms – and dozens more like them – will impact you or your line of work. Count on it.

There is very little in our maritime industry today that is not driven by regulatory change, environmental policies, safety initiatives and the never-ending pressure to do the 'right' thing. For some, the efforts take the shape of doing just enough to get by and comply. Others get out in front of the regulations and ensure adherence to a higher standard. Both paths are shaped by the corporate cultures peculiar to each model and more often than not, the results will be reflected in the amount of elbow grease applied and the reasons for attempting to comply in the first place.

It is no coincidence, then, that matters pertaining to lube oils, pumps, piping, valves and marine propulsion all form a part of the editorial calendar for our Workboat Annual. Each and every one of these items – covered closely within – is subject to some sort of regulatory compliance mandate, either coming soon or already here. All of that said; I've been told more than once that (a.) operators rarely 'go green' because it is the right thing to do, and (b.) the so-called 'two-tier' market that operators (in particular) hope that will emerge as a result of being greener, cleaner and safer has not yet fully come to pass.

In other words, consistently being paid more for the same job on the premise of a better quality operation is still, to a certain extent, a pipe dream. That might be about to change. The eventual winner's in today's workboat market, awash in regulatory oversight, will be those who 'sweat the small stuff.' Pumps. Piping. Propulsion. lube oils and more. Here's a hint: *it's all small stuff.*

Joseph Keefe, Editor, keefe@marinelink.com

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Offshore Report from World Energy Reports

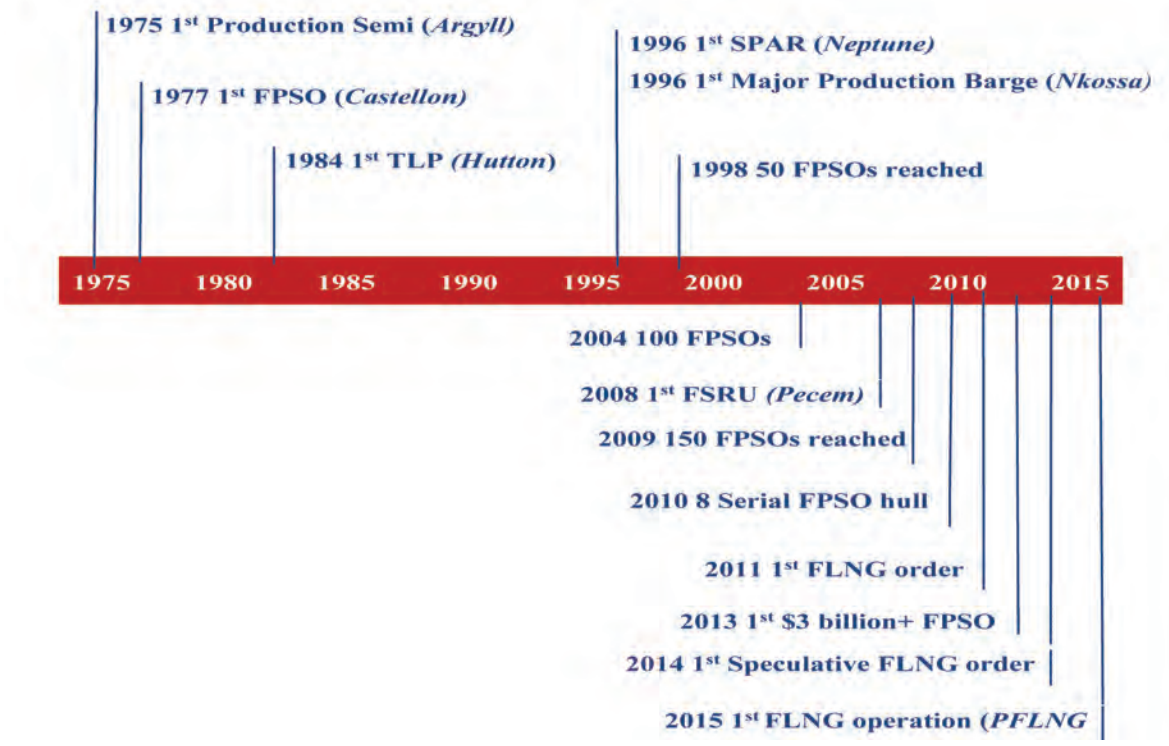
Floating Production Systems

In the recently released (October 2014) version of ***World Energy Reports'*** Floating Production Systems report, the future business drivers for this critical offshore sector of the marine and energy businesses are analyzed. The analysis and research will be of particular interest to *MarineNews* workboat and shipyard stakeholders in that whatever happens in deepwater production sites, all of it will most certainly require marine support in some shape, form or fashion. And, as time marches on, the marine and energy sectors become more closely connected and dependent on one another.

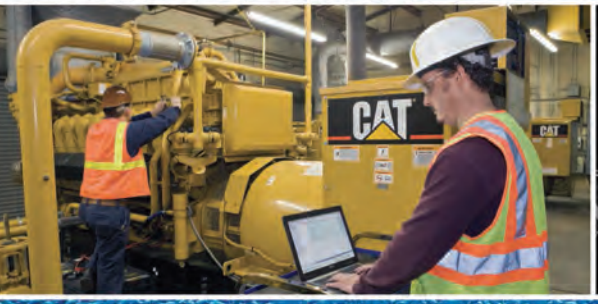
Indeed, floating production has been one of the most significant achievements in the upstream oil and gas industry over the past four decades. Before floating production offshore development was limited to water depth of 300 meters, the upper range of a fixed platform installation. Now production offshore has moved to 3000 meters water depth, with deeper projects in sight. The ability to produce in deepwater has opened a new frontier in oil and gas development – and has generated a huge business base for suppliers of floating production systems. It has also produced an offshore support system of increasingly larger and more capable offshore support vessels that also require greater endurance and the ability to operate further offshore and for greater periods of time. But, what does the future hold for the maritime sector? Can the building boom now underway to support the offshore energy industry be sustained? That's just the insight which the **Floating Production Systems** report provides – and much more. The report also provides forecasts for tension leg platforms, spars, production semis and analyzes the pros and cons of each structure.

In a nutshell, two basic types of floating production systems are in use today: oil/gas production units and LNG/gas processing units. Common to both is the use of a floating facility to support an oil and/or gas processing plant to monetize oil and/or gas deposits. Also common to both is the requirement for OSV's and other marine

Exhibit 4 Major Milestones in Floating Production Since the 1970s



FULL SPEED AHEAD



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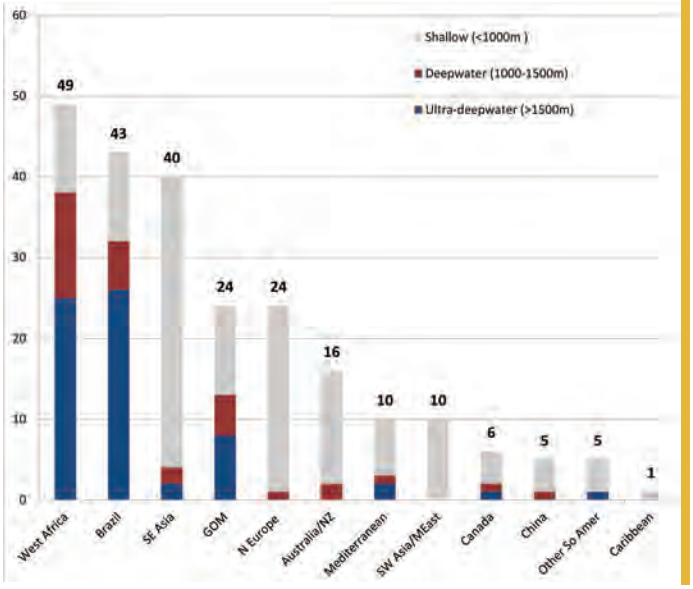
By the Numbers, floating production has a short but dynamic history, dating all the way back to the mid-1970's. And, the business is growing quickly:

- **10***: number of years it took to reach 15 units in operation;*
- **12***: number of underlying business drivers that will ultimately influence the pace of investment decisions;*
- **20***: number of years (approximately) that it took to reach just over 50 units in operation;*
- **30***: number of years that it took to reach 170 units in service;*
- **275***: possible number of newbuild systems that could be required in the near term;*
- **310***: Approximate number of floating production units that could be in operation by end of 2015.*

How rapidly these projects will move to the contracting stage is the question. Having a long list of projects ready to go forward is important. But an investment decision is needed to transform project opportunities into contracts for production facilities. And, that's where the new World Energy Report comes in. Twelve underlying business drivers will influence the pace of investment decision. Some of these are positive drivers. Some are negative. All have an impact on the number and timing of future production floater orders. The unknowns – also deciphered within the 147 page report – include the question of how competitive will deepwater be with shale oil supply in the short and long term and the always dangerous effect of a so-called 'black swan' event in the sector.

World Energy Reports will systematically track and report in monthly updates how the forecast is performing, with a recalibrated forecast in the New Year. As the line of demarcation between the world of energy and the domestic maritime industry slowly disappears over time, ***World Energy Reports*** is there to guide you on the journey.

Location and Water Depth of Planned Floating Production Projects



Number of Floating Production and Storage Units in Service, On Order and Available (As of October 2014)

	Total	Active	On Order	Available
Oil/Gas Production				
FPSO	213	163	37	17
Production Barge	10	8	2	0
Production Semi	8	41	2	5
Production Spar	22	20	2	0
TLP	28	24	4	0
Total	324	256	47	22
LNG Processing				
FLNG	5	0	5	0
FSRU	25	13	12	0
Storage Systems				
FSO	102	93	8	1

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President and CEO, Bouchard Transportation Co., Inc.

Bouchard Transportation Co., Inc.

When it comes to iconic, East Coast mainstays of the U.S. maritime industry, probably one of the first names that come to mind is 'Bouchard.' Likewise, Morton S. Bouchard III, who has served as President of Bouchard Transportation Co., Inc., the nation's largest independently-owned ocean-going petroleum barge company since 1996, also needs no introduction to *MarineNews* readers. Bouchard's CEO since 1999, he is the fourth generation of Bouchards to lead the company since its incorporation in 1918. Promoted to President at the tender age of 32, Mr. Bouchard has continued the family tradition of investing profits in cutting edge equipment and following the passage of the Oil Pollution Act of 1990, he instituted the first double hull barge construction program in the United States. The company began building flat deck double hull ocean-going petroleum barges in 1992 and under Mr. Bouchard's leadership, continues to do so. Beyond this, Bouchard's ongoing fleet expansion includes the construction of two 6000-hp ATB tugs, both of which will join two ATB units currently under construction. Closer to home, and building on an All-American career in Lacrosse, his robust philanthropy for his high school and college alma maters has benefited a generation of scholar athletes on Long Island, NY, and beyond. But Bouchard's commitment to education and mariner training extends far beyond the playing fields. The Bouchard Transportation Company, Inc., Tug & Barge Simulation Center is nearing completion at SUNY Maritime College's Throggs Neck campus. Available to SUNY Maritime College students as part of their program of study, and to outside tug and barge companies for employee training, the facility mirrors Bouchard's resolve to create a safer workplace and a cleaner environment. In 2011, Mr. Bouchard established the Morton S. Bouchard Jr. Scholarship Program at SUNY Maritime in memory of his father. A staunch supporter of the maritime industry, Bouchard also serves on the Board of Directors of both the American Maritime Partnership and of the American Steamship Owners Mutual Protection and Indemnity Association, Inc. All that said; it is clear that Bouchard Transportation's storied history is only part of the story. As far as Morton S. Bouchard III is concerned, what comes next is just as important. Listen in this month as he talks about how things get done; the 'Bouchard' way.

Running a fleet in today's increasingly regulated environment can't be easy. If you had to point to one aspect of this business that is the most challenging, then what would that be?

The biggest challenges in running Bouchard Transportation fall into two categories; the first being the ever-changing regulations and the second being the continuous attempts to open the Jones Act. When a company makes an investment in an asset, it does so in compliance with the existing regulations so that the asset will last for its useful lifespan, if not longer. Lately, the worldwide regulatory agencies have been trying to implement changes without regard for the companies that made these investments in accordance with the regulations in place. I am all for modernization, and of course I too want a clean environment, but there has to be some consideration for these older assets that were built in compliance with the standard at the time, and now must be upgraded or scrapped without even a tax credit. The continuous failed attempts by companies to circumvent the Jones Act are also amazing to me. This legislation will not change. From our inception, Bouchard has invested well over five billion dollars in vessels built

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in the United States, crewed by United States seamen and owned by the Bouchard family. During the past few years, Bouchard has again invested well over one billion dollars in new equipment. This investment could have certainly been cheaper if built in foreign shipyards. However, consider all the jobs that were created and the taxes that Bouchard and the shipyard paid, again, in compliance with existing regulations, which gets back to my first issue in managing Bouchard - it all comes full circle. And as for the oil industry's complaint that rates are too high, I didn't hear them complaining years ago when owners were losing money. The Jones Act was fine then.

Many global operators are moving towards the practice of so-called "simulation based competency assessments." The more stringent assessments of skill, performed under realistic conditions, are changing the way deck officers in particular are trained – and assessed. Is Bouchard moving towards this practice?

Bouchard Transportation implemented this practice years ago. All Bouchard vessel employees must go through a training session before being fully employed. This is followed by a probation period during which evaluations are performed by the captain. Bouchard wheelhouse personnel are subject to the strictest hiring practices in the industry, and our safety record is a direct result of these practices.

What's the biggest change you've seen in the maritime business since you became involved on the water?

I started working on Bouchard vessels in 1974 when I was in high school. That is 40 years ago. The biggest change I have seen is in the education of the vessel employees. The employees today are much more aware of the importance of performing their duties in a safe manner, and only in a safe manner. I can confidently state that Bouchard vessel employees are the best Jones Act seamen. They are educated on all safety policies and procedures, and without them, Bouchard would not be able to continue to grow. I firmly believe, as does our management team, that we must not only invest in new modern equipment, but also invest in our employees.

What would you say is the biggest change you personally brought to Bouchard since taking the helm in 1996? Why did you set out on that course?

The biggest change that I brought to Bouchard has been to keep the company going. I still remember very clearly a meeting I had with my father after OPA 90 was passed. My father and I had a very close relationship within Bouchard, and outside of the company, and I miss him every day. We had lunch and he threw the OPA 90 regulation on the table and asked if I read it. I told him not the entire legislation but parts, and he responded he wanted to sell the company. The legislation scared him with its statements on criminal liability and double hulls. I responded, "Why don't we just build double hulls?" We started doing that in 1992 and continue to do so today. Bouchard was also the first company to install Intercon on vessels. Hence, the biggest changes I am responsible for at Bouchard include becoming the first company to build double hulls, the first company to install Intercon and the first company to take an aggressive approach in educating our employees on the importance of safe operations.

The Maritime Association of the Port of New York and New Jersey inducted you into International Maritime Hall of Fame. The honor paints you as a maritime visionary who best exemplifies the qualities of futuristic thinking. Give us an example of that in practice.

Well, thank you for that compliment. The best example is our fleet today. All of Bouchard barges – 80,000 to 255,000 barrels – are equipped with Intercon; no other company can say that. However, these changes are not my vision alone; they were also the vision of our valued customers and employees. Bouchard was the first Jones Act company to build double-hull oceangoing ATB barges with Intercon.

Why this coupling system and not another? What makes it best suited for your purposes?

Simple. It is the best, the safest, and the most reliable. Intercon is more expensive than others, but the product stands on its performance. Brian Everist also provides the highest level of customer support and stands behind his product. This assists Bouchard in being more reliable and safer. I always tell our customers that Bouchard Transportation is the best and we only equip our vessels with the best equipment. That is why we are an Intercon customer.

Controlling emissions and at the same time, increasing efficiencies is a challenge for any operator. You have 21 tugs listed on your web site with an average age of 14 years for those hulls. When it comes time to renew these vessels, do you favor repowering or will you go the replacement route with appropriate EPA tier engines?

Bouchard will in all likelihood do both. However, I may leave that decision up to the fifth generation of Bouchards, my sons.

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Have you considered the "LNG as a fuel" route and do you have any plans to build in that arena? If not, why not?

Yes we have. In the planning stage of the two new builds presently under construction, we had a full day of meetings studying the feasibility of fueling the tugs and barges with LNG. After a long day (we met for 14 hours), I decided that the infrastructure was not available and the ability to design a vessel with the fuel storage capacity was not there. That said, I do think Bouchard will eventually have an LNG vessel and be a factor in this market.

In August 2014, you announced the next step in Bouchard's fleet expansion; the construction of two 6000-hp ATB tugs. What's special about these hulls and when all are delivered, what will be the average age of your fleet(s)?

These two tugs, Bouchard Boys and Evening Light, will be matched up with the B.NO.210 and B.No.220 and will be equipped with Intercon and segregated ballast. This design has been proven in the M/V Brendan J. Bouchard & B.NO.215, M/V Linda Lee Bouchard & B.NO.205, M/V Jane A. Bouchard & B.NO.225, which are all 115,000 bbl. Intercon units.

You've done a lot for SUNY Maritime; notably making possible the Bouchard Transportation Company, Inc., Tug & Barge Simulation Center. The Center will be available to SUNY Maritime College students as part of their program of study, and to outside tug and barge companies for employee training. Will Bouchard mates and captains train there?

I am very proud of this investment, and yes, Bouchard wheelhouse employees will do their required training at the BOUCHARD TUG & BARGE SIMULATION CENTER. I believe anytime a company can make an investment that will educate students and employees, and at the same time make operations safer, it is an investment worth making. It will pay dividends in the future for all involved.

The AMS Safety Advisory Committee has released the names of the Maritime Safety Award recipients for 2014. Bouchard Transportation won the 'Tug and Barge Safety Award.' Prior to that, Bouchard Transportation was recognized by The Chamber of Shipping America (CSA) with 41 Jones F. Devlin Awards. The awards highlight vessels that have operated for two years without a crew member losing a full turn at watch because of an injury. What's the secret formula involved with that kind of record?

I do not feel there is a secret formula. It is a corporate policy that starts at the highest level of management and is implemented by our safety department, and followed by our employees. Bouchard employees believe in our Safety Management System and that is a credit to VP, HSSE Mike Brady and his staff. Bouchard would not receive these awards if the vessel employees were not well-educated on safety and believe in the system. It benefits us all.

Retired Coast Guard Officer Brian Hall has joined Bouchard Transportation as Southern Port Captain / Vetting Manager. When it comes to vetting, this aspect of vessel selection by potential charterers is becoming more and more burdensome to operators. What's your take on vetting in today's world and how does Bouchard deal with this aspect of its business?

Bouchard Transportation is very happy to have Captain Brian Hall join our management team. He brings another level of commitment to safety, and has already had a positive impact on safety and safety awareness. I believe in a very strict vetting policy. Bouchard implemented a six month SIRA Inspection Policy on all of our vessels. The more inspections, the quicker you find deficiencies, and make the corrections that keep the vessels operating in a safe manner. I do not feel it is the charterer's responsibility to do a better job of vetting; it is the owner's responsibility. Owners must be aware that vetting today is the cost of operating safely, and a cost that can only lead to savings.

Your firm is International Safety Management (ISM) certified, issued by ABS. ISM is typically thought of as a larger vessel, blue water certification. Could you have certified with a different, perhaps lesser standard? Why ISM?

ISM is very comprehensive and covers our entire operation. Yes, it is very onerous and costly, but it has made Bouchard a safer company.

You are also American Waterways Operations (AWO) Responsible Carrier Program (RCP) certified. Subchapter M is coming – what does that mean (if anything) for Bouchard and its fleet? Are you looking at any significant operational or equipment alterations when it does come? Or, is ISM in effect far more stringent than the requirements of subM?

Bouchard is still studying the effects of SubChapter M. We are watching this closely.

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Did You Know? ...

By Mike Toohey

The National Waterways Foundation's (NWF) mission is to develop the intellectual and factual arguments for the general public and for policy-makers to understand the critical importance of our national waterways system, to enhance its capabilities and to promote its value. The NWF is a center for research and learning where industry leaders and researchers can address public policy issues related to America's inland waterways system through studies, education and training programs, grants, and forums.

The NWF will release a new and exciting study this month titled, *"Inland Navigation in the United States: An Evaluation of Economic Impacts and the Potential Impacts of Infrastructure Investment,"* by the University of Tennessee and University of Kentucky. The study examines the waterways' national economic return on investment and the need for and benefits of an accelerated program of waterways system improvements that sustain and create American jobs.

A few facts from the study:

- ***Investment in badly needed modernization improvements*** *to our inland waterways' aging lock and dam infrastructure could lead to 350 job-years of new, full-time employment with a present value of $14 trillion.*
- *If we continue to keep our inland waterways functioning efficiently,* ***541,000 jobs with associated earnings of $29 billion*** *in the inland sector alone would continue to strengthen our national economy.*
- *If 21 priority navigation projects could be completed at a cost of around $5.8 billion total, the* ***20-year sum of output growth would exceed $82 billion.***
- *Although not likely in the current fiscal environment,* ***if the completion of those projects were accelerated to 10 years, between 10,000 and 15,000 new jobs*** *in the construction industry with an annual economic value of $800 million could become available. In the second decade of project completion, navigation improvements could result in 10,000 new jobs each year with a total income of $740 million in the first year to more than $1 billion.*
- *New freight capacity could result in robust economic impact in the creation of some* ***12,000 additional full-time American jobs*** *in other sectors each year with incomes above $500 million annually.*
- ***There are a number of economic sector outputs strongly impacted by waterways shipping,*** *including construction (83%); manufacturing (75%); mining (64%); health care ($60%); retail trade (58%), and professional and technical services (54%).*
- ***If commercial shipping on our waterways were to cease entirely with no prior warning****, there would be an immediate, crippling impact on the economy in the range of $1.063 trillion. Shipping costs would increase by $12.5 billion, which would ultimately be passed onto American consumers in the form of higher costs for goods.*
- *With the loss of waterways' shipping, an estimated 75% of freight would be diverted to truck or rail, and there would be a 25% loss due to (decreased) production.* ***Given that the capacity of just one jumbo barge equals 1,050 trucks or 216 rail cars and six locomotives,*** *the nation would face certain traffic gridlock. There would also be a 7.8% spike in the price of electricity for consumers, triple the average annual increase.*
- ***The Gulf Coast and Lower Mississippi River regions would be hardest hit by a potential complete waterways system closure.*** *High-value petrochemical products dominate industrial production in that region and alternative transportation in the region is limited. Investments made to infrastructure indicate the Gulf Intracoastal Waterway and gulf region would make the largest gains at $496 million in output gains in a 10-year period.*

While Members of Congress debate the many needs of the nation with constrained funding, our inland waterways transportation system must not be overlooked. This study underscores the need for investment spending that directly results in efficiency and production gains across sectors, sustainment and creation of jobs, and curbs on traffic congestion from truck and rail. To access the study, visit **www.nationalwaterwaysfoundation.org.**

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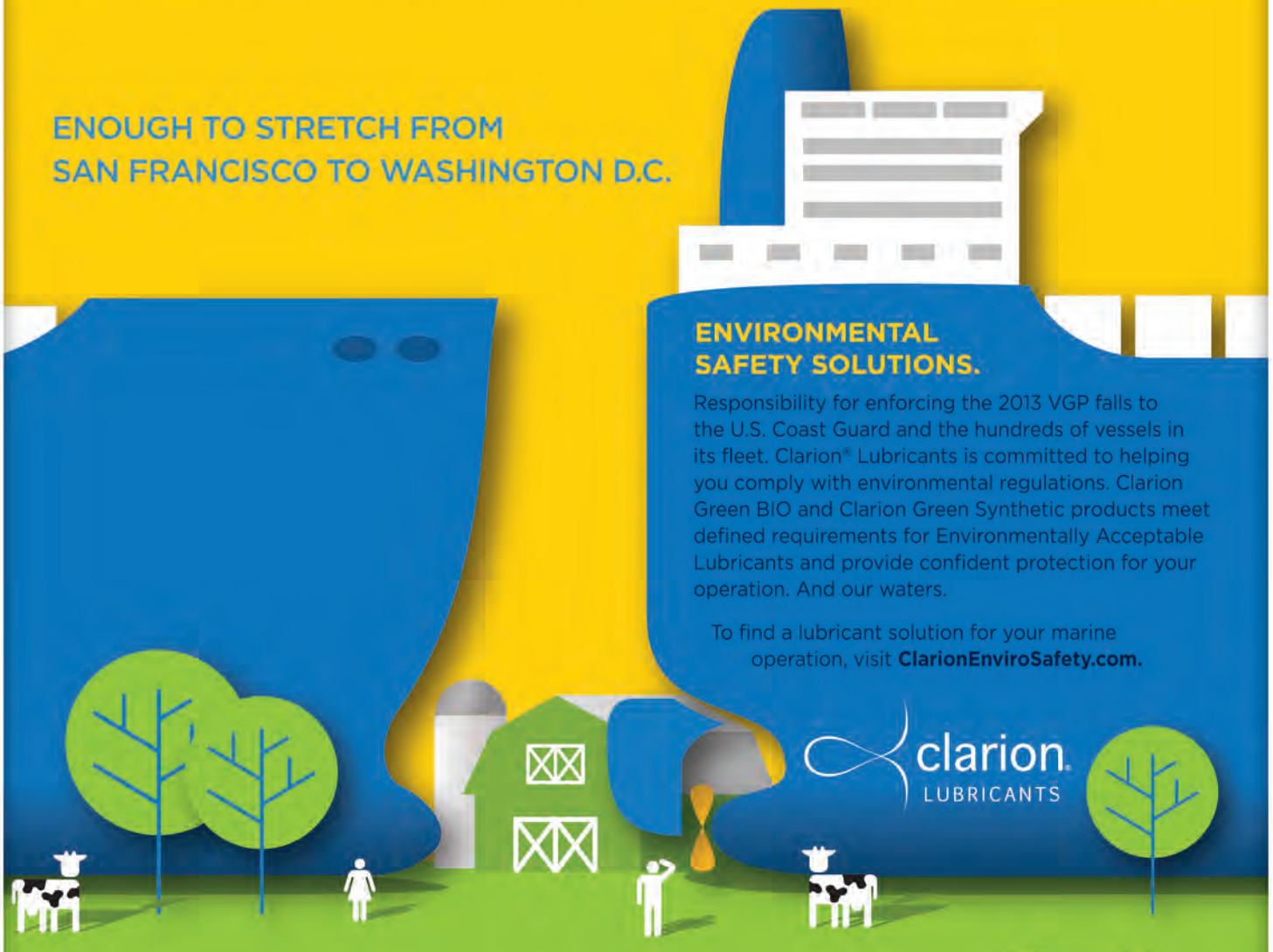

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Energy's Promising Future Threatened

Unrealistic Fears and Overstated Risks obscure the benefits of new seismic data.

By Randall Luthi

The United States stands poised on the edge of a bright energy future. After decades of decreasing domestic energy production and increasing reliance on foreign sources of oil and natural gas, a revolution in production has positioned this nation to become a net energy exporter by 2017, according to the International Energy Agency. It seems the future is bright and promising for U.S. energy security, yet this promise is under threat from unrealistic fears and overstated risks.

Policy makers must understand the true dynamics at play in the energy sector so they can make informed decisions. If not, we risk squandering the opportunity being presented to us. For example, this July, the US Bureau of Ocean Energy Management (BOEM) issued a record of decision (ROD) for environmental review of geological and geophysical (G&G) survey activities offshore the Atlantic Coast. This regulatory move means that the United States Department of the Interior's next 5-year Outer Continental Shelf (OCS) oil and gas program will likely include fresh G&G data for the Atlantic OCS.

This opens the door to a vital data-collection activity that has been kept off the table for more than 30 years. The Obama Administration deserves applause for taking this vital first step toward accurately assessing the resources of this new offshore area. However, some voices in the debate are making wildly inaccurate assertions about the risks involved. In addition, the federal government is mandating companies take unnecessarily costly steps to prevent worst case scenarios their own science deems virtually impossible. So, maybe only one-handed applause is appropriate.

Why is G&G, also known as seismic, data so important? Simply put, before any drilling for oil and natural gas can take place, it is first critically important to determine where the hydrocarbon reserves are located. Seismic surveys send sound waves through the water column and into the sea floor. This is similar to ultra-sound used in medical exploration. Based on how they are reflected back to the surface, complex computer calculations make determinations of possibly where the reserves are and whether they can be reached economically and safely.

For over three decades, this simple data collection activity has been off-limits in the Atlantic and much of the rest of the Nation's OCS, though it has been used safely in parts of the Gulf of Mexico and around the world. As policy makers debate on whether to allow oil and natural gas production in areas such as the South Atlantic OCS, new data would be helpful, but not necessary. This new data must be aggregated and analyzed through modern seismic surveys. The Administration rightly calls for decision making about whether and how to proceed with such surveys to be based on sound science.

Opponents of offshore energy production have waged a full-on information war to prevent the permitting of these vital seismic activities, and adherence to actual facts does not seem to stand in their way. Many environmental groups committed to denying the American people access to their own domestic energy resources have made the wild assertion that seismic surveys are 100,000 times louder than a jet engine, threatening marine life.

This is absolutely untrue. First, Government scientists estimate the sound level of seismic acquisition is closer to one jet engine in volume. Second, contrary to environmentalist claims that over 138,000 whales and dolphins could be injured by seismic activity in the Atlantic, seismic surveys have been conducted for over thirty years around the world, including the Gulf of Mexico, and BOEM has found no documented indication of adverse impacts on marine animal populations or coastal communities.

It is more likely that the hyperbole from some environmental groups has injured hundreds of thousands of coastal residents by opposing energy development and denying communities affordable energy, well-paying jobs and billions of dollars in government revenue.

The ROD calls for the use of stringent mitigation measures, supposedly to minimize impact on marine life. These mitigation measures may be unduly restrictive; however, since the ROD establishes an unrealistic 'worst case' that BOEM has since admitted will not actually occur. As a result, the ROD is mandating mitigation measures that are not supported by science. This will impose serious burdens on industry, likely discourage exploration of the Atlantic,

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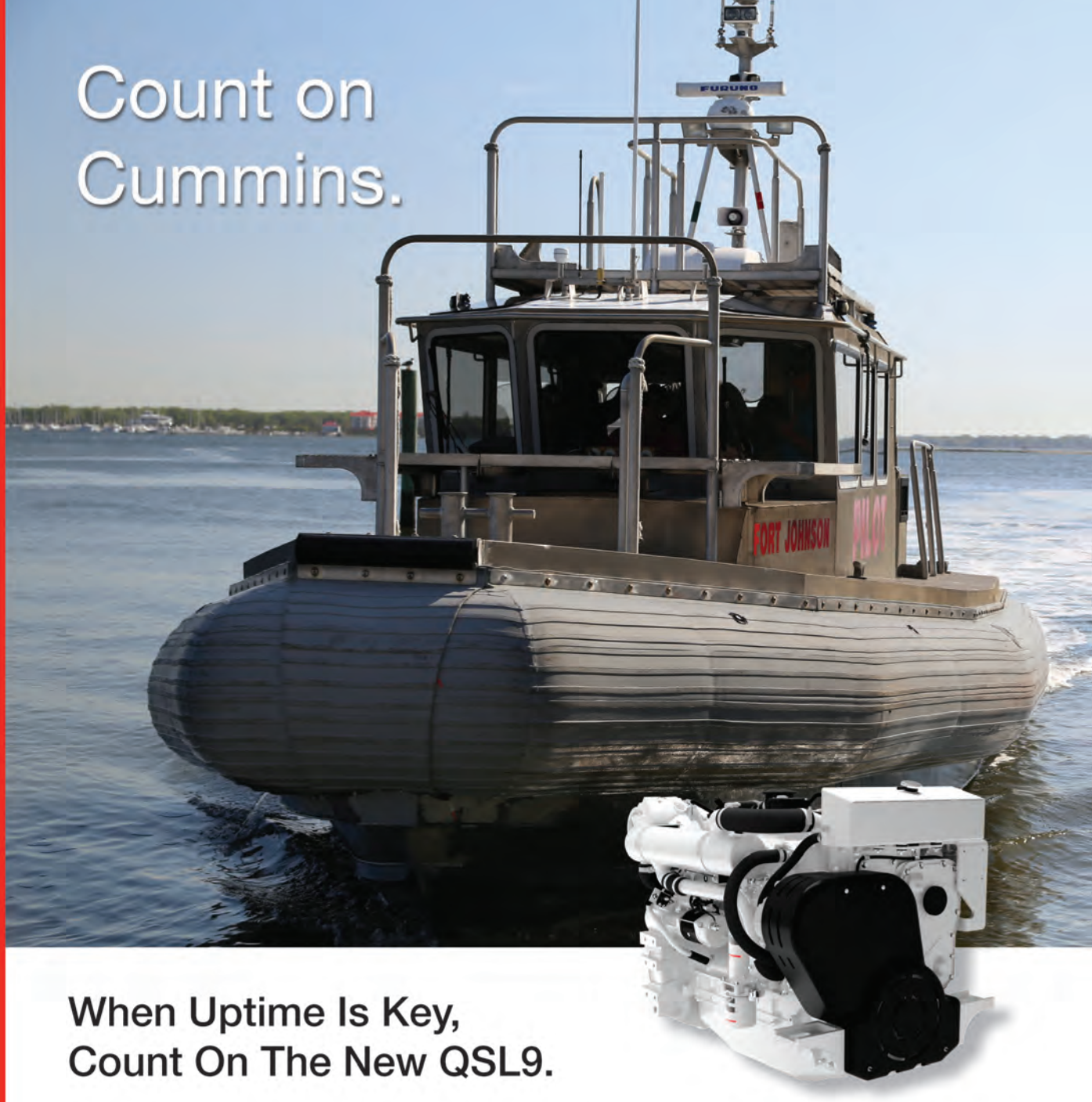

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and will result in no benefits to protected species. This approach is contrary to both the best available scientific information and applicable law.

The truth is that seismic surveys have been conducted safely for decades, and industry already routinely implements a suite of measures to mitigate potential impacts to marine animals. The best science and research, including the Department of Interior's own studies, show that seismic surveys have little to no effect on marine mammal populations. Government scientists acknowledge this, and dispute the hyperbolic claims of environmentalists in BOEM's Science Notes of August 22, 2014.

Regulators should rely only on sound science when setting permit requirements. The stakes — for the offshore industry, the nation's domestic energy production, the strength of the overall economy, and the jobs that hang in the balance — demand no less.

NOIA
America's Offshore Energy Industry

Randall Luthi *is President, National Ocean Industries Association (NOIA). Previously, Luthi's career includes time spent as Wyoming Speaker of the House, director of a Federal agency, legislative assistant in the U.S. Senate, and an attorney at both the Department of the Interior (DOI) and the National Oceanic and Atmospheric Administration (NOAA), where he worked on natural resource damages following the Exxon Valdez accident. Luthi most recently served as the Director of the Minerals Management Service (MMS) at DOI from July 2007 through January 2009.*

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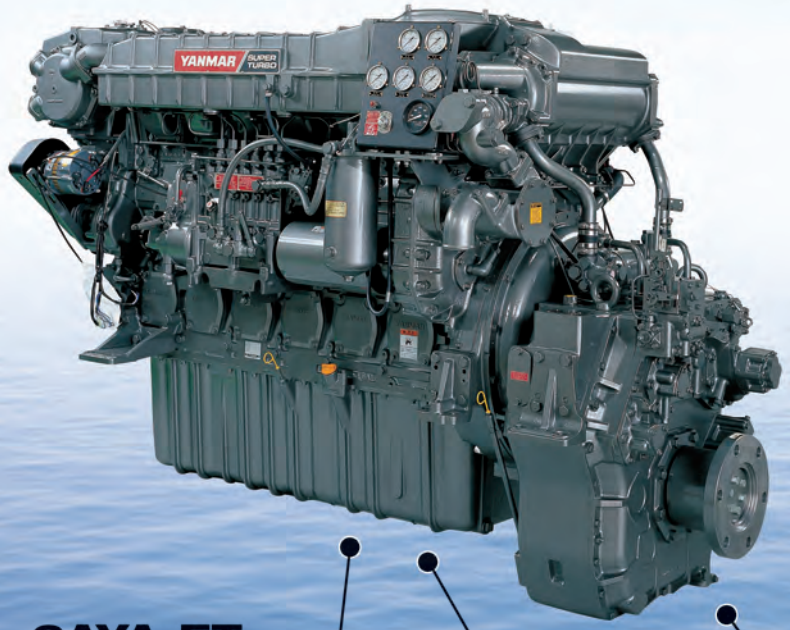

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How Difficult is it Really to Obtain a Jones Act Waiver?

The American Salvage Association's Jon Waldron provides the ultimate cabotage primer.

By Jonathon Waldron

There always seems to be constant chatter about waiving the Jones Act. In reality, it is a simple task to demystify the thought that it is easy to obtain such waivers. To set the stage, in one of her first press conferences after taking the chairmanship of the Senate Energy Committee, Senator Mary Landrieu exclaimed that "Waiving the Jones Act literally hands over work to foreign shippers."

The fact that Senator Landrieu's comments were not directed against any potential waiver of the Jones Act shows the controversy that Jones Act waivers can rise in the maritime and energy sectors. In reality, however, there exists a misconception amongst many about the ease of obtaining a waiver to the Jones Act. Accordingly, this article will discuss the requirements for obtaining a waiver, analyze key past Jones Act waivers, and look to possibilities for future Jones Act waivers.

Jones Act Waivers in Law and Practice

The Jones Act prohibits the "transportation of merchandise by water, or by land and water, between points in the United States . . . either directly or via a foreign port" unless the vessel was built in the United States and is U.S.-owned and registered under the U.S.-flag (commonly called "coastwise vessels"). The general standard for waiving the Jones Act is if doing so is "necessary in the interest of national defense." There are two types of Jones Act waivers. One type that is requested by the Secretary of Defense is granted automatically. The other type of waiver may be granted at the discretion of Secretary of the Department of Homeland Security ("DHS"). It is discretionary and may only be granted if the Administrator of the Maritime Administration ("MARAD") first determines that no U.S.-flag vessels are available.

Waivers Requested by the Secretary of Defense

All waiver requests by the Secretary of Defense must be granted. Specifically, the Waiver Provision states that "[o]n the request of the Secretary of Defense, the head of an agency responsible for the administration of the navigation or vessel-inspection laws shall waive compliance with those laws to the extent the Secretary considers it necessary in the interest of national defense."

Historically, these waivers have been granted to address an immediate need of the Department of Defense ("DOD"). For example, in 2005, the Secretary of Defense granted a waiver permitting transportation of a portion of a sea-based radar system aboard a non-coastwise vessel. Similarly, in 2006, the Secretary of Defense waived Jones Act requirements for the transportation of military helicopters from Tacoma, Washington, to Anchorage, Alaska.

Waivers Requested by the Secretary of DHS

Although subject to the same national defense standard, waivers requested by the Secretary of DHS are not automatic. A 2009 amendment to the law provides that the Secretary of DHS cannot grant a waiver unless and until MARAD determines that no coastwise vessels are available and capable to provide the proposed transportation. Only after MARAD makes this determination can the Secretary of DHS evaluate and determine whether the proposed transportation is "in the interest of national defense."

Process to Obtain a Discretionary Waiver

To request a Jones Act waiver, the first step is to submit a request to U.S. Customs and Border Protection ("CBP"), a DHS agency, for processing. Upon receipt of a waiver request, CBP immediately forwards the request to MARAD, the Secretary of DHS, DOD, and—if the transportation is energy related—the Department of Energy ("DOE"). To determine if there are U.S.-flag vessels available to meet the needs, MARAD surveys the maritime industry to establish the capability and availability of coastwise vessels to meet the needs of the requested transportation.

After the request is submitted, DHS goes through a variety of consultations. To establish the "national security" standard, the Secretary of DHS generally consults with DOD. Additionally, if an area under another agency's jurisdiction is affected, the relevant agency may weigh in as well. For example, if timber must be moved, the Department of Interior may provide advice. Finally, the domestic maritime industry will consult with DHS and the MARAD Administrator.

Examples of Past Jones Act Waivers

Exxon Valdez: Following the grounding of the Exxon Valdez in 1989, Exxon requested foreign-flag oil skim-

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ming barges to assist in clean-up efforts. MARAD, DOD, and the Coast Guard supported the waiver, with the Coast Guard adding that it supported their use until U.S.-flag vessels could effectively replace the vessels. DOE also recommended approval citing the interest of national defense since the failure to act promptly and effectively could jeopardize the country's energy supplies. The Customs Service (CBP's predecessor) ultimately granted the waiver, but mandated that the vessels could not be used for supply purposes. This waiver and other associated waivers were subsequently extended until the threat passed.

Hurricanes Katrina and Rita: Following a DOE request, DHS granted a waiver after Hurricane Katrina in 2005. DHS stated that the catastrophic destruction brought about by Hurricane Katrina dramatically impeded the production and transportation of oil, gas, and other energy sources. Additionally, the administration decided to draw down the strategic petroleum reserve ("SPR") and needed foreign-flag vessels to transport the supply. There was nationwide support, especially with a spike in gas prices following the catastrophe. Additionally, domestic maritime industry supported the waiver, acknowledging there was not capacity to handle the problem. After Hurricane Rita struck the Gulf Coast a few weeks later, DHS issued another waiver. However, this time the domestic industry protested, claiming that there were coastwise-qualified vessels ready and able to assist. Following the general waiver, the administration issued waivers on a case-by-case basis.

Libya: In 2011, President Obama decided to draw down the SPR after commencing hostilities in Libya. The President authorized the release of 30 million barrels of oil, apparently anticipating shortages due to the unavailability of Libyan crude oil. Out of 45 shipments of crude, 44 used foreign-flag vessels. Following this SPR drawdown, Congress enacted legislation requiring future SPR waivers to provide a written justification for not using coastwise-qualified vessels.

Hurricane Sandy: Following Hurricane Sandy in 2012, DHS issued a waiver to allow foreign-flag vessels to transport petroleum products to New England and the Mid-Atlantic regions. The waiver did not allow for the transport of crude oil or blendstock components. DHS issued the waiver four days after Sandy's landfall in New Jersey, and the waiver lasted almost three weeks.

Polar Vortex 2014—Waiver Request Denied: With the arrival of a difficult winter in 2013-2014, New Jersey ran low on salts to clear roadways. The state requested a Jones Act waiver, which was denied because transporting road salts did not meet the "national security" standard. The state has been criticized for making the request due to poor planning and the availability of U.S.-flag vessels.

Looking Ahead: Are there Waivers in Our Future?

The last time the United States became involved in a Middle Eastern conflict, Libya in 2011, the President preemptively authorized a release from the SPR and DHS issued a Jones Act waiver. Although the U.S. forces have been involved in attacks in Iraq since August, drawing down on the SPR has not yet occurred. Gas prices and petroleum supply have not been interrupted, largely due to expansion in domestic supplies. However, a variety of factors may change this equation. At the time of writing, U.S. forces were increasing participation to hostilities in Syria, and conflict has raised supply risks in key oil producing countries such as Iraq, Syria, Yemen, and Libya. Additionally, international sanctions against Iran and Russia have further depleted potential suppliers of oil. Should domestic production slow or conflict in oil-producing regions increase, the administration may need to take a hard look at another SPR drawdown.

Additionally, the increase in domestic production could also be a factor leading to Jones Act waivers. Currently, only 50 Jones Act compliant tankers exist, and growth in oil supply outpaces domestic transport capacity. Additionally, under current law, crude oil cannot be exported, leaving producers in a potential conundrum of not being able to get their product to any market. While this in itself may not meet the "national security" standard for issuing a waiver, as we have seen in the past, disruption to energy supplies has been grounds for a Jones Act waiver.

Waiving the Jones Act requires meeting a high standard, namely, that a waiver is necessary to the "national defense." Although requests from DOD trigger an automatic waiver, discretionary waivers by DHS require a number of factors to be met. In addition to demonstrating a national security need, U.S.-vessels must not be available to undertake the proposed transport. Historically, waivers have not been granted absent a catastrophe, war, or a severe and substantial disruption to energy supplies. As evidenced above, this clearly has not happened often unless there was an imminent and substantial threat to the national security of the United States. Do not expect this standard to change in the future.

AMERICAN SALVAGE ASSOCIATION

Jonathan Waldron *of Blank-Rome is Chair, Maritime, International, Trade and government practice group. He concentrates his practice in maritime, international, and environmental law, including maritime security. Mr. Waldron is also the Counsel for the American Salvage Association.*

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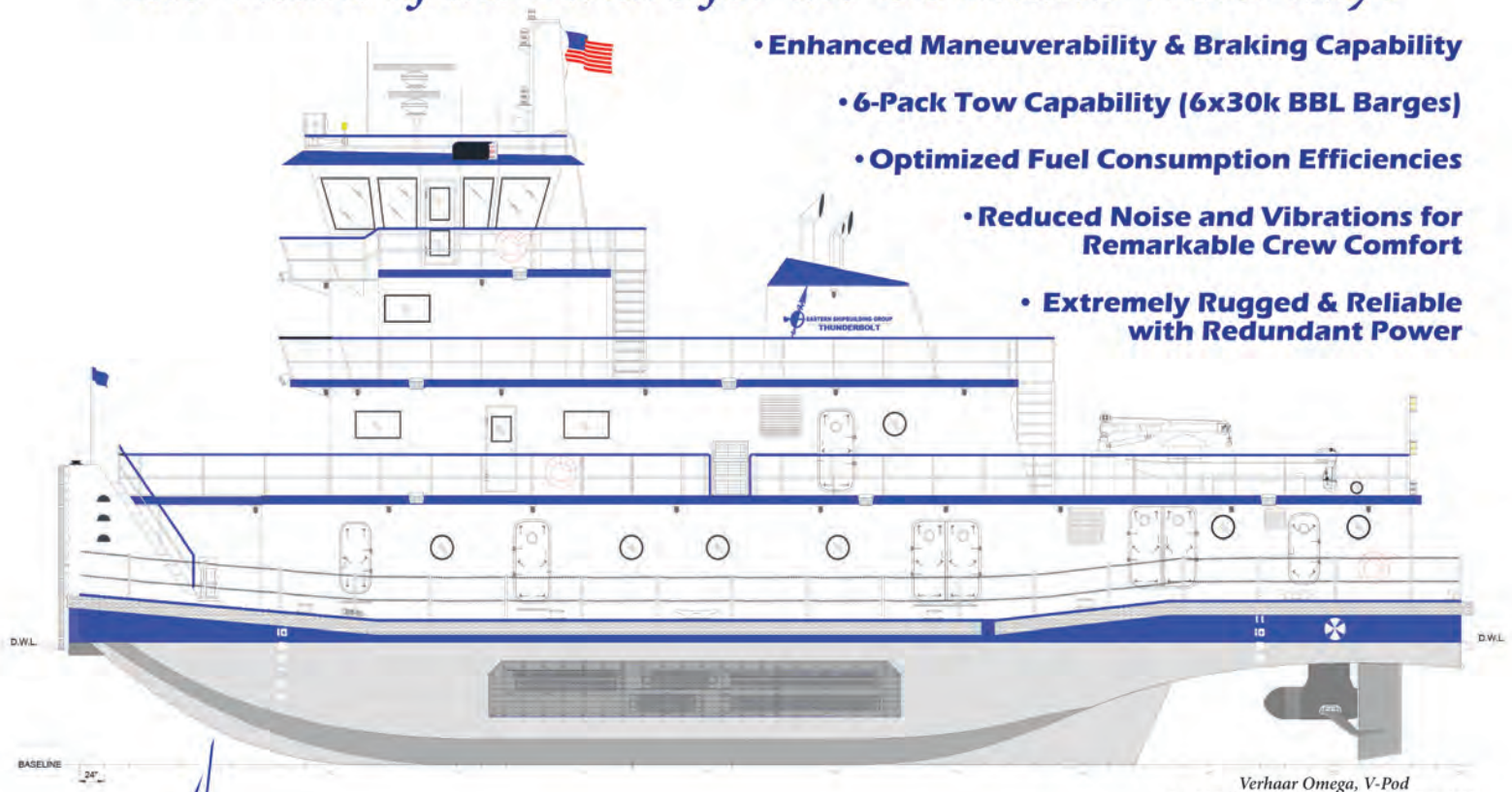

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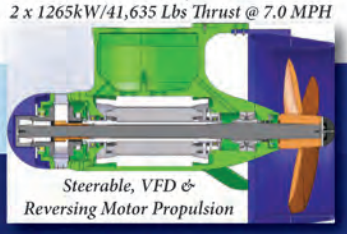

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Cents and Sensibility

Addressing the Jones Act is just one aspect of an increasingly complicated boatbuilding environment. Stovepiped, poorly conceived regulations is another.

By Joe Hudspeth

The sting of the recession is fading, but the economic vitality of the marine industry is still in jeopardy. That's because the current regulatory environment and the foreshadowing of its future is concerning. Boat builders and operators alike understand and accept that the premise of the rules is to promote safety, ensure security, protect the environment, and sustain justice. Out of what was intended to be clear and guiding parameters comes chaos as multiple regulators are empowered and conflicting regulations pop into place.

Too Many Cooks in the Kitchen

Compliance with the regulations can be daunting and in the vessel construction arena, the onus ultimately rests with the boat builder—even the naval architects tend to shy away from accountability. Some boat buyers, often larger corporations, local/small government entities, or sometimes academic institutions get nervous about compliance; after all, their funding is predicated upon so many levels of conformity. Such buyers think they are covered by generating a laundry list of government agencies and marine societies and then stipulating in the contract that each and every applicable regulation must be adhered to. A builder would not only be foolish to consider such a contract, but it is utterly impossible to calculate a tangible cost for the risk, let alone the necessary materials.

The problem is that there is overlap, inconsistencies, and conflict between many of such regulations that can be interpreted as applicable. Something as benign as plumbing systems can be stipulated several different ways by the likes of the USCG or ABS and the cost differential is staggering. Further issues emerge when the regulator is not always the rule maker. The Department of Justice issues Americans with Disabilities Act regulations, which soon will include vessel construction guidelines for passenger vessels, thus leaving the USCG in charge of enforcement. Boat builders and designers will be forced to somehow balance the significant details of minimum height door coamings and wheelchair accessible thresholds, which is not so easy when some compliant ramp runs are not viably possible. Such will also be the case for the USCG to adjust their rules and inspection procedures as EPA Tier IV fully evolves. The EPA is largely concerned with the emissions, but it is up to the USCG to determine how to safely design and install the urea-based after treatment systems. Stewardship regulations like EPA's tier system are impactful, but regulating the industry right out of the environment is not the right approach to greening the sea.

Compensating for Something

Tonnage regulation is one of the oldest principles. Its roots extend back hundreds of years, yet everyone does whatever they can to skirt it. Tonnage rules simply beg to be broken. Tonnage regulations and tonnage admeasurement are akin to year-round Christmas lights—tacky most of the time, but on occasion can be appreciated and beneficial. For context, tonnage regulations pertain to a measurement of volume. The calculated volume of the vessel is then used to stipulate crew qualifications and is the basis for applying other significant safety and operating regulations. The issue is that a few loopholes exist regarding tonnage admeasurement.

Many vessels that should fall under the purview of more stringent requirements can escape them with a few strategically placed tonnage openings in the super structure and deep frames integrated into the hull. The art of manipulating tonnage is as easy as it sounds. Regardless, customers now enter shipyards with the full expectation that their vessel should be under 100 gross tons or some other reduced tonnage and the builder and designer must do whatever it takes to achieve the desired calculation no matter how large of vessel it is. Outside of the most simplified tonnage calculations, the U.S. Coast Guard even defers to outside contractors and classification societies to produce properly calculated tonnage certificates.

Phil Essex, of Moorsom Consulting, is an expert in deciphering tonnage and provides consultation on tonnage

reduction. Essex claims that for some vessels, "the use of tonnage openings – essentially a weather-tight means of access into a deckhouse – permits the exemption of space from gross tonnage. Depending on the interior layout, a properly positioned tonnage opening in a passenger vessel could permit the exemption of the entire tier of superstructure from gross tonnage."

What's the purpose of such an opening? The opening, which must be positioned on a forward or aft facing bulkhead is not water-tight, does not make the vessel any smaller, nor any safer to operate, and on the contrary does not in fact reduce any actual volume of the vessel. Nonetheless, if done properly, an operator with reduced tonnage may escape other onerous regulations and can cut crewing costs by hiring a captain with a lower endorsement. It is possible that the tonnage game may finally change as the rules are currently in the process of revision.

Proud to be American

Compliance with the Buy America Act for new vessel construction is not only patriotic but bodes well for promoting the common good of commerce within our country. The Buy America Act is nearly always tied to projects with underlying federal funding. Compliance versus cost does not typically pose a threat as these projects are often funded to such a level to compensate for domestic procurement. The issue is really one of supply. Without loopholes in place, boat builders would flounder in compliance.

Raw materials for manufacturing aluminum and even steel to some extent are typically sourced abroad in Europe or Asia. Finding American-built, emissions compliant, commercially rated, marine diesel engines is less common than expected. Reaching compliance levels of more than 50% American content requires that most of the large ticket components are stamped made in the USA; however, many key products that are engineered specifically for marine use (engines, gears, propellers, water jets, electronics, etc.) tend to be foreign produced. When the requirement is only being met through wiggle room, it should be a clear sign that stronger

incentives for stateside marine manufacturing are needed. Likewise, keeping up with the Jones Act also comes at a premium. There are elements of validity to the revise and repeal arguments, but such action will not enhance our industry. The Jones Act must remain intact to keep the door open for the next generation of mariners. Our industry is already struggling in recruitment efforts and pulling the Jones Act would be the straw.

Policy Makeover

There certainly is a place for regulation and a proper system with viable policy is required to sustain our industry. Policymakers and stakeholders must work in partnership to ensure that productive policy is in place and antiquated or conflicting regulations are brought current. Regulators also need to be willing to rethink and explore alternatives as technology develops or if the policy causes considerable discord and avoidance. Never again should Sequestration restrict the ability for all stakeholders to sit at the regulatory partnership table. Trouble also develops when regulators are stuck 'inside the box' and fail to negotiate or see any gray shadows in the corners that can sometimes make all the difference in the world, while at the same time upholding most of the policy's original intent. Lastly, the EPA's forced tier development has greatly hindered advances in promising LNG technology and it should be clear that regulation cannot hinder innovation. Working together we can keep our industry moving forward through sustainable regulation, 'win-win.'

Joe Hudspeth is Vice President of Business Development at All American Marine, Inc., a manufacturer of high speed passenger ferries, excursion vessels, and work boats, in Bellingham, WA. He currently serves as a regional co-chairman for the Passenger Vessel Association and participates on several committees concerned with marine industry issues. Email: ***jhudspeth@allamericanmarine.com***

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Night Moves

Distracted Driving Impacts Waterborne Commerce

By Randy O'Neill

Overnight operations are certainly not unusual on America's inland waterways, but that doesn't make them any less hazardous. Onboard activities that seem so straightforward and customary in the light of day can take on a decidedly different feel after the sun sets and darkness envelopes the river and shrouds its banks. And, while navigational aids on the river and electronic equipment on board clearly assist nighttime vessel movements, many towboat and tug operators will tell you that fatigue, boredom and endless repetition in the sensory-deprived environment of darkness present very formidable challenges to even the most experienced rivermen.

Inattention Suspected

Such were the conditions on the Mississippi River on a chilly early spring night as a Z-drive tug left the safety of a riverside dock just before midnight to travel south to prepare for a 'routine' ship assist job early the next morning at an oil terminal downriver.

The weather was mostly clear under a crescent moon with patchy fog and little wind as the tugboat got underway. The vessel's mate who was on watch had recently ended a heated argument with a family member on his radio telephone and was resuming his regular duties. Perhaps because of his agitated state, he was unaware of the fact that his tug was slowly drifting to the left as it made its way downriver. He soon began to sense the vessel's departure from center channel, however, and was preparing to adjust his course to starboard.

Before he could alter course, he heard a loud rumbling and felt a shudder from the tug's port Z-drive unit. He quickly took the port unit out of gear, turned sharply to starboard and returned to the dock he had departed from less than 30 minutes earlier. Preliminary investigations at the dock revealed that not only had the tug left the channel when traveling southbound, but that the resulting grounding had torn off the vessel's Z-drive, spilling an unknown quantity of what was assumed to be engine oil, accounting for the sheen which was spotted on the surface at daybreak.

After notifying his company of the incident, the mate immediately called his license insurer's 24-hour claim reporting hotline and within 15 minutes was speaking with a local maritime attorney assigned to him by his license insurer. The lawyer calmed him down and provided him with guidance and instruction to help prepare him for his impending initial Coast Guard interview which took place at the dock in the early morning hours. In later private conversations with his attorney, the mate reluctantly conceded his assumption that the tug had grounded outside the channel, but still maintained that the vessel had not yet left the channel at the point of impact.

While leaving these and other critical questions and assumptions to Coast Guard investigators working the case, he met with his attorney to prepare a statement and complete the CG2692 marine casualty report form. Predictably, less than two weeks later, the licensed deck officer was contacted by the local Coast Guard Marine Safety Office (MSO) and directed to come in for a more in-depth interview related to the facts surrounding the grounding. He attended the interview with his maritime attorney by his side.

Cell Phone Use Investigated

As the interview proceeded, it quickly became clear that the investigators suspected that the mate was inattentive to his professional duties because he was distracted while using his cell phone to make personal calls. Aware of his earlier argument on his radio telephone, investigators assumed that, once underway, he continued the argument on his personal cell phone, distracting him from his responsibilities. Pursuing that suspicion, the Coast Guard's investigating officer requested to see the mate's cell phone records for the period several hours before the early morning grounding. Knowing that the records would be subpoenaed if they did not comply, the attorney instructed his client to contact and procure them from his cell phone carrier. Thankfully for him (and his license), the mate's insistence that he had not made nor received any personal cell phone calls in the critical pre-grounding timeframe was confirmed by Verizon's records of his account.

While clear of that suspicion by investigators, the mate,

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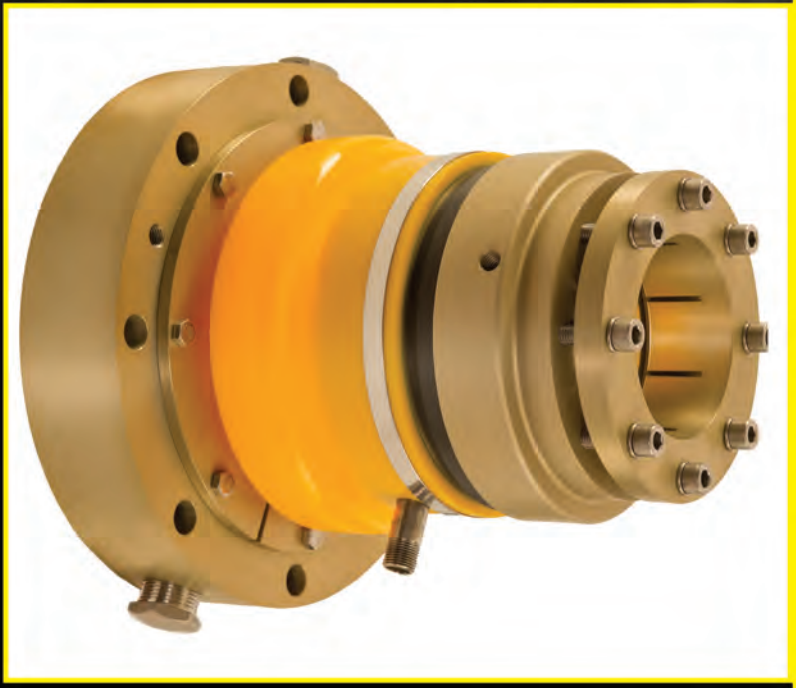

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who had been abruptly terminated by his employer for cause following the incident, still had to confront impending negligence charges being brought by the Coast Guard for the actual grounding and resulting minor spill of what turned out to be gear oil from the vessel's damaged propulsion drive.

A Generous Offer

Prior to bringing charges, however, the Coast Guard somewhat surprisingly proposed a settlement offer of the case under which the mate would accept a four-month suspension of his USCG license, remitted on a four-month probationary period. The net result being that the mate would be allowed to work under his license as long as he had no further license incidents during the four-month probationary period and enrolled in a Bridge Team Management course of 24 hours or more duration.

After consulting with his attorney and weighing his chances of receiving a better outcome if he rejected the Coast Guard's settlement offer, he decided to accept and sign the settlement offer. The thought of looking down the barrel of negligence charges and facing a Suspension & Revocation (S&R) proceeding was far more daunting than successfully completing his probationary period and attending the prescribed course, he concluded.

While this case had a relatively positive outcome for the mariner because of prompt reporting, quick attorney intervention and the mate's candor, clearly the Coast Guard's strategy and the mate's ultimate fate would have been decidedly different if his cell phone records revealed he was using his device while on duty the night of the grounding.

A risk worth avoiding

It's a fact of life in the modern world that rarely a day goes by when news reports of a horrific truck, bus or automobile accident is not attributed to operator distraction of some kind … typically involving a hand-held electronic device. The message to professional mariners operating commercial vessels on America's waterways is the same: That phone call, text, or email can all wait until the end of the trip or duty period. Suffice it to say that, when on the water in day or night operations, the consequences of 'distracted driving' can be as bad or worse for a mariner's career than any similar transgressions on the road.

Randy O'Neill *is Senior Vice President with Lancer Insurance Company and has been Manager of its MOPS Marine License Insurance division since 1984. Over the past 29 years, Mr. O'Neill has spoken and written on many occasions on the importance of USCG license protection. He is a regular contributor to MarineNews magazine. He can reached at:* ***roneill@lancerinsurance.com***

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Choosing the Best Financing Proposal

It isn't always about the rate.

By Richard Paine, National Marine Sales Manager at Signature Financial LLC

In a robust boatbuilding market – like the one we see now – even the most successful, financially stable operators need to borrow. And, if that newbuild or conversion program involves a significant fleet expansion, then everyone will need to leverage their business model. So, you've assembled and sent off your financial package to a handful of lenders, answered most of their questions and now have a number of their proposals or term sheets in front of you.

While the proposals are generally similar, some are not, especially from non-commercial marine lenders and may contain arcane language or confusing structure. Evaluating one proposal over another to determine suitability and competitiveness is a key to securing the best financing or leasing facility for your company. The formats of most proposals generally follow a certain format. Sure, the rate offered is important, but ultimately, understanding the nomenclature is the key to selecting the right option for you and your growing operation.

Garden Variety Proposals

Construction Loan Proposal: The potential lender will specify the rate and term of the loan; name corporate and/or personal guarantors; describe the asset(s), including vessel specs, cost, propulsion system and major equipment; shipbuilder information; progress payment or milestone schedule; repayment scheme; assignment of construction contract; insurance requirements; capitalized or periodic interest payments; advance against cost; value of owner-supplied equipment or additional collateral; either floating or fixed interest rate and to what it is indexed; break funding penalty if any. Expect a "material adverse change" (MAC) clause in the general terms of the loan. A MAC clause is the lender's escape language which requires the borrower to repay all loan amounts advanced in the event of a major decline in the financial health of the obligor's business.

Term Loan Proposal: A term loan usually follows the termination of the construction loan (if there is any). The potential lender describes the collateral, lists any additional collateral to be pledged; describes the method for release of additional collateral; names guarantors; specifies loan amount and down payment. The lender will propose the term of the loan; the interest rate, corresponding index and the amortization period. Various repayment terms may be offered including seasonal payments; non-standard payment intervals; balloon payments; delayed principal payments or other, sometimes highly creative payment plans. Additional language may include prepayment penalties, survey requirements, fees and other costs to be incurred by the borrower. Insurance requirements vary and are dictated by the vessel's usage characteristics. Expect higher limits to be required for vessels that transport petroleum or other noxious liquid or dry cargos.

Bareboat Charter or Lease Proposal: What is in effect a proposal to offer terms and conditions to rent a vessel for a specified period of time, a lease will vary from a loan proposal in a number of important ways. There are two major flavors of a lease, operating and capital. ***If:***

- *Title automatically passes to the lessee at the termination of the lease*
- *The lessee may purchase the vessel at less than fair market value*
- *The term of the lease is greater than 75% of the vessel's useful life*
- *The present value of lease payments are less than 90% of fair market value*

Then: the lease is a capital lease which is, in effect, a financing agreement. The lessee claims depreciation and interest on the vessel, the lessor shows the interest charged as income. If it is not a capital lease, it is an operating lease and depreciation and the cost of borrowing to finance the vessel is claimed by the lessor. The lessee can claim rent paid to the lessor as a deduction on his/her taxes.

Expect a lease proposal to specify the type and terms of the lease that is being offered. Information should include: the length of the lease (the term or tenor); payments in advance or arrears; the monthly or other interval between payments; the payment amount specified as a dollar amount or lease rental factor; insurance requirements; a possible early buyout option (EBO) wherein a fixed price at a specified date is offered for the purchase of the vessel; and termination options at the end of the lease. These options may include a return to lessor provision, an opportunity to purchase the vessel or the option to re-lease the vessel for an additional term. The lessor will disclose the index used to determine the rate, but usually will not offer either the actual rate being charged or the residual value set by the shipowner of the asset at termination.

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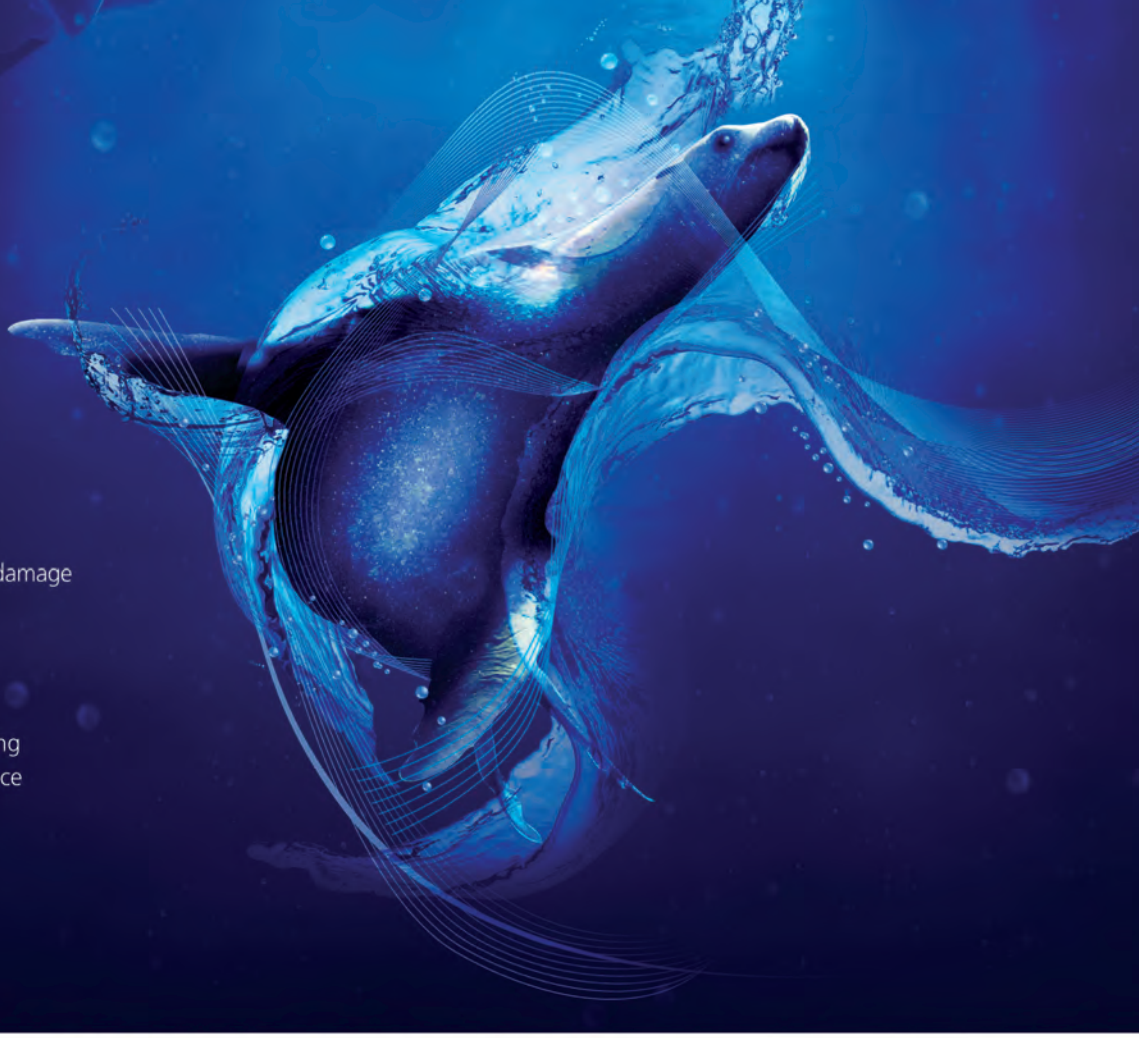

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Evaluating the Proposal

Most loan proposals can be evaluated simply by comparing advance, interest rate, term, points or fees paid by the obligor. Others may have included requirements that specify when and how much it would cost to pay off or terminate the loan. Still others may require that certain covenants for debt and interest service coverage or liquidity ratios be met and maintained. Prohibitions on secondary mortgages, assignment of equity or limitations of distributions to shareholders are other possible covenants. Violations or breaches of these covenants may result in a default and the lender "calling" or accelerating payment of all future payments or increasing the pricing of the loan. No covenants are the best covenants.

Comparisons of leases or Bareboat Charters are not quite as simple, although the basics are the same. There is inherent risk incorporated to most operating leases which generally occur at the termination of the lease. Leases are available in a number of different "flavors." Some carry more risk and some carry less ... most risk lies in the value of the vessel at the end of the lease. In a fair market value termination, the vessel can be purchased at the then current fair market value (FMV) as determined by an independent surveyor. Further, the option to re-lease the vessel for additional periods may be based in part on payment history of the lessee and the then current index. What may be available to the lessee to mitigate some of the FMV risk in a operating lease or bareboat charter is the EBO. Given that if the lessor's profit (Internal Rate of Return or IRR) on the vessel's lease remains the same, then the greater the amount of the EBO, the lower the amount of the rent . . . and vice versa. The EBO must meet the Internal Revenue Service's "compulsion test." The purchase price of the collateral cannot be less than the present value of the remaining rents plus a FMV worth not less than 20% of assumed value. The lender's rate of return of the lease and the EBO are generally the same. It is this value of this IRR which, in addition to the rent and amount of the EBO that is used for comparison between one proposal and another.

As the actual calculation of the internal rate of return at the EBO is arcane at best, contact your CPA or financial analyst for their professional expertise in performing such calculations and shrink the mountain of proposals to the one that suits your business best. And, remember, it isn't always just about the rate.

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WRRDA:
Clearing the Channel for P3 Projects
A Creative Combination for Financing Inland Waterways Infrastructure

By James A. Kearns

Earlier this year, the U.S. maritime industry in general, and the inland waterways industry in particular, celebrated the long-awaited passage of the Water Resources, Reform and Development Act of 2014. Among the accomplishments of this legislation were provisions to address the funding needs of the ever-worsening condition of the inland waterways infrastructure.

Specifics – and Caveats, too

Among these provisions are Sections 2004 and 5014 of WRRDA. The first of these provisions, Section 2004, is captioned *"Inland Waterways Revenue Studies,"* and requires the Secretary of the Army to conduct a study on the "potential benefits and implications of authorizing the issuance of federally tax-exempt bonds secured against the available proceeds, including projected annual receipts, in the Inland Waterways Trust Fund." This section also requires the Secretary to conduct a separate study of the "potential revenue sources from which funds could be collected to generate additional revenues for the Inland Waterways Trust Fund."

The second provision, Section 5014, captioned *"Water Infrastructure Public-Private Partnership Pilot Program,"* requires that the Secretary establish a "pilot program to evaluate the cost effectiveness and project delivery efficiency of allowing non-Federal pilot applicants to carry out authorized water resources development projects for coastal harbor improvement, channel improvement, inland navigation, flood damage reduction, aquatic ecosystem restoration, and hurricane and storm damage reduction."

Of the two provisions, the public-private partnership (P3) pilot program under Section 5014 has received substantially more attention in the maritime press and at industry conferences than have the studies of federally tax-exempt bonds and potential sources of additional revenue for the IWTF under Section 2004. One of the reasons for this disparity might be that Section 5014 authorizes a pilot program to be actually conducted, while Section 2004 provides only for studies, which might—or might not—result in further action. (For both provisions, it should be kept in mind that WRRDA is only authorizing legislation; it does not provide funding for the studies and projects that it authorizes. Such funding is provided—if at all—only as part of the annual appropriations process in Congress.)

USACE Listens – But, no easy answers

Soon after the enactment of WRRDA in June of this year, the U.S. Army Corps of Engineers scheduled four listening sessions to receive public input on those provisions in WRRDA that are the responsibility of the Corps. The listening sessions were organized according to specific themes selected by the Corps, with each session covering the provisions of WRRDA related to the particular theme of that session.

The second of these listening sessions was held on August 27, 2014, and focused on the provisions of WRRDA related to alternative financing, including the pilot program for public-private partnerships under Section 5014. Section 2004 was not included in the list prepared by the Corps of WRRDA provisions to be covered in that listening session, and no one commenting in the session mentioned it.

But this little-noticed provision may yet have its turn in the limelight. Each discussion of public-private partnership financing inevitably comes down to the question of how sufficient revenue will be generated from the P3 project to provide the return on investment required by the private sector partner. For the inland waterways infrastructure, the greatest funding needs are associated with the system of locks and dams and with the dredging of ports and river channels. Therefore, these are the projects that are most often studied as possible candidates for the use of P3 financing. Various suggestions have been made for how such a P3 project could, on its own, generate a return on investment sufficient to attract private sector funding. These suggestions have included user fees or other payments by users for services (including lockage fees and ad valorem cargo fees), tax increment financing, revenues from hydropower or hydrokinetic energy generation, and revenues from commercial development.

None of these possible revenue sources has, as yet, at-

tracted an enthusiastic following; in fact, the proposal of lockage fees has been roundly rejected by nearly every segment of the inland waterways industry. So where will the revenue come from?

Common Sense Funding Relief?

A simple and straightforward solution would be to use the fuel tax revenues that the IWTF receives each year. Indeed, this approach has been proposed by a study prepared for the United Soybean Board by the Center for Ports and Waterways of the Texas Transportation Institute, titled "New Approaches for U.S. Lock and Dam Maintenance and Funding," published in January 2013 (the USB Study). (A copy of the USB Study can be found, among other places, on the website of the Soy Transportation Coalition at **www.soytransportation.org**.)

The USB Study presents three scenarios to illustrate how the IWTF receipts could be used to support the issuance of bonds to finance capital projects on the inland waterways. The three scenarios are all essentially the same in their underlying approach. In each scenario, the projected annual receipts of the IWTF are pledged for debt service—the payment of principal and interest—on bonds that are issued to obtain, up front, all the funds expected to be needed for a capital project. The three scenarios differ only in whether all, or only some, of the projected IWTF receipts are pledged for debt service, and in whether the projected receipts are calculated on the basis of the existing fuel tax rate of 20 cents per gallon or on a higher rate of 24 cents per gallon. All three scenarios provide dramatic illustrations of how IWTF receipts can be effectively used to generate the funds needed for major capital projects.

"For those who have been engaged in the discussions over the past several years about how to find additional funds for our rapidly deteriorating inland waterways infrastructure, there would seem to be little need for such a study. For at least the past several years, the inland waterways industry has been recommending that the fuel tax be increased by 30 to 45 percent, from its current rate of 20 cents per gallon to between 26 and 29 cents a gallon."

In principle, the IWTF receipts could be used to provide not only a return on debt instruments such as bonds, but also a return on equity investments. Such equity investments would not likely take the form of direct ownership of the facilities themselves that are financed, since ownership of the nation's locks, dams and public ports would presumably be kept in the hands of the federal or local governments. However, there are a variety of structures for P3 projects, and in a particular case the private sector partner might provide its funds in the form of an equity investment rather than as a loan.

Therefore, one might expect that any discussion of how to carry out the P3 pilot program under Section 5014 of WRRDA would include a reference to the studies called for in Section 2004 on how IWTF receipts could be used to support bonds and how IWTF receipts could be increased. Oddly enough, this connection has not yet been made in the attention that is being given to P3 pilot program provisions of WRRDA.

One of the studies that Section 2004 calls for is a study "on potential revenue sources from which funds could be collected to generate additional revenues for the Inland Waterways Trust Fund." In carrying out this study, the Secretary of the Army is required to evaluate an "array of potential revenue sources from which funds could be collected" in addition to the receipts generated by the existing fuel tax.

Stakeholders: Ready to Ante Up

For those who have been engaged in the discussions over the past several years about how to find additional funds for our rapidly deteriorating inland waterways infrastructure, there would seem to be little need for such a study. For at least the past several years, the inland waterways industry has been recommending that the fuel tax

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be increased by 30 to 45 percent, from its current rate of 20 cents per gallon to between 26 and 29 cents a gallon. This recommendation was included in the Capital Projects Business Model prepared by the Inland Marine Transportation System Capital Investment Strategy Team, which was unanimously approved and adopted by the Inland Waterways Users Board on April 13, 2010.

More recently, in a letter dated September 24, 2013, to the House Ways and Means Committee, the Waterways Council and a coalition of nearly 40 stakeholders expressed their support for increasing the fuel tax to at least 26 cents per gallon. Therefore, a "revenue source from which funds could be collected to generate additional revenues" for the IWTF is already in place; namely, the fuel tax. All that needs to be done is to increase the rate, and those who would be paying the increased rate have already come out in favor of it. From the viewpoint of the industry, what is there to study? It might be that this otherwise obvious way to increase IWTF revenues is a victim of the current political logjam in Congress or the strong opposition in certain quarters to any new or increased taxes. The real purpose of the study might be to see if other approaches can be found that are more feasible politically, or simply to buy some time until the composition or climate of Congress changes. In any event, the current system for funding the IWTF remains in place, receiving the fuel tax revenues paid each year. According to the USB Study, even at the existing tax rate and level of receipts, the IWTF revenue stream would be able to support between $1.4 billion and $1.8 billion in lump-sum payments for inland waterways infrastructure projects over the next eight years. This assumes that the entire IWTF revenue stream would be used for this purpose. If only a portion of the IWTF's annual receipts were directed to such a use, the lump-sum amount that could be supported would be reduced accordingly, but would still be significant.

Unanswered Questions: great hope

The critical question in any P3 project is how to generate the funds that are required to provide a return on investment to the private sector partner. A source of such funds is already at hand in the annual revenues of the IWTF. Congressional appropriation of IWTF funds for this purpose would be required, but Section 5014 likewise requires an appropriation for any P3 projects under the pilot program of that provision. If an appropriation can be obtained for a P3 project under Section 5014, then appropriation of IWTF funds to attract private sector participation in the project would be a logical combination of the innovative financing approaches provided in WRRDA. What's not to like?

BRYAN CAVE

James A. Kearns *is a Partner at Bryan Cave LLP. Mr. Kearns has represented owners, operators, financial institutions (as both lessors and lenders), and end users for more than 30 years in the purchase, construction and financing of vessels engaged in both the foreign and coastwise trades of the United States, including compliance with the requirements of the Jones Act for the ownership, chartering and transfer of vessels. Kearns has earned an LL.M. (in Taxation), New York University, J.D. cum laude, University of Notre Dame, 1974, and a B.S.E.E., summa cum laude, University of Notre Dame, 1971. Reach him* ***at jakearns@bryancave.com***

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Safe Operations Offshore: *It's Our Culture*

By Ben Billings, OMSA

The Coast Guard has sharpened its focus on marine safety and safety culture offshore through recent blog posts and the use of its Twitter feed. This is a conversation that the offshore marine industry is excited to have because we invest tremendously in this area, and it is interwoven into everything we do. Safety represents a savings, not a cost. A strong safety culture can reduce lost employee hours, hospital expenses, disability payments, pollution costs, cargo damage, insurance premiums, and most importantly, it can save lives.

The offshore marine industry has a unique experience in this arena because of who our customers are. Oil and gas companies proactively develop industry standards for offshore safety through the American Petroleum Institute (API), Offshore Operators Committee (OOC), the Center for Offshore Safety (COS), and other bodies. They are also heavily regulated by government agencies. The Bureau of Safety and Environmental Enforcement (BSEE) requires offshore lessees to take responsibility for all vessel contractors working on their lease. As a result, these energy companies conduct regular inspections and audits of the vessel operators they hire, using systems such as the Offshore Vessel Inspection Database (OVID), which went live in 2009 and includes information on 1,200 vessel operators and 7,000 vessels, or ISNetworld, which provides offshore operators with access to information about vessel contractors ranging from inspection certificates and employee training to insurance documents. In the U.S. Gulf of Mexico, vessel contractors that do not operate safely will not get hired. It's that simple.

More than a Motto

Safety in the offshore marine industry is much more than just a company motto or a sticker on a hardhat. Dozens of companies are finding creative ways to empower crewmembers and hold them responsible for understanding and carrying out their responsibilities. These companies continue to up their safety game through a creative mix of training, regular drills, audits, financial incentives, crew competition, and positive peer pressure. The result among OMSA member companies has been the manifestation of a visible and palpable safety culture that extends from the engine room all the way to the board room. These operators encourage their employees to speak up and reward them for doing so. That is how they achieve an open and honest reporting culture, a key element of any effective safety culture.

In Practice: Safety Starts at the Top

Here are just a few examples of the hundreds of tools that offshore vessel operators use to ensure the safety of their crew, vessel, and environment:

Training: Each crewmember on a vessel over 200 tons must complete STCW Basic Training (BT) before going offshore, including courses in first aid, CPR, firefighting, and water survival. Many companies require all employees to complete BT. OMSA's Offshore Orientation (a SafeGulf equivalent program) is a mandatory, 8-hour Offshore Safety Orientation Course that all mariners must take before they can work offshore. Most crew then work as 'short service employees' over the following six months with the benefit of an assigned mentor undergoing job-specific training on a regular basis. Additional onboard training and safety reviews for all crew are common.

JSAs, Safety Meetings, & Management of Change: Every day, offshore crews conduct careful planning for safe operations, reviewing potential risks and mitigation factors, and ensuring that crewmembers are aware of their responsibilities before beginning a job. Safety meetings are often held at the beginning and end of each shift, and work is plotted out in advance through a Job Safety Analysis (JSA) or Management of Change to assess potential hazards and

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discuss procedures to mitigate or address them.

Crewmember Interviews & Assessments: OVID audits often include interviews of individual crewmembers to ensure they are knowledgeable about their responsibilities aboard ship. Many operators, such as Barry Graham Oil Service, regularly conduct interviews during crew changes and internal company inspections. The company also re-tests its mariners regularly using Competency Verification Assessments to ensure they haven't forgotten any of the requisite knowledge. Seacor Marine conducts "Safety Stand-ups" where topics such as risk tolerance are discussed with all crews including certain triggers that cause mariners to take risks in their work environment and personal lives.

Drills: OSVs are required to conduct fire and abandon ship drills every month, and most hold drills on a weekly basis. These are not taken lightly either. Marine Transportation Services, for example, grades each crewmember on their performance. Individual performance matters from a pay perspective, but peer pressure is also a factor, because any department has the capacity to uphold or tarnish the grade of the entire ship; all vessels in the fleet are graded against one another and ranked sequentially, and the vessel with the best safety performance is designated as "Pride of the Fleet."

Safety Bonuses: Safety bonuses are a popular and effective method of improving performance in the offshore fleet. Many companies issue quarterly safety bonuses to crewmembers and recognize a "Boat of the Year" for its safety excellence. If one crew on a vessel has an incident, both crews lose their bonus. Positive peer pressure is utilized to keep crewmembers focused on what matters.

Audits & Inspections: Internal and external audits are pervasive in the offshore service fleet. On one particular day, Edison Chouest Offshore was participating in 11 separate third-party audits by customers and regulatory agencies, and there are days when it has done even more. Unlike some other segments of the U.S. merchant fleet, OSVs are subject to comprehensive inspection, and while the Coast Guard conducts inspections annually, most OSVs undergo two to four inspections in a given year through internal HSE departments, class societies, and charterers.

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Reporting & Monitoring: A safety culture works best when there is a reporting culture to drive it. Stop Work Authorities (SWAs) are essential to crewmember empowerment and safe operations, but they can only achieve their purpose when crewmembers feel comfortable utilizing them. Seacor Marine, for example, has documented 526 Stop Work Authority actions already this year. Monitoring is another important part of the company's safety culture. Seacor requires its mariners to observe one another's work habits through its Behavior Based Safety System "PAUSE," which covers 15 critical elements of job safety. The system praises good work practices and offers coaching and safer alternatives to correct unsafe habits or factors. Through the first three quarters of 2014, Seacor employees have recorded 13,338 observations noting 104,446 safe elements and 815 at risk. This report volume is a testament to crewmember engagement in Seacor's safety culture, and the performance numbers reflect the company's exceptional safety record, which exists largely because of the continuous monitoring and risk reporting that prevents incidents from ever occurring.

Separately, Harvey Gulf International Marine has installed three iPads on each of its vessels for crewmembers to report any safety concerns in real-time. All entries are sent to the entire safety department of approximately two dozen employees. The company tracks and trends real-time data to identify the top five reported hazards and at-risk behaviors and then modifies its interventions and training to address them, continuing to track the data until it witnesses an improvement in those safety issues. Seacor also encourages employees to submit Opportunities for Improvement that identify potential exposures or opportunities to strengthen safety guidelines, and the company gives an award each year for the best idea.

Leadership: The best corporate safety cultures exhibit a demonstrated commitment from management. The chief executive officers of Edison Chouest Offshore and Montco Offshore, for example, both receive a safety report from each vessel in their fleet every Monday morning and personally respond to each one. That sends a strong message to every single employee within the company that safety is priority number one.

Information Sharing: Companies also learn from one another. Safety alerts and near miss reports are commonly shared among operators.

People Driven, Individual Buy-In

Offshore safety is people driven and requires individual buy-in. By encouraging, incentivizing, and facilitating reporting and accountability, the offshore marine industry has made safety a core value that is ingrained in every employee and a visible, tangible part of everyday operations. Vessel operators are leaning forward more than ever to get people involved, be creative, share information, and constantly improve. They believe that safety must be priority number one and embrace the notion that vessel operators should implement a Safety Management System throughout their fleet.

Continued progress on safe operations offshore will not come about as a result of stodgy regulations, however. Real improvements will come instead from clear training, regular assessments, crewmember empowerment, accountability, effective leadership, and an open, honest, and dynamic safety culture that encourages new ideas, healthy competition, and diligent reporting and monitoring. The offshore workboat fleet is extremely proud of its individual and collective efforts to improve safety and will continue to innovate and lead the way.

Ben Billings *is President & CEO of the Offshore Marine Service Association (OMSA), a nationwide trade association headquartered in New Orleans that represents more than 200 member companies. OMSA's membership includes approximately 100 firms operating more than 1,200 vessels that provide transportation services to the offshore oil and gas industry in the Gulf of Mexico and around the world. Billings holds a bachelor's degree from the University of Texas at Austin, master's degrees from the United States Naval War College and the University of London.*

Is "Noise" Your Next Regulatory and Environmental Hurdle?

A different kind of emission in the compliance spotlight – above and below decks.

By Robert Kunkel

Top image: the $2.7m environmentally friendly research vessel, Spirit of the Sound.
Right image: R/V Spirit of the Sound christened by her godmother Astrid Heidenreich on Friday, September 26, 2014. She is assisted by boat build project manager Robert Kunkel, Amtech.
(Photo courtesy of the Maritime Aquarium at Norwalk)

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The International Maritime Organization (IMO) Sub-Committee on Ship Design and Equipment during its 2012, 56th session submitted a draft revised code on noise levels onboard ships. The code set out mandatory noise level limits for machinery spaces, control rooms, workshops, cargo blocks and accommodation spaces in an effort to address health and safety issues on board ships, ATB's and/or tugboats. The benefits of the noise reduction included improved shipboard communications, an employer's administration of an effective hearing conservation program, maintaining decibel levels below 85 dBA and identifying peak sources where extended periods of "noise" were evident.

It is difficult to argue with an attempt to provide regulations that protects the health of your crew or assist with better communications in the work place. The shipboard noise debate has also been taken further ashore when you can consider terminal operations and the noise generated during tanker and barge discharges in surrounding coastal towns and cities where refinery operations are prevalent on a daily basis. Many coastal municipalities are unhappy with the racket and as a result, some have even been successful in limiting tanker terminal operations to limited daylight periods.

Upping the Ante

The Marine Environmental Protection Committee at its sixty-sixth session in April of 2014 extended the range of the environmental envelope. The Sub-committee on Ship Design and Equipment provided code on the reduction of underwater noise from commercials shipping and issued Guidelines for the reduction of underwater noise from commercial shipping to address adverse impacts on marine life.

To be perfectly clear, marine life in the guideline definition is not your officers and crew or your neighbors near the refinery. The application of underwater acoustic ecology is based upon scientific research completed by NOAA in 2009 that identifies both short and long term negative consequences on marine life and especially marine mammals. Most of that research was collected along the coastlines of the United States in areas where commercial shipping, tug and barge traffic and offshore supply operations are growing. The rising background noise was noted to affect the communication process of many species of marine life and in certain marine areas, the ocean noise level has doubled each decade over the last sixty years.

According to the research findings, increased ship traffic generates an acoustic 'fog' that confuses marine mammals, separates them from their "pod" and as a result, these solitary swimmers are less able to locate mates' further threatening survival of the species. And, say the experts, for many whales and dolphins, it is also difficult to acoustically locate their prey through the noise and more frequently, marine mammals collide with ships which they identify only too late as a danger.

There are also noise related economic considerations in commercial fishing. After exposure to heightened noise levels, the catch rates of many commercial fishing species, herring, cod, sea bass, sea bream or haddock decline by 40 to 80 percent. Ocean noise pollution can have a devastating effect on fish stocks, already depleted at an estimated 90 percent.

Addressing the Problem: Below Deck

We raise these new regulations as they relate to shipping's latest improvements in energy efficiency and emissions reduction. Our industrial environmental sustainability can easily be advanced to address the issue of noise both above and below the keel. Designers, shipbuilders and operators should be encouraged to consider new technologies and applications that address these issues. The mitigation effort should consider operational applications beyond propeller cavitation and look to alternative operational modifications.

In several recent new construction projects completed by Amtech and employing new technology, noise levels on

board the ship resulted in many conversations between the builder and crew. The trials and delivery of the American Phoenix, a 50,000 dwt U.S. flag product carrier, were deemed to be so quiet and calm that the crew continually looked through the port lights to see if the ship was actually at sea.

Amtech was next employed to develop a lithium battery hybrid propulsion research vessel. The propulsion system developed by Northern Lights, BAE Hybrid Systems and Corvus Energy was introduced due to a request to reduce emissions and fuel consumption along with providing a quieter platform for collecting data and teaching. Built at Robert E. Derecktor shipyard in Mamaroneck, New York, the Spirit of the Sound hybrid application is being used as a platform for offshore wind farm maintenance where emissions at the farms will be an issue during construction. The research vessel is used to collect water samples and track marine life in Long Island Sound and the actual "noise" benefit of the silent propulsion system was not realized until sea trials were conducted and schools of fish and other marine life surrounded the vessel during its movements in and out of the harbor, without machinery noise or wake.

On Deck

Noise reduction efforts have also continued in our Articulated Tug and Barge designs and construction. Working with Marflex of the Netherlands and their U.S. agent Southern Electric Pumping Systems, variable frequency drive deepwell pumps have been introduced to several chemical and tank barge designs providing an alternative to historic hydraulic based cargo systems. Marflex was first introduced to us during several product tanker construction projects in Korea where the builder understood the cost

Marflex Variable Frequency Drive Cargo pump.

savings and efficiency of installing electrical cable versus hydraulic piping as the energy source. Marfex is now working with many U.S. shipyards and design houses to help achieve those production cost savings in U.S. construction.

The proposed IMO regulations and the capability to reduce deck chatter during cargo operations on the ATB applications are not new to Marflex. The issue was studied in Europe in October of 2013 when the Dutch company completed a survey of noise measurements on the MDPC-200 deepwell pumps while operating in Rotterdam to assess compliance with IMO guidelines. Working areas on board affecting the crew, areas located 275 meters from the vessel ashore and underwater survey points were all collected.

The variable frequency drives allow complete speed control of the deck mounted electric motor driven deepwell pump. Sound levels were recorded during idle speeds, full discharge and stripping exercises. At all RPM levels the survey concluded that the noise limits were easily met. The underwater noise levels measured from the terminal jetty to the port side of the tanker while one or more of the Marflex pumps were operating also produced interesting results. The port geometry, resonance between the quays and the slope of the bottom profile all affected the noise generated by the pumping system. We found the results

(Photo courtesy of the Maritime Aquarium at Norwalk)

interesting as most data concerning underwater noise pollution addresses only propeller cavitation and though we have addressed propeller design in recent builds, the fact that other operating system could add "noise" was not considered in the design effort.

Why all the chatter about ship noise?

On October 10, 2008, NMFS published a final rule (73 FR 60173) that established vessel speed restrictions to reduce the likelihood of deaths and serious injuries to endangered North Atlantic right whales from collisions with vessels. The regulation limited vessel speeds to 10 knots or less for vessels 65 ft (19.8 m) or greater in overall length in certain locations and at certain times of the year along the east coast of the U.S. Atlantic seaboard. The regulation contained a provision that allows for an exception to the speed restriction when navigational safety requires a deviation. This rule also contained a provision whereby the regulation would expire (or "sunset") on December 9, 2013. The sunset provision was removed and the regulations remain in place. Nevertheless, though environmentally responsible, the speed reductions cause economic harm and in some cases dangers of navigation.

The industry's continued attempt to increase efficiency, reduce emissions and remain environmentally sustainable has introduced new technologies. An effort to use these technologies to address collateral issues should continue to avoid regulation and address the problems as "guidelines." There are better ways to solve the problems beyond restrictions, limits and regulation. Let solid design and engineering be our path forward to environmental sustainability.

amtech alternative marine technologies

***Robert Kunkel**, President of Alternative Marine Technologies, is currently serving as the technical advisor to Coastal Connect, a U.S. company actively developing LNG propulsion as a maritime component of short sea shipping. He is a past Vice President of the Connecticut Maritime Association, Past Chairman of the Federal Short Sea Shipping Cooperative Program and a member of the ABS Special Committee on Ship Operations.*

An open Arctic and its impact on drilling

William Cho, Head of MatthewsDaniel Weather, a division of the Bureau Veritas Group, explains why improvements in drilling technologies and weather monitoring systems have made offshore shelf drilling operations in the Arctic Circle increasingly attractive to upstream oil and gas companies and their investors.

By William Cho

Rising crude oil prices motivate not only technological innovators to explore cheaper alternative energy sources, such as solar panels and wind turbines, but also upstream oil and gas companies to explore new oil reserves which had not otherwise been economical. While the exact amount is less certain than highly developed areas, such as the North Sea or the Gulf of Mexico, the United States Geological Survey (USGS) estimated in 2008 that the Arctic contained about 412 billion barrels of undiscovered oil and oil equivalent.

The Arctic Circle area, in particular, has approximately 90 billion barrels of undiscovered but technically recoverable oil, 1,670 trillion cubic feet of technically recoverable natural gas, and 44 billion barrels of technically recoverable natural gas liquids. To put these amounts into context, they account for about 22 percent of the 'not yet discovered but recoverable' resources in the world. Drilling down into these figures, lying in the Arctic zone is one third of the world's undiscovered but potentially recoverable natural gas reserves. With improvements in drilling technologies and weather monitoring systems, offshore shelf drilling operations in the Arctic Circle have become increasingly attractive to upstream oil and gas companies and their investors. USGS estimates that about 84 percent of these resources are offshore.

Melting Ice = Accessible Assets

In addition to technological advancements in identifying oil and gas pockets and new drilling methods, such as multilateral drilling, the declining ice extent in the Arctic Sea has enabled the exploration for minerals. An unprecedented amount of the Arctic ice melted in 2007, surpassing the previous record low ice in 2005 by 24 percent. Another record ice-melt was observed in the summer of 2012, leaving the Northwest Passage navigable. The next record low ice is expected to occur in 2015 or 2016. These findings signify that Mobile Offshore Drilling Units (MODUs) will be able to undertake voyages to areas previously inaccessible, and drilling contractors will also have longer drilling seasons.

MatthewsDaniel Weather monitors melting ice in the Kara Sea and the Chukchi Sea to calculate an estimated beginning and ending date for offshore drilling seasons. The Kara Sea ('Ка́рское мо́ре' in Russian) forms part of the Arctic Ocean north of Siberia and has a mean water depth of 110 meters (360 feet). Although the sea is ice-bound for about ten months of the year, a significant amount of untouched petroleum and natural gas reserves lie in the East-Prinovozemelsky field, an extension of the West Siberian Oil Basin. Estimated recoverable resources in East Prinovozemelsky Blocks 1, 2 and 3 are almost 21 billion tons of oil equivalent.

The Chukchi Sea ('Чукóтское мóре' in Russian), on the other hand, is a marginal sea of the Arctic Ocean and is bounded on the west by the De Long Strait, off Wrangel Island, and in the east by Point Barrow, Alaska. About 56 percent of its total area has a water depth of less than 50 meters (164 feet), and the sea is open (navigable) about three and a half months of the year on average. The oil and gas reserve in the Chukchi Sea is estimated to be as high as 30 billion barrels of oil and gas. Several oil companies have been bidding for extraction rights, for around US$2.6 billion.

Science Supports Seasonal Drilling

MatthewsDaniel Weather analyzed significant wave data in both the Kara and Chukchi Seas over three time periods:

1979 to 1989, 1990 to 1999, and 2000 to 2012, to determine the lengths of past drilling seasons. Jill Hasling, Chief Consulting Meteorologist at MatthewsDaniel, states, "In addition to the retreat of the ice in the Kara Sea, the Kara Gate needs to be ice-free (less than 15 percent ice in the region) in order to enable mobilization." Based on this research, Jill and her team were able to identify the historic potential drilling windows for the Kara Sea and the Chukchi Sea. Drilling seasons are determined by the retreat and return of ice in the Marginal Ice Zones (MIZ). MIZ is beyond the extent of the year-round pack ice.

"A number of separate and significant issues come into play when having to mobilize a mobile offshore drilling unit and, of course, its support and supply vessels into the Arctic. These include ice and potential heavy weather, which might come into play late in the season. The more accurately we can predict or model these, the better the industry can prepare to meet these difficult circumstances."

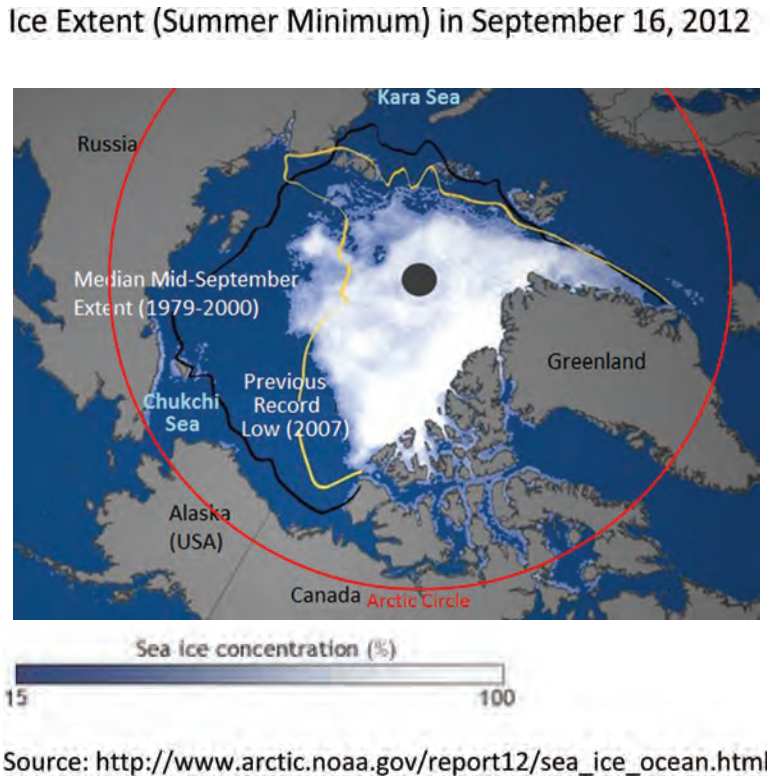
– S Douglas Devoy, President of MatthewsDaniel in Houston

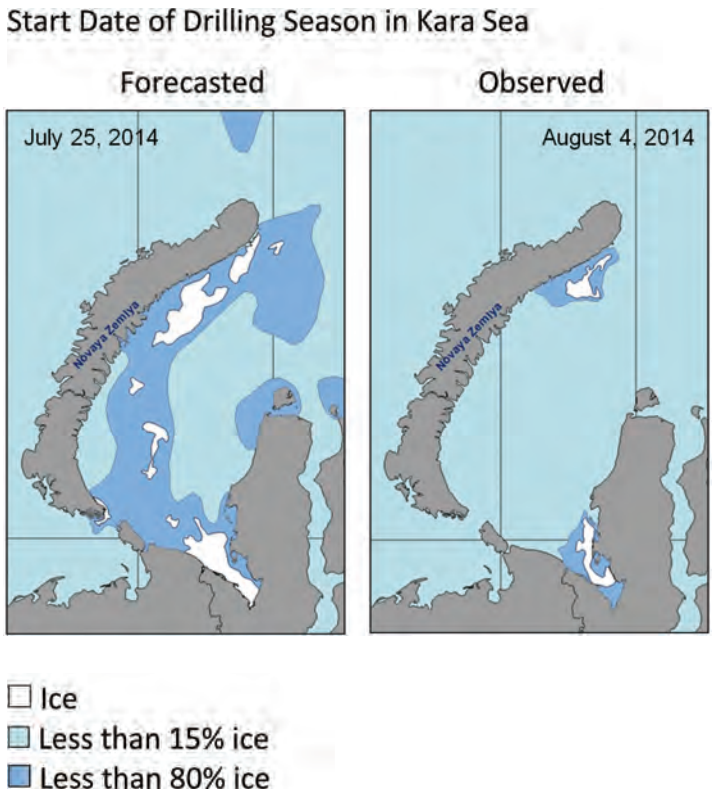
Combining this analysis of past drilling seasons with current daily plots of the sea ice extent and meteorological conditions, MatthewsDaniel Weather developed a methodology for predicting start and end dates of future drilling seasons. In May 2014, it forecast that the 2014 Arctic drilling season would start on July 25 and continue until October 25 for the Kara Sea and from July 18 to October 25 for the Chukchi Sea. The actual ice-free period (less than 15 percent ice in the region) began on August 4 for the Kara Sea and on July 25 for the Chukchi Sea.

James Vavasour, Executive Vice President at MatthewsDaniel, said, "It is still too early to accurately identify the end of the season, but we expect it will be within ten days of the prediction we made in May. We can, with a degree of confidence, estimate next year's drilling season; for the Kara Sea, beginning on August 4 and ending on October 30, and from July 25 to November 2 for the Chukchi Sea."

What does this mean for Industry?

Certain risks in the Arctic Sea are obvious, such as potential freezing of fluids and winterizing equipment due





to extremely cold temperatures. Other considerations are remoteness in an already isolated region, communication challenges, collision risk with drifting icebergs, and weather delays while retrieving drilling equipment from the ocean at the end of the season. S Douglas Devoy, President of MatthewsDaniel in Houston, adds, "A number of separate and significant issues come into play when having to mobilize a mobile offshore drilling unit and, of course, its support and supply vessels into the Arctic. These include ice and potential heavy weather, which might come into play late in the season. The more accurately we can predict or model these, the better the industry can prepare to meet these difficult circumstances."

Further analysis shows that the frequency of Arctic storms has increased due to more atmospheric interactions with the open sea. Arctic storms expedite the melting process by breaking up the ice cover. NASA's Arctic storm track maps contrast storm frequency between 1950-1972 and 2000-2006, showing a marked increase.

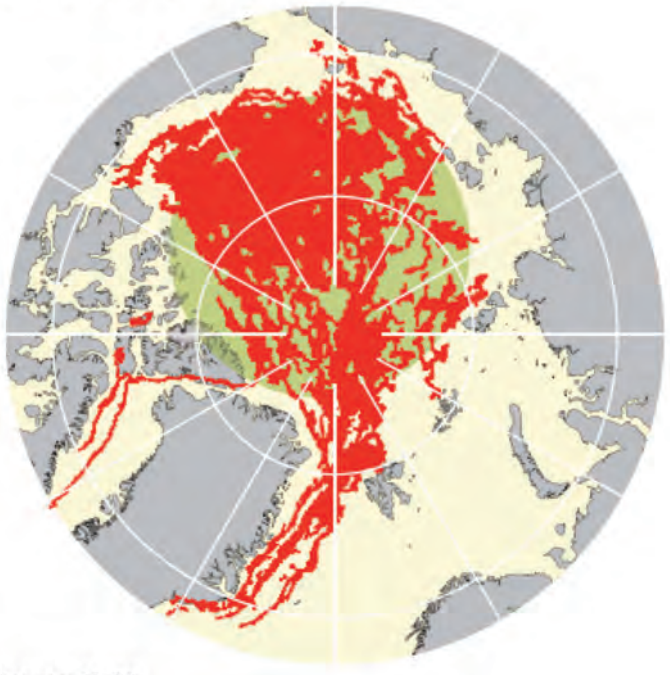
On a broader view, the ability to predict the drilling window will undoubtedly enable companies to fine-tune their mobilization programs, and benefit from a higher degree of certainty on expenditure planning. However, the weather analysis can have more specific influence on operations. During the planning stage of mobilizing a vessel to the Arctic, MatthewsDaniel Weather would provide SafeTrans voyage route simulations, based on captains' decision mimics and probabilistic environmental wind and wave condition reports. During the actual voyage, the Weather team would provide the mobilization team with twice-daily forecasts for the following eight days for more inclusive, 'real-time' planning and decision-making.

MatthewsDaniel demonstrates its commitment to risk mitigation in the Arctic environment through its contribution to SALTO: Safe Arctic Logistics, Transport & Operation. This Joint Industry Project aims to offer risk-based tools to assist the industry with its preparations for operating in Arctic environmental conditions.

The three factors that would make the exploration of Arctic reserves attractive to investors and upstream oil and gas companies are high commodity prices and technological feasibility, coupled with favorable environmental conditions. The first two criteria are met by the global rise of crude oil prices since 2009 and industry-wide investment and innovation in drilling technology. These technological solutions have made it feasible and more cost-effective to explore remote or difficult reserves and produce with fewer installations. The key that is specific to the Arctic is the lengthening of the drilling season, due to warming waters and increased storm activity.

Considered alongside these commercial factors are potential positive and negative impacts on local economies, environmental risks such as ecosystem disturbance and oil spill and political sensitivities. The mood and appetite is to accept the challenges that this harsh region represents. And, science and nature can combine forces to minimize risk and promote a safer operating environment.

Arctic Storm Tracks (2000 – 2006)



Source: NASA

William Cho *joined MatthewsDaniel as head of the weather department in September 2014. Prior to MatthewsDaniel, William worked in international trade, insurance and reinsurance industries for 10+ years. Cho holds undergraduate degrees in Mathematics and Economics from Vanderbilt University and completed Master's degree program in General Management at Harvard University (pending graduation in November 2014).*

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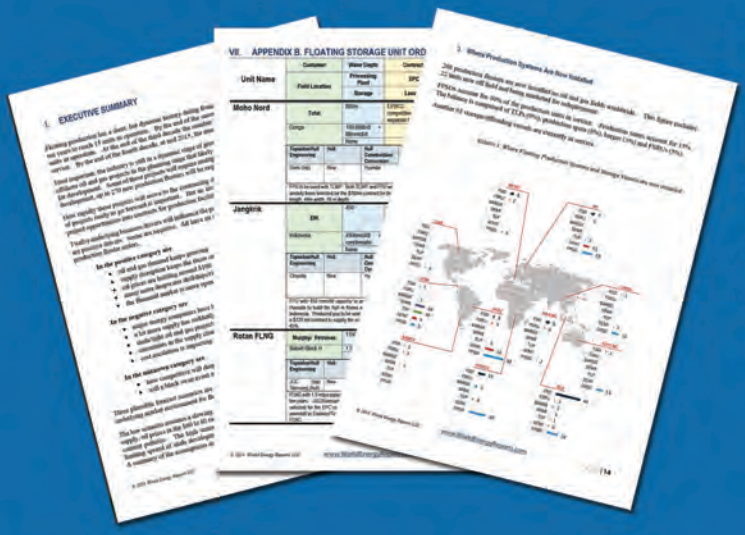

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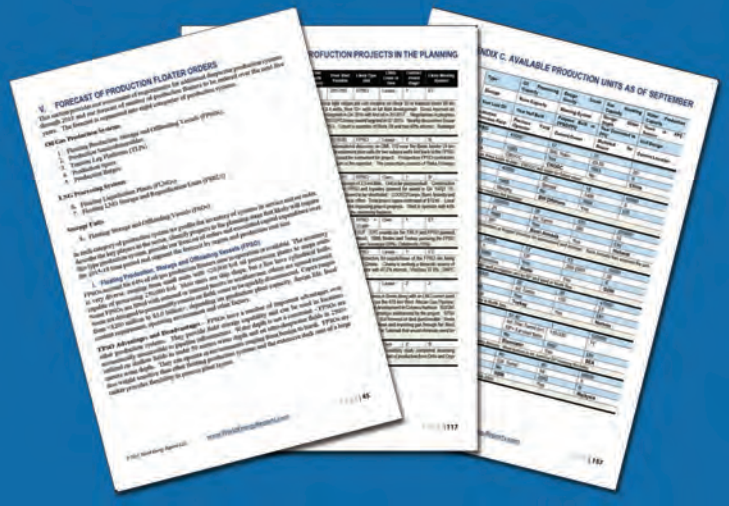

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Experience Counts in the Arctic

Edison Chouest's Fairweather, LLC lessens Arctic risk while increasing efficiencies in a challenging environment.

By Joseph Keefe

As interest in offshore commerce in the Arctic increases, key components of any successful operation in this theatre include logistics, assets, and of course, a healthy dose of experience while operating in cold weather environments. To that end, Fairweather LLC's Arctic operations include the Deadhorse Aviation Center (DAC). Strategically located at Prudhoe Bay, DAC provides oil companies and their suppliers with an aviation command center to manage both onshore operations and Outer Continental Shelf (OCS) exploration and production activities on the Arctic Ocean and Beaufort Sea.

But, anyone in the know will agree that it is foolhardy to forge ahead with any sort of Arctic operations sans serious hands-on experience in the region. Equipment alone won't get the job done. For many stakeholders, Edison Chouest Offshore subsidiary Fairweather, LLC is just the ticket. And, for Fairweather, they count on General Manager Lori Davey to provide risk mitigation, operational efficiencies and a steady, experienced hand in the region. For everyone involved, that's the ideal combination.

At the Helm

Lori Davey, a lifelong Alaskan and resident of Anchorage, joined Fairweather in 2012 as director of business development. Prior to that, she owned and served as president of Motznik Information Services, a data service company founded in 1974 that provides highly-targeted information searches for key Alaskan industries. Davey graduated from the University of Alaska Anchorage in 1992 and earned an MBA in 1998. Beyond this, she currently serves as a trustee on the boards of the Nature Conservancy in Alaska and was recently appointed to the Arctic Economic Council. As general manager of Fairweather, LLC, Lori is responsible for directing all of Fairweather's business activities and overseeing the company's expansion and management of Deadhorse Aviation Center.

A member of the Edison Chouest Offshore companies, Fairweather, LLC was founded in 1976 by Sherron Perry with a focus on providing aviation weather observation services to remote regions of Alaska. In response to the growth of the emerging oil and gas industry, Fairweath-

er expanded its operations to include a variety of logistics and expediting services to serve both onshore and offshore operations. Today, Fairweather provides a wide range of advanced support services, including drilling and production services, medical services, meteorological and oceanographic forecasting, aviation and airstrip support, environmental research, remote sensing, scientific surveys and expediting and logistics services. Without that support, much of what takes place in the Arctic today arguably would be impossible.

A key component of Fairweather's Arctic operations is the Deadhorse Aviation Center (DAC). In 2013, Fairweather formed Tulugaq, LLC – a partnership with Olgoonik Corporation and Kaktovik Iñupiat Corporation created to expand airborne assets for remote sensing operations and scientific surveys, bolstered by the purchase of a new Diamond DA42 optionally-manned aircraft. Fairweather is committed supporting safe and secure operations in Alaska and ensuring the needs of every project are met, no matter how complex.

The Arctic: Today & Tomorrow

Today, the maritime and the offshore oil and gas sectors form a large portion of Alaska's economy. Commercial activity in the Arctic region, already robust, could grow again in the not-too-distant futures. A recent report issued by the *McDowell Group* outlining the role of the Oil and Gas Industry in

Alaska's Economy found that 2013 related employment and payroll from "Primary Companies" totaled 5,335 workers, including 4,700 Alaska residents earning $780 million in wages. Including all direct, indirect, and induced employment and wages, oil and gas industry's spending in Alaska accounted for 51,000 jobs and $3.45 billion in total wages in Alaska's private sector. Looking beyond all of that, the industry accounted for 33 percent of all wage and salary employment in Alaska (111,000 jobs out of total of 335,000 jobs) and 38 percent of all wages ($6.45 billion in wages out of a total of $17.1 billion).

The future could be even brighter, says Davey. "There is an estimated 40 billion barrels of oil remaining to be

tapped on the North Slope and offshore areas of the Alaska Arctic," she said in September. According to the U.S. Government itself, the Alaska Outer Continental Shelf constitutes one of the world's largest untapped resources potentially reaching as high as 27 billion barrels of oil and 132 trillion cubic feet of natural gas, with the majority being in the Chukchi Sea. In February 2008, the second most successful oil and gas lease sale in the history of the United States took place, covering millions of acres in the Chukchi Sea. The sale raised a record $2.7 billion in revenue.

Despite that promise, Davey says that there remain misconceptions about the challenges of living and working and working in the Arctic region. She explains, "Many believe that the logistics that are required to operate safely in the Arctic are substantial and costly. Fairweather rarely wins bids based solely on price and this is because we refuse

to cut corners on safety to meet a price. We sometimes get beat up over price but often still win the business because of our experience and safety record."

Challenges & Solutions

Nevertheless, she says, operating efficiently and safely in the Arctic constitutes an enormous challenge.

For starters, she says, the remoteness of the region can be the number one issue. "Prudhoe Bay is 750 miles away from Anchorage and it is incredibly remote. Prudhoe Bay has the only road system leading into the Alaska Arctic. Everywhere else has to be reached by airplane, boat, or snowmobile," she said. Once there, however, communications becomes even a bigger issue, adding, "Communications are getting better where there is cell service in most villages, but just outside the village it drops to nothing. Internet is also very slow and expensive. Where there is adequate bandwidth it is very expensive – around $1000/mo per meg."

Finally, there is the obvious barrier posed by the extreme temperatures and weather. Davy explains, "The North Slope has some of the harshest weather in the world. Temperatures often dip down to the -50 degrees Fahrenheit. There are phase conditions in the winter where all work has to stop till the snow stops blowing and visibility improves. Special personal protection gear is mandatory to be worn when operating on the North Slope. Often times, it is bulky and hard to work in."

Making a business venture in the Arctic involves a simple formula, says Davey. Oil & Gas and maritime companies need to work with local companies who know the area. "This offers the best chance of success. The Alaska Arctic is fragile and we must do our best to protect it. It is full of resources in oil and gas, but it also provides the food source for our Native people. Fairweather operates in joint ventures with Olgoonik Corporation in Wainwright and Kaktovik Inupiat Corporation in Kaktovik. This allows us to leverage our business opportunities with the local knowledge to achieve shared success."

Experience does count in the Arctic. That involves balancing the bottom line of business, positioning the client for success, and respecting both the harsh climate and the value of the natural resources to those who live there. That's where Fairweather comes in and Lori Davie makes it happen.

Next Generation Shock Mitigation for Fast Boats

photo: Shockwave

Workboat construction now demands that naval architects factor in the physical demands on passengers and crew. As wind farm requirements increase, so too will the need for greater protections.

By John Haynes

A major challenge for the builders of next generation RHIBs and high speed craft is delivering platforms that balance high performance with the physical demands on crew and passengers. With the arrival of 'unbreakable boats' plus a surplus of engine power, 'man' is often considered as the weakest link. CAD software and digital modeling are key components in the process of designing high speed craft, but feedback from the human body is a crucial input that designers and naval architects must consider for the next generation of fast boats.

Professional organizations using RHIBs and fast boats need to identify what level of sea conditions are likely to be encountered, and then ensure that the type and size of craft are fit for purpose. The definition of shock mitigation is, 'to make a violent collision or impact less intense.' A shock mitigation strategy is essential for all craft that undertake open sea transits or operate in rough water. This includes rivers and estuaries with wind against tide conditions, and even lakes can produce significant wave heights from wind blowing over a few miles of open water.

Shock Mitigation Strategy

Planing craft are selected to perform a wide range of operations. The consistent objective is that passengers arrive safely at their destination ready to do a job, or in some cases fit to fight. In some countries, increasing individual fitness and stamina is seen as the solution. In other parts of the world people are expendable as there are others are ready to take their place, but that approach does not help when a boat and crew are underway with a task to complete. With an effective shock mitigation strategy the helmsman, crew and passengers benefit from increased comfort and reduced injury. But shock mitigation is not just about reducing injury. An organization can increase sea time for as-

Image above: Multi axis suspension at work in a storm

sets, cover greater distances at higher speeds, improve crew performance and extend operational effectiveness.

It is important to learn from other sectors that have made progress with shock mitigation, but myths need to be dispelled. From motion analysis metrics on land, sea and aircraft, it is clear that not all vehicle impacts are simply lesser or greater G forces. A major difference between automobiles and boats is the suspension system managing vibration between road wheels and the chassis. Trucks take this a stage further and have suspended cabs, so the seat is mainly for comfort. An agricultural or mining vehicle driving over rough terrain experiences different loads to a boat at planing speed on rough water. In recent years, the development of MRAP (Mine Resistant Ambush Protected) military vehicles has accelerated research into reducing the effects of mine blast. However, a vehicle seat that mitigates the shock from a mine blast is unlikely to mitigate the repeated slamming effect from high speed wave impacts.

Aviation has researched shock mitigation and the effect of various impacts. Helicopter seating is designed to protect the crew from hard landings and a crashworthy seat is part of the overall crumple zone. Ejector seats have saved the lives of many pilots and navigators as they exit from fixed wing aircraft. However, ejection is a single event based on a consistent input force, usually initiated by the seat occupant, and compared to loss of life, some level of injury may be acceptable. Large wave slams at sea are not usually isolated events, they can be of random magnitude and from multiple directions. In rough sea transits, the boat suspension seat has a fraction of a second to return from a 'hit' to mitigate a 'double hit' or the next pattern of multiple impacts.

A core component of fast boat training should be specialist knowledge to educate coxswains and crews to understand the forces that affect a planing craft, particularly when operating in waves. For planing craft there are three conditions to consider – displacement speed, getting on or off plane, and planing speed. When loitering or at slow speed in waves a craft follows the waters surface, the human response is unlikely to be injury but could be motion

sickness. An issue with operating at 'hump-speed' is that the helmsman has poor visibility over the bow, which can reduce awareness of sea conditions.

Understanding & Quantifying the Forces

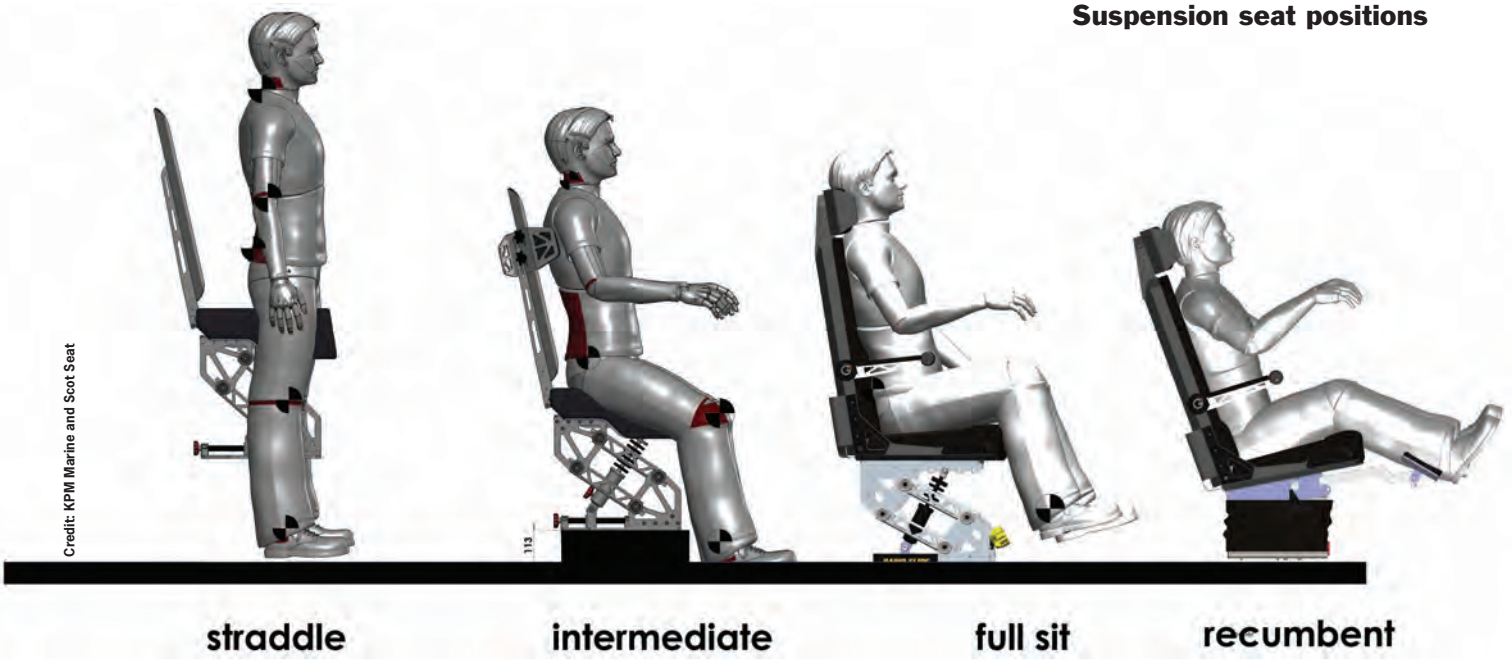
To develop the next generation of shock mitigation solutions for fast boats operating in waves it is important to understand the forces that the hull is experiencing as it passes through or over moving and uneven water surfaces. Disturbances could be caused by storms hundreds of miles away generating groundswell, local windblown waves or the wake of other vessels. From an understanding of wave events scientists and engineers can analyze the exposure chain of hull, deck, seat and finally the human body of boat occupants.

Scientists are starting to quantify wave slams and describe how differently a planing craft re-enters the water in various sea states and wave patterns. In simple terms, a fast RHIB or high speed craft can land bow first, stern first, flat on the keel, or on one side of the hull. The process can be filmed and replayed at slow speed or analyzed with data recorders in different sea states. When crews come off the water after a hard transit, the subjective statement of 'that was a hard ride' can now be quantified. Two coxswains on identical boats running side by side at the same speed can have vibration measured on each craft for later analysis. Used correctly, this approach is a powerful training tool where video and metrics can show 'what good looks like.'

Monitoring the effects of vibration and impact on the hull or critical pieces of equipment is relatively simple, as data loggers can be attached to FRP, aluminum or plastic in various ways. Land-based industry has been doing this for years on factory and moving machinery, then developing shock mitigation methods to damp or eliminate vibration by tuning the dampers. Measuring the forces on the deck or on a seat base will produce data, but a topic of major debate in recent years has been how to gather vibration data from the crew and passengers. The lower back is the area with highest incidence of injury, however fixing accelerometers to a flexible human body is difficult. Seat pads and kidney belts are common methods that provide reasonable contact for data loggers. The consistent objective is valid and reliable measurement for the assessment of RS (Repetitive Shock) and WBV (Whole Body Vibration).

As the cost of data loggers has come down various organizations around the world have started to gather and store vast amounts of vibration data. Analyzing the data and deciding which metrics are relevant is a challenge. A simple Red Amber Green (RAG) index showing traffic lights on the console is an indicator to show crews that vibration exposure is increasing. However, setting the vibration thresholds for color change may vary depending on which measuring method is used.

Suspension seat positions



Credit: KPM Marine and Scot Seat

Seating Solutions Evolve

As the fast boat sector has evolved over the past decade, the diversity of potential seating solutions has grown with it. RIB and high speed craft seats need to provide a good ergonomic position for the different requirements of helmsman, crew and passengers. Comfort is important so seating design needs to allow space for occupants PPE and personal floatation devices. Some organizations require webbing and body armor to be worn and weapons to be carried. This may require an adjustable seat with built in personal storage for equipment.

For the past thirty years typical seating for RHIBs and fast craft has been jockey (straddle) or leaning post with foam cushioning. Due to higher operational speeds many organizations are now using or considering suspension seating. The objective of a suspension seat is to separate the helmsman and crew from the worst effects of vibration and impact. Suspension seating may have feet on or off the deck. A jockey suspension seat is where a percentage of the occupant's weight is spread between backside on the seat and feet on the deck. Typical stroke or travel of the suspension is 6" (150mm) to prevent bottoming out. The next generation of seats have the option to adjust for height and weight which allows for a broad size range of occupants. This adjustment has to be supported with clear instructions and onboard briefing as a badly adjusted seat can be an issue.

A conventional suspension seat with feet on footrests carries all of the occupant's weight. Suspension travel for semi-displacement craft seating starts around 4" (100mm). For extreme fast craft, the travel can be over 8" (200mm). It is becoming increasingly relevant to either select the correct seat for the boat or tune the seat to the boat. In rough conditions the seat is the only part of the boat that humans can travel on so increasingly workstations will be attached to the seat.

photo: Shockwave

6 man controlled environment suspension system

photo: South Boats

Windfarm support catamarans are expected to transfer personnel in a range of sea states.

The European wind farm sector is driving higher levels of safety for crews and technicians being transported on planing craft. Crash testing for individual seats and deck fixings is relevant for craft operating in close proximity to wind turbines and other vessels. Improved ergonomics and adjustments are required for these seats as passengers are expected to travel further offshore in higher sea states for longer periods. Varying body position during a long journey is important on any mode of transport. When the seat occupant is asleep the whole body needs to be suspended to enable the suspension to do the work. Research is considering whether a recumbent or reclining position is more comfortable and gives better spine protection when conscious bracing is not possible.

The Way Forward

Linking the man or woman to the task is becoming a requirement for many military and Special Forces organizations. As seat and suspension systems evolve more responsive controls and work station layouts with improved ergonomics are part of human factors design. Helmsmen already have joystick steering and throttle controls built into the armrest of their seat. Navigators can only work

effectively at high speeds if their GPS and radar screens are moving in unison with their hands and eyes. Communications, situational awareness and weapons technicians benefit from control panels attached to their seats. Gunners operating at high speeds require specialist suspension seats attached to weapons.

In recent years, there have been significant developments in the fast boat sector. Major steps forward in technology by seat manufacturers may mean that 'man' is not always the weakest link on fast boats. Boat speed on flat water is governed by the power limit but speed in waves may be governed by the structural design limit. Professional fast boat coxswains generally operate to a level known as tolerable discomfort, then the pain threshold is reached and they are likely to slow down. But as innovative suspension systems have de-coupled the man from the boat the new challenge is to build hull, components and equipment that are able to survive the extreme ride severity that occupants can now tolerate.

To support procurement decisions the next generation of fast craft hulls and shock mitigation solutions need to be compared. Full scale sea keeping trials in high sea-states are costly, weather dependent and will vary between craft. Wave conditions are rarely consistent over sea areas or over time. It is also hard to justify taking people to the point of injury as part of testing. To address this, an International Standards Organization (ISO) Technical Committee Working Group was established in December 2013 to develop standard procedures for 'Laboratory evaluation of marine seat shock isolation.' Preliminary drop testing has been performed in the UK and Canada in to demonstrate seat mitigation characteristics in the lab before installation on boats for on water testing.

Overall, the fast boat sector now has a better understanding of the problems associated with high speed transits. Commercial, energy, emergency, government and military organizations all need to recognize that a shock mitigation strategy needs to be incorporated into design, training, planning and operations. Other technical shock mitigation solutions include innovative hull forms to improve ride quality, hull appendages to control angle of attack in waves and cushioned decks for crew and passengers to stand on. Even with all this technology, important factors for individual mission success and long term capability all depend on how an organization takes care of passengers and the skill of the coxswain to drive according to the sea conditions.

John Haynes *is an Associate Fellow of The Nautical Institute, Yachtmaster Ocean and Advanced Powerboat Instructor. Subject matter expertise includes high speed craft consultancy, product development and specialist training. He is Managing Director of Shock Mitigation and founder of the RIB & High Speed Craft Directory that brings together specialist boats and equipment for the sub IMO / sub 24 metre professional sector* ***www.ribandhsc.com***

Future LNG Exports to Impact Traffic, *Tug Requirements*

Workboat requirements will soar as heightened safety requirements for LNG transit demand tighter oversight.

By Susan Buchanan

The Louisiana Gulf is gearing up to export liquefied natural gas from Sabine Pass and Lake Charles in the state's southwest and Plaquemines Parish in the southeast. Over the next five years, as LNG import terminals begin exporting and new terminals are built, more tugs and channel pilots will be needed, industry experts said last month. A convoy system will be employed to handle outgoing and incoming tankers. Safety rules for the region's waterways are also almost certain to be revised.

The nation's only LNG export terminal is run by ConocoPhillips in Kenai, Alaska. But that's about to change. Cheniere's Sabine Pass LNG facility in Cameron Parish should be Louisiana's first exporter, starting in late 2015. Natural gas from fracking Haynesville shale in northwest Louisiana, the state's pipeline network and existing LNG import terminals, along with currently weak gas prices, have spurred firms to consider exports.

Just what makes LNG suitable for export? When natural gas is chilled to minus 259 degrees Fahrenheit, or minus162 Centigrade, it becomes a liquid that's more efficient to store and ship. Liquefied natural gas is about 1/600th the volume of natural gas. Buyers in Japan (moving away from nuclear power), China (slowly weaning from heavy use of coal), other Asian nations, Europe and Latin America are thirsty for it. The ongoing dispute between Russia, Ukraine and the EU also hold out possibilities for more outlets for U.S. LNG exports.

Calcasieu Shipping Channel Revs Up For More Vessels

"Calcasieu River channel traffic – including LNG tankers, oil tankers and tugs – is expected to double by the year 2025," Stephen Broussard, Director of West Cameron Port, said last month. The channel runs from mile-marker zero at the Calcasieu jetties up 52 miles to Lake Charles, La. Broussard added, "The Federal Energy Regulatory Commission is approving LNG projects in a process that takes more than a year. At least seven LNG export projects, either in the Calcasieu channel or utilizing it, are in various stages of planning. They are SCT&E LNG; Waller Point LNG; Venture Global, LLC--with the latter to be called Calcasieu LNG; Trunkline LNG; Magnolia LNG; Cameron LNG and Gasfin Development."

"In addition, Sasol is expanding and building a huge

Cheniere Aerial

plant in Westlake that will use natural gas to make ethylene and other products that will require tankers." And, he said, "G2X Energy plans to build a natural gas-to-gasoline facility at Port of Lake Charles that will need vessels." Sasol is based in South Africa while G2X Energy, Inc. is headquartered in Houston.

The LNG boom that most think will come will also have other local impact. "The number of Calcasieu River pilots will probably double from 17 now by 2025," Broussard said. So, too, will the need for additional workboats in the form of high powered tugboats. "LNG carriers each have at least two dedicated tugs now. We're looking at nearly two dozen tugs in the channel by 2025." But he said it's hard to get a good grip on tug numbers. "Some of them are here all the time, while other tugs come and stay awhile but it's not their home base," Broussard said. Cargo at West Cameron Port, located in Cameron, La., includes crude oil, baroid, coal and grain.

Safety Precautions Will Increase As Vessel Traffic Grows

Local officials are already hard at work to determine changes that LNG will bring to the local traffic schemes. For example, Ausenco Consulting was hired by the Port of Lake Charles to study how LNG exports will impact Calcasieu channel traffic. Broussard explained, "Ausenco is in the middle of doing that study now and could be finished by year-end. Of course, the Coast Guard will have final say on traffic safety, and it may issue additional rules for the channel at some point. A recent Coast Guard ruling addresses the number of pilots on certain-sized ships in the Calcasieu River." Ausenco, based in Australia and Canada, has a Houston office.

The U.S. Coast Guard is working with federal, state and local partners to keep the Calcasieu shipping channel safe and secure, Lieutenant Will Fediw, the Guard's Marine Safety Unit chief in Lake Charles, said last month. "The Coast Guard, in partnership with channel users, reviews

"The number of Calcasieu River pilots will probably double from 17 now by 2025. LNG carriers each have at least two dedicated tugs now. We're looking at nearly two dozen tugs in the channel by 2025."

– Stephen Broussard,
Director of West Cameron Port

best practices, mitigating measures and regulations as to their effectiveness," he said. "In anticipation of future growth, we're looking ahead to the impacts of additional vessel traffic. But at this time there have been no discussions about increasing existing regulations."

Lake Charles Pilots Invest in New Dispatch System

Captain Brett Palmer, president of the Lake Charles Pilots Association, said with at least $70 billion in new LNG and petrochemical projects and expansions planned from the mouth of the Calcasieu up to Lake Charles, vessel traffic will swell. "We'll have a lot more tankers on the Calcasieu channel, and are contemplating using a convoy system to pilot them through the waterway," he said last month. "Some of the additional tankers will be very large." In line with Broussard, Palmer said the Lake Charles group's 17 pilots are expected to double within the next ten years.

"There are 11 tugs in the harbor today, and that will double if all the anticipated construction here occurs," Palmer said. "More line handlers, local and out-of-town agents, and an abundance of infrastructure will be required. Our pilots' group is working closely with existing and new stakeholders to assess these demands. We aim to protect all stakeholders." To meet potential growth, the Lake Charles Pilots Association has spent $58,000 since last year on a new dispatching system.

"Meanwhile, the Coast Guard is looking at safety zones, vessel traffic management, boarding rules for pilots, and the timing and sequence of vessels," Palmer said. New approaches to managing traffic will be needed. "The only way to accommodate growth and meet USCG safety zone requirements is to convoy ships inbound, and then start a convoy outbound after the LNG ships have cleared," he said. For existing channel users, Palmer's remarks are sure to have real consequences. Blue water and brown water traffic will surely be impacted whenever LNG vessels are in port. And, while the proliferation of LNG terminals

means more workboats, it will also mean traffic congestion for existing users. That said; local stakeholders are working hard to minimize that reality.

The Calcasieu channel's LNG imports were a record in 2007, and then declined as the nation's natural gas production rose, Palmer said. Once a big LNG importer, the channel will soon be a major exporter. He explained the current piloting system. "Incoming LNG tankers are guided by one pilot now, or two pilots for the biggest tankers. Our association has three boats. One pulls alongside a tanker 30 miles out in the Gulf and guides it up the Calcasieu channel to Lake Charles."

If seas are choppy, a pilot might board a tanker by helicopter. "The crude tankers that we board offshore accept private helicopters," Palmer said. "But LNG ships will not. We need additional, appropriate pilot boats for this LNG export expansion." To that end, Palmer added, Gladding-Hearn Shipbuilding in Massachusetts – which just delivered a state-of-the-art multi-missioned pilot boat for the Charleston, SC pilots – is also working on a design for a new pilot vessel.

Meanwhile, "a big current and future challenge is whether Congress can provide the U.S. Army Corps of Engineers with enough funding to keep the Calcasieu shipping channel dredged to a 40-foot depth for tankers," Palmer said. The channel is 400 feet wide. But, Lake Charles will have to get in line with other deep draft ports, some clamoring for dredging funds in order to accommodate the new post-Panamax containerships. It's all but certain that there won't be enough to go around.

Sabine Pass Exports Should Start Late Next Year

The Sabine Pass LNG terminal, operated by Houston-based Cheniere

Energy, Inc., is located in Cameron Parish, La. along the river on the Texas border. The facility is preparing to export LNG next year. The terminal, which started up in April 2008, became the world's largest LNG receiver in terms of regasification capacity. Located at the channel's widest point, it is 3.7 nautical miles from open water and 23 nautical miles from the outer buoy. Tugs are stationed at the terminal to berth LNG vessels. The navigation channel is maintained at a 40-foot depth. The FERC on April 16, 2012 authorized Sabine Pass LNG to receive, process and export U.S.-produced natural gas as part of its liquefaction project.

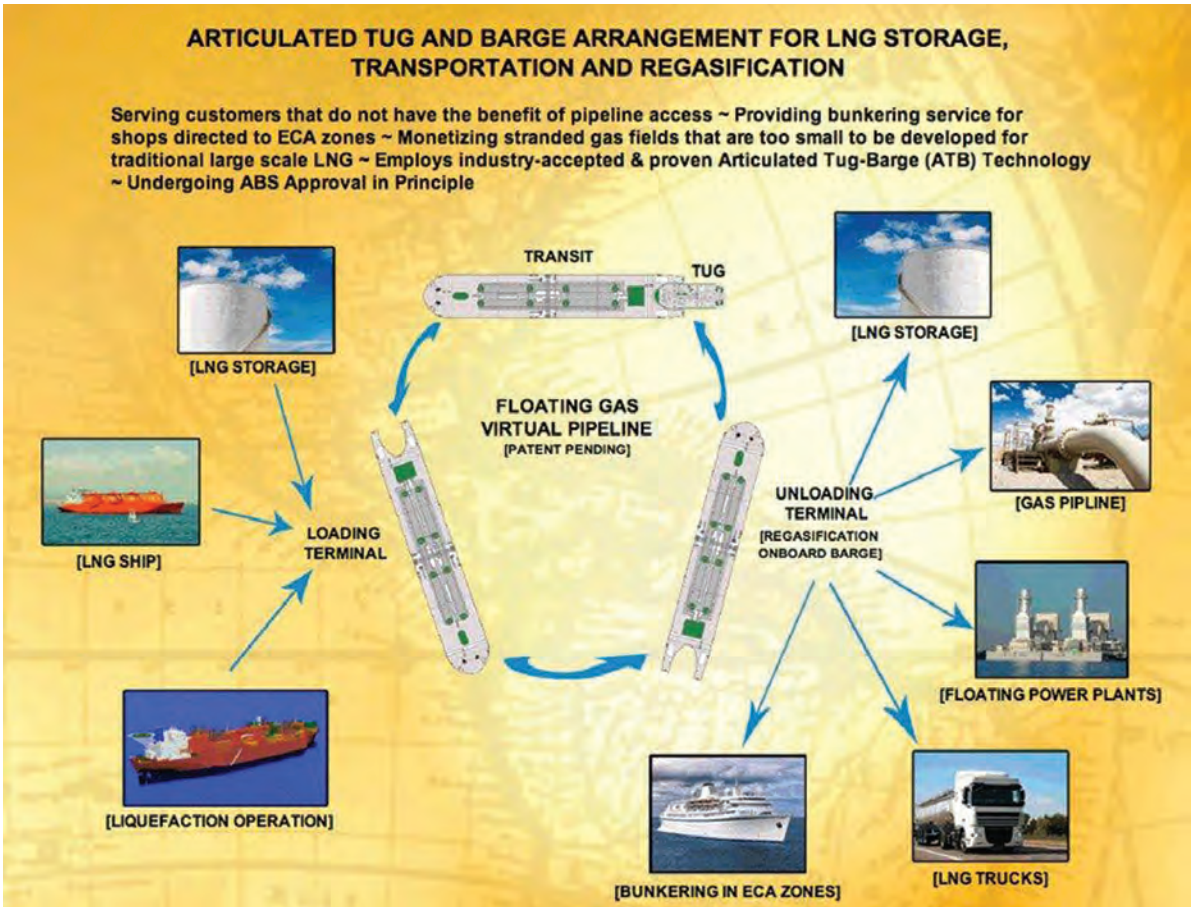
"The Sabine Pass liquefaction facility will be the first LNG export operation to be built in North America in over 40 years," Katie Pipkin, Cheniere Energy's Senior Vice President of Business Development, said last month. "Construction is well under way on the first four liquefaction trains, and we expect the first LNG production by late 2015." LNG plants consist of one or more trains, each of which is an independent liquefaction unit. Trains can be added to an existing LNG plant.

"The facility is underpinned by long-term contracts that commence with the start of a designated train," Pipkin said. Under an agreement to buy products, "BG Gulf Coast LNG's contract commences with Train l," she said. BG Gulf Coast is a subsidiary of U.K.-based BG Group.

When completed, Cheniere's planned six-train liquefaction facility will export about 27 mtpas or million tons per annum of LNG. An expansion with trains 5 and 6 awaits final permitting, and a final investment decision (FID) is expected next year. All six trains should be operational by 2019. For its part, BG Group expects global demand for natural gas to grow at an average 2.4 percent yearly between now and 2025, led by China and other Asian nations and boosted by urbanization and a shift away from coal. The European Union, meanwhile, wants to reduce its reliance on Russia's natural gas and is looking to other suppliers.

Southwest Louisiana: Can it Handle More Vessel Traffic?

According to the Lake Charles pilots, the Calcasieu channel is underutilized. And, says Captain Palmer, with the right planning, the channel can handle the expected doubling in traffic. "Lake Charles pilots and the port as a whole are working closely with all stakeholders," he said. "We're aware of the challenges presented by this unprec-



edented expansion, and we're confident about providing a safe, efficient and prosperous port for all."

An additional 25,000 workers are expected in the area, mostly to build the new LNG and petrochemical facilities, Palmer said. "They'll have to be housed, and lodges are being constructed for them now," he said. In the petro-expansion, Lake Charles could go from being the nation's twelfth most-active port to fifth busiest by 2025, he said. Meanwhile, the U.S. Department of Energy has warned that an outflow of LNG will raise natural gas prices to American consumers. The Sierra Club and other environmental groups say an industrial conglomeration in the bayous threatens Louisiana's already shrinking coastline.

It seems almost certain that LNG traffic will rise on the Gulf Coast, and very soon. How much depends on who you talk to. On the other hand, workboats are the one variable that is guaranteed to increase along with any development. Erring on the side of caution – both in the number of pilots being used to move LNG traffic and the number of tugs required to provide the necessary margin of safety – local officials and the general public itself, will demand it. That's good news for brown water operators, shipyards and domestic mariners alike.

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

In the Interest of Public Safety

MarineNews contributor (Captain) Jeff Cowan handicaps the current system of medical evaluations and credentialing by the U.S. Coast Guard. It's not all smooth sailing.

By (Captain) Jeff Cowan

"While the U.S. Coast Guard regrets any hardship merchant mariners may experience to maintain their credentials, we must maintain the safety of the Marine Transportation System through a comprehensive MMC (Merchant Marine Credential) evaluation process. This allows the U.S. Coast Guard to make well informed decisions while protecting the public safety."

The U.S. Coast Guard issued these words in response to a query made by a congressional representative on behalf of a prospective mariner regarding incorrect Medical Credential date of expiration after three weeks of no response from the National Mariner Center (NMC) in Martinsburg, WV. In 2006, the International Maritime Organization (IMO) adopted the Maritime Labor Convention (MLC) pending approval from member states. Finally in August 2012, 30 percent of the participating countries ratified the Convention. In August 2013, the MLC became law per international treaty.

The Coast Guard eventually issued a final rule on 17 January 2014, five months after the fact, but took another two months to correct the issuance of the first medical credential for the mariner in question. A good question to ask is why did it take the Coast Guard so long to formulate the final rules for medical credentialing? They had seven years from the date of passing of the Convention and another year after its ratification to finalize the rules. What if my livelihood depended upon timely issuance of that piece of paper?

Real Issues

The issue stems from the date of expiration provided on these credentials. The first Medical Credential was slated to expire four (4) months after issuance. It can take six months to one year to complete the process for the certificate initially, which is why the original query had been made asking about an expiration date – which was good for only four months. The Coast Guard ignored that inquiry, and Congressional representative intervention became necessary to secure a response. How are mariners, whose very livelihood relies upon having the necessary certification to sail, supposed to meet the submission requirements and receive a certificate that allows them to sail if when issued, they are only good for a few months?

Actually, there are three dates printed on a Medical Credential. First Class Pilots, for example, have a two-year maximum expiration date. If the Pilot is actively engaged in Piloting ships, then the certification has to be renewed in one year. If they are not engaged in piloting then the expiration is two years, which is the date printed. The second date is for mariners engaged upon international voyages which requires the Standard of Training, Certification and Watchkeeping (STCW) training certificates. This medical credential expiration date is two (2) years. The third date of expiration is for National credentials or ratings for mariners who do not travel internationally with a five year expiration date.

If the issuing body is truly interested in "protecting the

public safety," how does granting a five year expiration date for operators plying domestic waters meet this lofty goal? Everyone else must undergo the probes and expense of medical examinations every two (2) years or one (1) year as in the case of active Pilots.

Policy in Practice

In 2003, the New York Staten Island Ferry, "Andrew J. Barberi", allided with a maintenance dock while carrying more than 1,000 passengers and 15 crew, injuring 70 and resulting in the deaths of 11 passengers. Mariners tasked with ferrying millions of American passengers annually and those moving millions of barrels of oil in the same time period along the U.S. Coast get their medical condition checked every five years. Hence, if the intent of the U.S. Coast Guard is "to maintain the safety of the Marine Transportation System through a comprehensive MMC (Merchant Marine Credential) evaluation process," shouldn't these mariners whose wellbeing is necessary to the health, safety and security of US citizens and US resources receive the same sort of review?

Upon further investigation of the ferry incident, the operator, an Assistant Captain at the time of allision, was temporarily unresponsive after taking one prescription pain reliever that promotes drowsiness. According to company regulations, there was to be a second person (Assistant Captain or Captain) on the ferry bridge able to take control while underway and just before docking, but in this instance, the Captain was not on the bridge and the two crewmembers in the wheelhouse – a lookout and mate – were not vetted to operate the ferry maneuvering controls. The incident precipitated the 10 page comprehensive medical form (719-K) required to be filled out each time a mariner renews a credential (license, seaman's document), as opposed to the less comprehensive four page medical form 719 in use for the previous 20 years, in one form or another.

The National Transportation Safety Board (NTSB) investigation of the event pointed out that "a mariner's medical status is reviewed only every five years, during which time he or she could experience new medical symptoms, see a health care provider, take new medications, or be hospitalized." Nevertheless, the accident that happened over 10 years ago has not changed the policy for this class or service of mariner. Why are the people who ferry millions of people and transport millions of tons/barrels of hazardous substances along our coast exempt from taking physicals every two years? Are these Nationally credentialed crewmembers in that good of physical shape?

Real Life – Impossible Criteria

The reasons for the unequal playing field are actually quite simple. If the NMC were to have all credentialed mariners submit physical examination results at two year intervals, our Coast Guard could not perform the necessary 200,000 evaluations in a timely manner. Presently, their annual evaluations number from 50,000 to 70,000 annually. Given present manpower and resources allocated by the DHS, if they did attempt to evaluate over 200,000 exams per year, ships would not sail, oil among other products, would not get moved. The safety of millions of people and clean waterways hangs in the balance.

The Federal Aviation Administration has over 1,000 medical doctors

or Aviation Medical Examiners (AME) trained in occupational medicine. Is the aviation industry that much different from the sea going trades? In terms of public visibility, that's certainly the case. In terms of the amount of cargo and passengers moved by the domestic maritime industry on an annual basis, it certainly is not. And, if it is important enough to hire that many medical professionals to oversee the very important health of the nation's airline professionals, the same is true for the waterfront.

Another Headache: Off the Water and into the Classroom

Beyond those who hope to continue to go out to sea, despite advancing into the ranks of the so-called "middle-aged" and taking with them the health baggage that goes along with it, another issue lurks for both the Coast Guard itself and the maritime academies and training institutions that are bringing along the next generation of mariners. That's because another implication of the heightened medical criterion is the recertification of "at-sea" training instructors, as well as those who never intend to sign articles ever again. As professors and instructors become older, it becomes just as difficult for these licensed mariners to maintain their tickets as it does for those who remain at sea. And, most academies require a valid license for those who teach professional subjects.

Projecting further, today's American deep sea merchant fleet engaged with international commerce consists of perhaps 86 to 120 ships. Hence, the number of mariners actively engaged with this type of operation are likely as selective a group as major league baseball players. When these people decide to retire or leave commercial service, some go on to impart their knowledge at the various maritime academies and training institutions. Many do not. Those who do, find themselves in the same situation as their seagoing counterparts.

Separately, and as the STCW training issue moves forward, the possibility of cramming a four-year college curriculum into a training regimen that can't possibly be accomplished in five also hits home in terms of who will still be "qualified" to do just that. Not many, if the current regulations continue. Sometimes, knowledge should be the variable that trumps everything else. But, not if a standard stipulates one, two, and then five years of medical credentialing – all at the same time. Could today's educational professionals – sailing on a training ship that is already required to have a physician on board – continue to do what they already do so well? Of course, they can.

There is a reason that it takes twenty to thirty years of actual sea time to eventually bring along the next generation of mariners. Yes, simulation is doing that much better than the previous practice of standing an otherwise boring sea watch, interrupted by fleeting moments of terror. That said; there is much to be said for – and everything to be lost if we discount – the experience imparted by today's rapidly graying mariners.

Today's dilemma for the Coast Guard, the IMO and everyone else, involves trying to cram twenty years of experience into a 20-year-old body. It simply cannot be done. And, with a policy of having one, two and five year medical renewals for different sectors of the maritime industry, we do nothing to promote safety, everything to create havoc, and nothing to impart a culture of parity. It is easy to say that it's all about money. But, it's not. We properly police – in a uniform fashion – truckers, airline pilots and railroad professionals. There is no reason to not do the same with America's mariners, no matter what sector they toil in. Anything less is unacceptable.

Captain Jeff Cowan graduated from the California Maritime Academy, ultimately earning and sailing on his Master's license. He remains involved in maritime issues and is a regular contributor to Maritime Professional and MarineNews magazine(s).

Marine Lubricants Engineer Solves Problems

Shell's MayMarie Culton Coaches Ship Owners to Achieve Championship Performance.

As a high school track and basketball star and power forward for the U.S. Merchant Marine Academy Mariners basketball team, Shell Marine Products engineer MayMarie Culton understands a thing or two about coaching. Moreover, she combines six years' experience sailing around the globe as a marine engineer with her professional career at Shell Marine Products (SMP) to advise customers how to get the best performance from their lubricants. Like sports excellence and coaching, it's a natural fit.

"Basketball involves a certain amount of athletic skill, but an excellent coach can make the difference between good and championship performance. I take coaching seriously. It's one of the reasons why I like to help my customers get performance out of their lubricants, including achieving greater efficiency and cost savings," Culton told *MarineNews* in October.

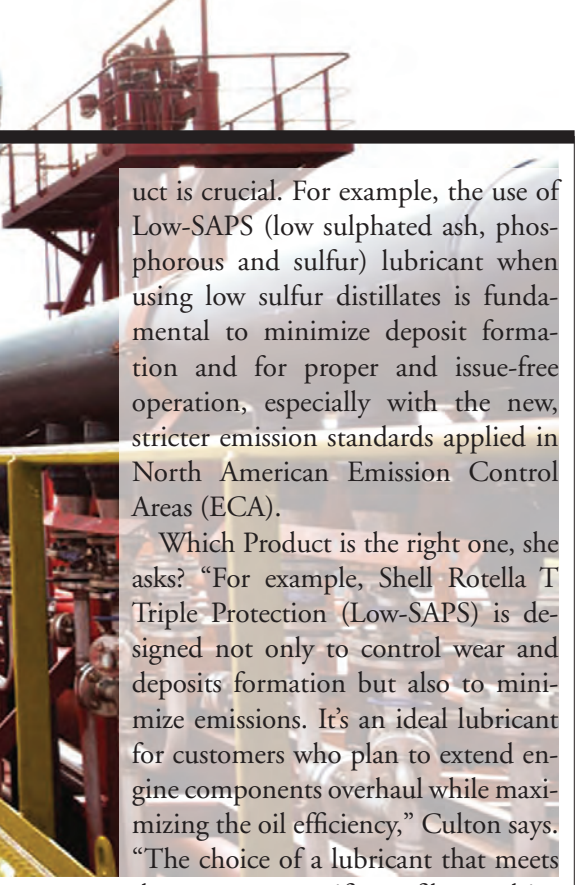
Culton is part of a global network of experts within SMP who supply lubricants and technical support services to the international and local marine industry, which consumes as much as 6% of the world's total lubricants demand. As part of her job, Culton acts as a Shell Lubricants Coach, offering direct customers and distributors training in lubricant tribology and product application to help provide the most cost-effective lubricant for customers' machinery. Keeping customers updated on latest industry requirements in terms of marine lubes and fuels, as well as Original Equipment Manufacturer (OEM) recommendations, Culton also offers technical expertise to help onboard users achieve what she characterizes as "championship" performance.

"Shell researchers work with customers, engine manufacturers, suppliers and key academic institutions to discover ways to improve engine efficiency and optimize lubricant feed rates. Test engines are put under the harshest running conditions to help develop new and improved products," says Culton, adding, "I get to take the outcome of Shell innovation and apply it through problem solving and coaching."

Determining Best Product for Performance

Culton answers technical queries, gives product application and change-over advice, and provides product troubleshooting. Her job often takes her aboard vessels or has her working with OEMs. Equally comfortable in the office or in the field, she can be found in the scavenge space of a vessel inspecting engine cylinders or consulting with a chief engineer to verify if the ideal CLO Feed Rate is applied.

According to Culton, the use of the most suitable prod-



uct is crucial. For example, the use of Low-SAPS (low sulphated ash, phosphorous and sulfur) lubricant when using low sulfur distillates is fundamental to minimize deposit formation and for proper and issue-free operation, especially with the new, stricter emission standards applied in North American Emission Control Areas (ECA).

Which Product is the right one, she asks? "For example, Shell Rotella T Triple Protection (Low-SAPS) is designed not only to control wear and deposits formation but also to minimize emissions. It's an ideal lubricant for customers who plan to extend engine components overhaul while maximizing the oil efficiency," Culton says. "The choice of a lubricant that meets the customer-specific profile can drive to equipment best performance and maintenance savings. The ultimate goal is to provide peace of mind to the final user and gain trust for Shell."

Sea Passage: On Board and on to Shell Marine

Culton understands the critical role oils and greases play in ensuring smooth sailing. She began her time on the high seas as a cadet at the U.S. Merchant Marine Academy with the Military Sealift Command, which today is one of Shell Marine's largest customers. After graduation, she worked as a marine engineer for a variety of shipping companies. Here, her work spanned from a bulk carrier vessel carrying humanitarian cargoes of U.S. grain to Africa and then, with prominent U.S.-based shipping companies such as Liberty Maritime, Central Gulf Lines and Crowley Maritime Corporation.

There's no substitute for time spent at sea. Because of her maritime experience, Culton is able to see through the eyes of the customer. "I've assisted in overhauling engines and maintaining

"I've assisted in overhauling engines and maintaining most of the equipment in the engine room. I've worked with suppliers and distributors to make sure they filled fuel and lubricants storage tanks at correct levels. I understand what customers want and what they look for when it comes to lubricant applications. My goal is to help them reduce their lubrication costs and give peace of mind by increasing operational efficiency."

– MayMarie Culton

most of the equipment in the engine room. I've worked with suppliers and distributors to make sure they filled fuel and lubricants storage tanks at correct levels. I understand what customers want and what they look for when it comes to lubricant applications. My goal is to help them reduce their lubrication costs and give peace of mind by increasing operational efficiency."

Marine lubricants "Championship Performance"

Tips from MayMarie Culton:

1. KNOW THE BENEFITS: **Have a general understanding of the key benefits in using the current lubricants for your machinery onboard. Make sure your lubes fit your vessel's function/profile. Refer to your technical data sheets when in doubt.**
2. BE AWARE: **Learn about and utilize strategic tools (portable kits, life extension tools, advanced monitoring, etc.) available that can increase machinery life, help avoid unexpected breakdowns, and reduce operational and lubrication total costs.**
3. STAY CURRENT: **Stay up to date on major marine industry news including robust innovations, health, safety, and environmental standards involving your marine lubricants.**

Shell at the Forefront

With offices in Singapore, London, Shanghai and Houston and staff strategically placed around the world, SMP offers an extensive range of lubricants to marine vessels of different sizes, from container ships to fishing vessels. Culton and other global technical experts within SMP who help develop, implement and maintain effective lubrication programs for customer fleets are backed by the Shell Marine and Power Innovation Center (MPIC) in Hamburg, Germany, which is part of Shell Global Solutions Technology.

Marine has always been a very important business for Shell. Through almost 100 years of history, Shell researchers and scientists have played a key role to help SMP meet the standards and requirements requested by the industry and to play a leadership role in terms of innovative high-performance lubricants and associated technical support. Through it all, Shell has come to be recognized as a reliable and trusted lubricant and technical-support supplier.

Shell Marine developed a complete high performance CLO solution for vessels operating in ECAs, where marine fuels must meet certain sulfur content limits. Shell Alexia S3, which will be available to customers in major ports starting in December. It meets the revised ECA regulation, effective January 1, 2015, that requires an onboard max 0.10%weight S content Fuel. In the coming years, the global maritime industry will see more stringent sulfur oxide (SOX) restrictions in ECA areas, such as the Baltic Sea, the North Sea, North America and the United States Caribbean Sea. Shell Marine intends to be ahead the game to help customers with innovative grades that meet the new industry requirements.

The offshore industry represents a key growth area for SMP. "From large tension-leg platforms, like the Shell Mars Tension Leg Platform, to anchor-handling vessels and tugboats, we have a wide variety of products and services to meet the needs of the offshore industry," Culton says.

Solving Problems

"It's not just about recommending an oil change. It's about helping our customers optimize the operations onboard," insists Culton, adding, "We use unique tools and dedicated service to help monitor wear and most efficient operations, improving safety margins in terms of pre-warning for equipment failure. Our Shell Rapid Lubrication Analysis provides ship managers and operators critical information on the condition of their machinery and the performance of their lubricants. It's about having the right products, for the right customer, with reliable customer service and exceptional technical support. It's a great job and I love what I do." For Shell customers, that means: problem solved.

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Proper Applications for Specialty Lubricants

Specialty lubricants are used in a variety of applications, but what factors should you consider? Depending on the situation, specialty lubricants can complement an existing program, in order to obtain maximum efficiencies.

By Ben Bryant

Often, shipboard use of lubricants is influenced by two general objectives – rationalization of the lubricant inventory and cost management. Vessels have limited storage space and complex logistics supply systems. This creates a strong incentive to source lubricants that can be applied to several applications. Furthermore, the maritime industry is a cost-conscious industry where profits can be difficult to attain, leading to a desire to reduce operating costs. The result is often a preference among operators for less expensive, multipurpose lubricants. However, as machinery has been developed to operate under increased demands to deliver specific benefits and as owner/operators strive to increase the life of the machinery and meet new requirements from governments and OEMs, specialty lubricants should be considered to assist in delivering the operational objective of the application.

Specialty lubricants are designed to provide optimal performance for specific applications. Whether the objective is to reduce energy consumption, increase the lifespan of your equipment, reduce total operating cost, extend time between dry-docks, or meet a regulatory requirement, choosing the correct lubricant can help meet a number of objectives.

The Science of lubrication

Lubrication is required to reduce friction developed when moving surfaces are in contact with each other. "Tribology – the study of friction, lubrication and wear" – considers the speed, temperature, load, type of motion, materials in contact and operating environment of the application to determine the best chemistry of lubricant components to minimize the friction. Types of motion include sliding, micro-sliding, rolling, and oscillating, as well as motions that combine rolling and sliding. Operating environments can include moisture, vacuum, dust, chemicals, and vapors.

In the marine environment, a typical environmental challenge is the effect of sea water on the lubricant. Specialty lubricants are designed to solve specific problems in the world of friction. Specialty lubrication acknowledges that one lubricant cannot meet the requirements of all applications and by carefully choosing the right lubricant for the application, the vessel owner/operator can maximize their total operation and receive increased value from their lubricant purchases.

Specialty lubricants are designed using base oils that meet

or exceed the requirements of the application, additives that enhance specific performance characteristics of the base oil, and for greases - a thickener chosen to hold and deliver the lubricating oil and additives to the area of friction. There are six types of base oils; refined mineral oils, synthesized PAOs (polyalphaolefin), esters (natural or synthesized), PAGs (polyalkyleneglycol), silicone oils and PFPEs (perflorinated polyether) with each providing different core costs and benefits. Additives improve lubricant properties such as anti-corrosion, anti-wear, extreme pressure, emergency lubrication, and viscosity/temperature performance among others.

Thickeners are generally lithium, aluminum, calcium, silica, polyurea or PTFE (polytetrafluorethylene) based with each providing a specific benefit for the application. A specialty lubricant formulator will chose an optimum mix of ingredients to perform in specific tribological situations. Then in the field, a lubrication engineer will assess the specific requirements of the system and recommend the correct lubricant to achieve the desired operational objective. There are literally thousands of specific lubricant formulations designed to meet the demands of various applications. A partial list of lubrication objectives that can be achieved by choosing a specialty lubricant is depicted in **Table 1.**

Shipboard applications: illustrating optimization of lubricant formulation

As **Table 1** shows us, there are many things to be considered when choosing the right lubricant. Every piece of equipment has its unique requirements and operating conditions. As such, there is every reason not to bow to the temptation of securing generic, middle range solutions that promise a

panacea across a multitude of applications.

Anchor handling winches on offshore oil rig support vessels require a lubricant that can provide a high viscosity, good adhesion, and protection of the entire tooth flank. A lubricant with a base oil viscosity at 40 C of 16,500 mm2/sec and can be applied using automatic spray systems, immersion bath, or circulation lubrication systems can increase the life of the gear set.

To extend the life of *wire ropes* on board vessels, the lubricant must be able to seal in the lubricant applied during production of the rope, protect against corrosion, and have minimal water wash off loss. A lubricant designed to reduce the friction generated between wire strands and prevent corrosion along with very low water washout loss, reduces lubricant consumption and labor costs. With good anti-wear properties, at low speed and under high load, the product may also be suited for open gears on deck cranes. Where the application is intended to be immersed in the

Table 1

Objective:	Lubricant Consideration	Lubricant Formulation	Operational outcomes
Decrease lubrication intervals	Strong resistance to base oil breakdown. Additive package that is designed for extended life. Thickener/additives that decrease lubricant loss. Low base oil evaporation rate.	PAO and PAG base oils have a higher resistance to oxidation and thermal breakdown compared to mineral oil. Anti-oxidants to preserve the base oil. Aluminum complex or anhydrous-calcium have high resistance to water washout.	Reduced total cost of lubricant over extended period. Reduce operational downtime. Reduce labor cost associated with lubrication program. Extend period between planned downtime.
Reduce wear	Viscosity matched to the speed, load and operating temperature range of the application. Increase in film thickness provided by the base oil. Base oil matched to the type of motion. Additive package that provides anti-wear and/or extreme pressure properties.	PAG base oils are best for sliding motion. PAO base oils for rolling motion. Solid additives to provide "emergency lubrication" when the base oil is not creating a lubricating film or advanced extreme pressure additives that can also minimize wear in surface layer friction conditions.	Extended life of machine components. Reduced unplanned down-time.
Increase energy efficiency	Reduced friction and the heat generated. Ability to use lower viscosity base oil. A dynamically light grease matched to the torque of the application.	PAG and PAO base oils can improve energy efficiency in gear boxes over conventional mineral oils. Oils with higher VI indexes may allow for a reduction of one viscosity level in many applications.	Lower total cost of operations. Improved service life of machinery due to lower loads.
Ensure compatibility	Base oils and additives that minimize the degradation of the elastomers used for housings, seals, hoses, o-rings.	Mineral oils typically work best with most common types of NBR elastomers. Ester and PAG base oils may need to be checked for FKM type elastomer. PFPE base oils work best in applications with most elastomer and plastic components.	Extended time between service overhauls. Reduced risk of accidental discharge. Ability to substitute lighter, better performing material in machine design.
Reduce corrosion	Good anti-corrosion properties, especially in salt water.	Corrosion inhibitors that form a protective film on the metal surface.	Increase life of equipment. Reduce friction thereby reducing energy requirements.
Extreme low / high temps.	Matches the service temperature.	PFPE and Ester base oils offer the best low temperature performance. Pour point improvers can lower the service temperature.	Increase range of operating temperatures. Reduce downtime due to temperature extremes. Improve application methods.
Wide range of temps.	High viscosity index	PAO, PAG and PFPE have excellent viscosity/temperature behavior. Additive packages that perform across temperature ranges. Viscosity improvers so long as they don't affect other desired attributes of the lubricant.	Maintain proper working viscosity over wide temperature range. Use one product for both winter and summer applications.
Reduce oxidation /deposits	Thermal and oxidative stability.	PAO base oils offer improved performance over mineral oil.	Longer oil life. Increased efficiency. Reduce disposal costs.
Meet environmental stds	Achieves specific environmental standards while meeting or exceeding OEM specifications.	Synthetic esters, low viscosity PAOs, or water soluble PAGs to meet biodegradability standards and resist hydrolysis. Additives that meet OEM specifications for anti-wear and/or extreme pressure.	Comply with regulatory requirements. Extend the re-lubrication interval. Protect elastomers.
Reduce vibration / noise	Low level of impurities and highly homogenized greases.	Ester base oils. Polyurea thickener.	Lubricate for life of the bearing. Improve efficiency. Reduce vibration in sensitive equipment. Longer component life.

water, a VGP-compliant lubricant should be utilized.

Due to the high speed of *shaft bearings on electrical motors, generators, fans and compressors*, they benefit from a lubricant that can minimize vibration, reduce internal friction, and provide long term protection. A low noise rolling bearing grease for long-term lubrication that is made up of ester oil, a polyuria thickener and special additives is recommended. One that is highly homogenized and contains very low amounts of impurities will lead to low vibration and extended bearing life.

Hydraulic systems require a fluid that remains within viscosity limits to protect pumps and hoses from pressures exceeding the system design during *cold weather*, yet still provides lubrication during warm weather. For vessels operating in northern climates, this may require switching hydraulic fluids between summer and winter operations. However, using hydraulic fluids with a high viscosity index may meet both summer and winter requirements. High VI ester based hydraulic fluids may also meet the environmentally acceptable lubricant requirements of the U.S. E.P.A. Vessel General Permit.

Compressor oils must perform several functions to optimize the performance of the compressor. They must lubricate the moving parts, dissipate heat, and form a seal edge between the rotor and the casing. Compressor oils developed from PAOs have very good oxidative stability extending oil change intervals and minimizing oxidation residues.

Discharge manifolds on petroleum, chemical, and LNG tankers require a bearing lubricant that can withstand the aggressive operating environment associated with these liquids. A lubricant formulated using PFPE base oils and PTFE thickener allows for operation in extreme temperatures, and is resistant to aggressive media.

Matching Lubricants to Specific Applications

Specialty lubricants matched to specific applications are an investment that returns dividends far in excess of the cost of the lubricant and the cost associated with carrying additional inventory. Highly specialized equipment on board modern vessels are designed to perform reliably in extreme conditions. A review of the lubricants and applications onboard a vessel can uncover opportunities to improve efficiencies and reduce the total cost of the operation through the applied use of specialty lubricants.

***Ben Bryant** is the marine market manager, Klüber Lubrication North America L.P. Bryant is a graduate of the Massachusetts Maritime Academy.*

Fugitive Emissions:

the new regulatory elephant in the room

W&O Supply and Chesterton team up to reduce harmful emissions out in front to the EPA's monitoring program. It's less expensive than you might think.

By Joseph Keefe

From the UK's Maritime and Coastguard Agency comes the September 2014 news of a barge operator fined for releasing dangerous gas into the atmosphere. The UK-based firm was made to pay almost £111,000 in fines and costs as a result of emitting unsafe levels of a gas; in this case, hydrogen sulphide (H2S). And, while an investigation by the MCA showed a number of health and safety failings by the operator, the bottom line was that not enough was done to stop the offending vapors from escaping into the atmosphere.

On this side of the pond, that sort of oversight has been going on for decades in the nation's industrial facilities, refineries and waterfront storage terminals. And now, it is coming to the water itself. That's because the U.S. Environmental Protection Agency (EPA) may be ramping up to monitor what is characterized as "fugitive emissions" from barges and other marine vessels. The Clean Air Act, which was first put in action in the 1970s and then revitalized in

the 1990s, is now affecting industries it has never affected before – one of these being inland waterways.

It works something like this: The EPA maintains a list of various chemicals for which they monitor varying levels of leakage into the atmosphere. As barges carry chemicals up and down the Mississippi River, the EPA might utilize aerial coverage to detect fugitive emissions from these vessels. Regulations can also vary based upon a ships' location and state-level Clean Air Act laws. Clearly, the rules can be difficult for owners and operators to

understand and comply with.

According to David Lamphier, Manager of Sealing Technologies, at W&O Supply, the EPA is employing two primary methods of monitoring and enforcement. "One is to fly overhead in helicopters that take infrared readings from the air of these barges as they travel down the river," he explained to *MarineNews* in October. He added, "The other is to be boarded and sniffed with detection equipment that registers parts per million emissions. Some companies haven't seen it at all – some have – but the monitoring has definitely begun." According to Lamphier, no fines have yet been levied, but the prospect for that to happen with the accelerated regulatory oversight is very real. As a direct result, many owners have reached out to W&O and Chesterton in an effort to better understand and, more importantly, comply with EPA rules.

"The majority of customers we're dealing with right now are delivering to the refineries. Those refineries are being held to these requirements. So the barge companies are being proactive here and telling their customers – we're taking care of it, as well. This involves leaks on decks too – not just talking about emissions, but pipeline leakage as well."

– W&O's David Lamphier

EPA documents have shown that airborne remote sensing survey data acquired with passive gas imaging equipment (PGIE), also known as infrared cameras, have shown potentially significant fugitive volatile organic carbon (VOC) emissions from petrochemical transport barges. And, according to the University of Toledo's College of Engineering, "fugitive missions" are defined as those that are not released through a stack, vent, duct pipes or other confined air stream are termed as fugitive sources.

In 2008, an EPA aerial survey detected leaks from 45 different barges located in the Mississippi River and the Intracoastal Waterway over a five day period. The ground-based monitoring detected leaks from over 18 different barges in the Port Allen lock during the study. Hence, the issue is one that EPA is watching. For tank barge operators, it may be an issue worth getting out in front of. One way to do that may be found in a reasonably priced equipment change.

Chesterton & W&O Team Up to Address Fugitive Emissions

As the issue becomes more prevalent, W&O and Chesterton have teamed up to provide a turnkey solution for operators, one that marries Chesterton seals and valve packing with various brands of OEM valves that can be installed onto tank barges. The firms also recently held an educational seminar centering on total sealing solutions for pumps and valves to help customers maintain compliance with EPA regulations. The valve packing solution, for example, is a low emissions packing design, which will keep equipment outside the vent system in compliance with EPA regulations for a 5-year period. According to W&O, it has passed the API industry test for low emissions packing and is approved by the likes of Exxon, Chevron, DuPont, Marathon and others.

Vance St. Jean, a Senior Manager at Chesterton, told *MarineNews* in October, "The release of fugitive emissions is a big problem today. The EPA is driving this emissions monitoring program. They've actually been doing it since 1990 with the passage of the clean air act. Since then, there have been lower and lower leak rates that have been obtainable, and this law addresses all aspects of industry – manufacturing, production, transportation of volatile organic compounds or VOC's. Businesses are signing agreements with the EPA to keep their emissions down. What we're seeing is that the EPA will demand 100ppm leakage rates or less for valves that are in these processes." St. Jean went to explain that customers – marine operators, for example

Sources of Fugitive Emissions

Valves	Sample connections	Screwed fittings
Flanges	Open-ended line	Loading and uploading losses
Seals	Pressure relief devices	Evaporation from deck spills

Source: University of Toledo College of Engineering

– were starting to be proactive in using technology that will get them to that 100 ppm level, and below. Hence, what W&O and Chesterton are now offering to barge outfits, has been around a long time, but primarily targeted towards refineries and other similar operations.

W&O's David Lamphier added, "The majority of customers we're dealing with right now are delivering to the refineries. Those refineries are being held to these requirements. So the barge companies are being proactive here and telling their customers – we're taking care of it, as well. This involves leaks on decks too – not just talking about emissions, but pipeline leakage as well."

The W&O/Chesterton Turnkey Solution

In a newbuild scenario, W&O would provide valves from their existing stocks – any number of OEM brands – and marry that with the Chesterton packing to provide a total engineered solution. The procedure involves instal-

Vance St. Jean, Senior Manager, Live Load Packing, Chesterton

... an EPA aerial survey detected leaks from 45 different barges located in the Mississippi River and the Intracoastal Waterway over a five day period. The ground-based monitoring detected leaks from over 18 different barges in the Port Allen lock during the study. Hence, the issue is one that EPA is watching. For tank barge operators, it may be an issue worth getting out in front of.

lation of a spring mechanism that constantly maintains load on the packing, which also reduces the amount of labor involved with the continual on board task of packing adjustments.

For a retrofit job, the work is either done dockside or in drydock. The barge doesn't have to be pulled out of the water. Because the work does not involve tank entry, no safety entry permits are required and everything is done topside. Typically, says Lamphier, a complete barge refit can be accomplished in two days and for around $6,000 in labor and materials for the average 30,000 barrel barge. As *MarineNews* was going to press, a large Midwest barge operator already had two barges fitted with the equipment, with tentative plans for as many as 50 more, depending on the results achieved from the initial units.

Chesterton 1622 Emissions Packing is designed to minimize valve emissions and exceeds current emission requirements for the refinery, petrochemical, and chemical industries. The Packing provides for superior emissions and leakage control under harsh process conditions. This construction results in a non-hardening, flexible packing that will not shrink or absorb moisture. The strands that make up the packing slide easily over one another in response to gland pressure, creating a secure and reliable seal.

Using American Petroleum Institute (API) and EPA testing guidelines, W&O and Chesterton report leakage levels that have been lowered to 12-13 ppm. Consequently, the packing materials – Chesterton 1622 packing, for example – are warranteed to not leak in excess of 100 ppm for a period of 5 years. On one hand, and although the conversions might add 50 percent to the cost of a valve just to change the packing, weighing that extra $350 against the average cost of responding to an on deck leak incident ($10,000 per event, according to one customer), can provide immediate payback. Indeed, W&O claims that the solution can produce lifetime savings of $7,000, and that the system can pay for itself in just one year.

Ideally, W&O wants to crack the new build market – one which could yield as many as 600 new units in the United States alone this year. And, the solution is even more cost-effective as an OEM newbuild installation. Vance St. Jean adds, "What we're talking to our industrial customers about is what is called pre-consent decrees. Using this solution on board their barges, these people will be in the position, when the EPA knocks at their doors, of having already installed low-emission, warranteed products on new valves, retrofits, and, at the end of the day, avoiding potential fines."

Beyond Compliance

Beyond the obvious environmental benefits that customers can enjoy, the use of this equipment can, says St. Jean, be leveraged to potential charterers as just another example of a "safe and green" operating culture for the barge operator. And, a better sealed barge is just one more way for barge operators – who have already reduced their incidents of oil spills by more than 95 percent since the 1970's – to show the environmental lobby that they are more than serious about their social responsibilities.

From the perspective of W&O, the Chesterton packing package is also just one more way to show potential clients that the firm is more than just a distributor of equipment. But, then this engineered solutions company has been marrying the right technologies and products to form turnkey solutions, working closely with OEM's and end-user customers, for many years. Arguably, the control of 'fugitive emissions' is a great way to continue on with that tradition.

Making a Conscious Change: Seaspan Marine's Conversion to EALs

Vessel fleets face an increasing number of environmentally focused regulations, adding complexity to their operations and creating urgency around compliance.

By Matt Houston

The U.S. Environmental Protection Agency (EPA), under the Vessel General Permit (VGP), requires that all vessels over 79 feet use an "Environmentally Acceptable Lubricant" (EAL) in oil-to-water interfaces unless technically infeasible. The 2013 VGP revision also requires any above water line hull cleaning or deck washdowns resulting in discharge to be conducted with "minimally toxic, phosphate-free and biodegradable" cleaners and detergents as defined in the permit.

These regulations are further extended to non-recreational or non-military vessels less than 79 feet in length that are operating as a means of transportation through the recently announced updates to the 2014 Small Vessel General Permit (sVGP). With these announcements, it is becoming more and more apparent that the U.S. is leading the way in the adoption of biodegradable products, such as EALs, in marine applications. For multi-national operators, the country in which they operate that has the most stringent product requirements determines their product selection.

Seaspan Marine's tugboat, Seaspan Royal, tows the barge, Hercules III.

Photo credit: Seaspan Marine

A Move to EAL's

One such operator that recently addressed its environmental footprint is Seaspan Marine, a marine transportation company serving the west coast of North America, from Mexico to Alaska and the Canadian Arctic. In addition to providing ship docking and ferry services to the ports of Vancouver, Victoria Esquimalt and other British Columbian ports, Seaspan Marine transports forest products, as well as a variety of other cargoes. This cargo is delivered via a large and diverse fleet of tugs and barges specially tailored to move the individual products in a safe, efficient, cost-effective and environmentally responsible manner.

Seaspan Marine's operations also take them into Washington, Oregon and Alaska. The requirement to be 2013 VGP-compliant prompted the firm to explore the use of EALs in their oil-to-water interfaces. A number of manufacturers approached the company about EALs, so Seaspan Marine looked at all of the major brands to see what would be required for the conversion from their petroleum based oils to EALs. Ultimately, in March 2014, the company decided that RSC Bio Solutions' products were the best fit for their fleet's applications.

Horses for Courses: Specific Applications

For the hydraulic system of its barge log-loading machine, Seaspan Marine now uses EnviroLogic 3046, a high performance, readily biodegradable – as defined by OECD 301B or ASTM D7373 – synthetic ISO 46 grade hydraulic fluid. It is intended for severe service, extreme high temperature (250^{0}F), low temperature (-40^{0}F) and high pressure (5000+psi) applications. For the stern tube applications, the company uses EnviroLogic 3068, a high performance, readily biodegradable, synthetic ISO 68 grade hydraulic fluid. EnviroLogic 3068 is also intended for severe service, and it allows similar oil change intervals and duty cycles in typical propulsion systems.

These products can directly replace petroleum based hydraulic fluids of the same viscosity with no performance tradeoffs—yet they have a reduced environmental impact.

Seaspan Marine considered a number of factors when selecting the RSC Bio Solutions' EnviroLogic products. The products are fully compliant with the EPA and compatible with a majority of the systems that Seaspan Marine would convert. The company was looking for a minimal amount of cleaning and flushing of the existing systems in order to introduce the use of EALs. With the conversion

Photo credit: Seaspan Marine

Seaspan Marine has converted Royal's stern tubes to RSC Bio Solutions' EnviroLogic EAL.

of a number of older vessels, the ease and timeliness of that conversion was very important.

As these products are critical to marine operations, distribution plays a large part in ensuring that quality, compliant products are available. Seaspan Marine needed a product that would be supported in a location with a readily available supply. RSC Bio Solutions' products were available in Seattle and eventually will be available in the lower Canadian mainland, as well, making them accessible to the fleet operations.

Beyond Compliance

Seaspan Marine also analyzed the chemistries and properties of their EAL options, wanting a product that would minimize the impact on operations. "Like all marine operators, we're fairly conservative, and we don't change easily with systems that are already operating fine to something that may or may not change the performance parameters," said John Fowlis, vice president, fleet maintenance for Seaspan Marine. "With a boat, you can't just park it on the side of the road and call somebody. The crew onboard is relying on that machinery for the safe operation of their vessel, and so experimentation has to come in a very measured kind of way."

The quality of performance is always a concern when switching to a new product, but Seaspan Marine has seen equal or superior performance from the EALs compared to petroleum based products. In fact, they've found that

Table 1: Variables for Selecting a Biodegradable Fluid

Operating temperature	Seal type	Fluid life required	Likelihood of water ingress
Operating pressure	Customer choice	Risk of leak or spill	Preventative maintenance cycle

the hydraulic system of the log loader was actually running cooler with RSC Bio Solutions' product, which is a benefit to the life of the machinery in this demanding application.

Based on this quality performance of the loader, Seaspan Marine is now looking to expand the use of RSC Bio Solutions' hydraulic oil into deck-mounted cranes, anchors and other on-ship machinery applications. They plan to be fully EAL-compliant in their stern tube applications in early 2016, converting the seals and fluids of the impacted vessels as they go through their regular docking cycles.

Seaspan Marine is committed to going beyond mandated requirements in adopting environmentally conscious business practices. The company is a member of Green Marine, a voluntary environmental certification program for the North American marine industry. Additionally, Seaspan Marine is an ISO 14001-accredited company with a continuous improvement quality toward environmental stewardship. This focus demonstrates a dedication to environmental operations and, according to Fowlis, "we will eventually convert our fleet, even the ones that do not go into the United States, to use the best practice oil that we can, in oil-to-water interfaces. We will use EALs, even if we're not required to."

Seaspan Marine implemented a thorough evaluation process before selecting RSC Bio Solutions' products, which was critical to a smooth conversion. Although specific requirements are linked to the needs of the individual fleet, key considerations to be evaluated prior to selecting a readily biodegradable fluid are many, as shown in **table 1**.

When these considerations are accounted for in the selection process and proper maintenance practices are in place, readily biodegradable lubricants can save marine transportation companies time and money, while further protecting the environments in which they operate.

Matt Houston *is the market manager, marine construction for RSC Bio Solutions. Prior to joining RSC Bio Solutions, Houston served as an account manager for large construction OEMs. He has earned a B.A. in marketing from Loyola University New Orleans.*

Safeguarding GPS

When Global Positioning Doesn't Work

By Lt. Hermie Mendoza

Photo by Lt. Hermie Mendoza

Suppose the Global Positioning System (GPS) receivers used for your vessel, offshore oil platform, or port facility could not generate position data needed for your operations. How would your crew or staff respond? Initial troubleshooting efforts may indicate equipment failures, antenna masking, or possibly human error. Additionally, the lack of position data will likely force your crew or staff to resort to secondary means to obtain position information. If position data cannot be regained, then the receivers may have lost GPS due to intentional or unintentional interference.

In these circumstances, ship's officers or supervisors may relay the incident to other key personnel within the organization. But will these individuals report the GPS disruption to an external entity? Or rather, what external organization should receive GPS disruption reports? Both of these questions point to whether there is value in reporting GPS service disruptions. There is value in finding out how, and why.

Image above: Petty Officer Charles Testrake trains Petty Officer Jesse Cappella in the art of responding to GPS-related inquiries. On average, NAVCEN fields over 22,900 inquiries submitted by the public through the NAVCEN website annually.

The Value of GPS

According to the European GNSS Agency (GSA)'s 2013 Global Navigation Satellite System (GNSS) Market Report, the maritime industry purchased over 100 thousand GNSS units in 2012. Their estimates project that the deployment of GNSS units will skyrocket to nearly 180 thousand units in 2022. In the U.S, the U.S. Census Bureau reported that $937 billion of goods were transported in U.S. waterways from January to July 2014. As the International Maritime Organization's (IMO) e-Navigation concept matures, the global maritime industry's strong dependence on GPS and other GNSS will only continue to grow. Therefore, disruptions to GPS will directly impede marine operations, impact your financial bottom-line, and the vitality of the global economy.

Dr. Nam D. Pham, a principal economic researcher for the U.S. Chamber of Commerce Foundation, estimated in 2011 that the U.S. economy will incur $96 billion in losses annually, or 0.7% of the U.S. economy, during large-scale GPS disruptions. Even smaller scale GPS disruptions will hinder the competitiveness of marine GPS users.

Reporting Outages

Reporting GPS disruptions is simple—notify the U.S. Coast Guard Navigation Center (NAVCEN). This Coast Guard unit, located in Alexandria, Virginia, is your first point of contact for suspected GPS jamming and/or interference inquiries. Depending on the severity of the disruption, NAVCEN may refer the disruption report to law enforcement or federal agencies for further investigation and corrective action. It is important to note that GPS jammers are illegal for use, market, and sale. These electronic devices intentionally block GPS signals and place people in danger. Violating this federal law can result in monetary penalties, seizure of the jamming device, and even imprisonment.

If your crew or staff suspect GPS interference during your operations, then submit a GPS outage report through the NAVCEN website at www.navcen.uscg.gov. Your report will be disseminated to the U.S. Air Force GPS Operations Center (GPSOC) and the Federal Aviation Administration (FAA) in an attempt to identify the problem and correlate other GPS incidents. If internet connectivity is an issue, then you can call the round-the-clock operations center. Watchstanders will file the outage report on your behalf and begin the GPS problem resolution process. Even if the incident has passed, filing a GPS outage report is still highly encouraged.

NAVCEN is also the world's civil GPS representative to the U.S. Air Force, the operators of GPS. Part of its civil GPS liaison responsibilities is to co-chair the Civil GPS User Interface Committee (CGSIC), a world-wide forum between civil GPS users and U.S. Government GPS service providers. Since 1991, NAVCEN has been the voice of the maritime community in GPS-related meetings. Its other duties include disseminating GPS information, collecting worldwide user input and feedback for civil GPS user needs, and advocating on behalf of terrestrial GPS users in all GPS-related meetings, especially system planning and operation.

Photo by Lt. Hermie Mendoza

Entrance to the U.S. Coast Guard Navigation Center.

Core enablers to the IMO's e-Navigation concept are the signals provided by the world's premier GNSS, especially GPS. This global movement toward integrated ship and shore systems to be used by maritime professionals relies on independent GNSS signals to improve position performance and provide system redundancy. However, current standalone ship and shore systems may only use GPS. Even if ship and system owners invest to recapitalize existing equipment with receivers capable of using all available GNSS signals, intentional or unintentional GPS interference will still severely impact the equipment's performance.

Protect your bottom-line by reporting GPS service disruptions. Your efforts will ensure that GPS remains a "Great Positioning Source" for all stakeholders. To learn more about the U.S. Coast Guard Navigation Center, visit www.navcen.uscg.gov. To report GPS service disruptions, submit outage reports at **http://www.navcen.uscg.gov/?pageName=gpsUserInput** or call 703-313-5900.

Lt. Hermie Mendoza *is a GNSS analyst at the U.S. Coast Guard Navigation Center in Alexandria, VA. She is a 2007 graduate of the U.S. Coast Guard Academy in 2007 where she earned a Bachelor of Science in Electrical Engineering. She also holds a Master of Science in Electrical Engineering from Virginia Tech and a Master of Business Administration from the University of Maryland University College.*

Fort Ripley:

Multi-Missioned & Fully Capable

Photo by Peter Boyce Hunt Design

On a beautiful Autumn afternoon in Charleston, SC last month, *MarineNews* Editor Joseph Keefe had the good fortune to attend the christening on the nation's first dual purpose, rapid response vessel and pilot launch. As the first vessel to be designed for offshore salvage and firefighting requirements, it was also notably the first commercial application of Volvo Penta's IPS drive propulsion. The vessel also represents an interesting twist in the Charleston Branch Pilots' business model. The pilot game is already a pretty good paying gig, but clearly, this group is thinking outside the box. So, too, were the designers, builders and propulsion providers when they dreamed up and brought to fruition the M/V "Fort Ripley."

With a Tier III compliant propulsion arrangement that burns 30 percent less fuel than any of the other three vessels in the Charleston Pilot fleet, the vessel's long range endurance will eventually allow it to respond to maritime casualties all along the mid-Atlantic coastline. Diver and hotel ready, and capable of pumping 3,500 gallons per minute in firefighting mode, the new delivery is a welcome addition to the port of Charleston.

The gala event included attendees from C. Raymond Hunt (designers), Gladding Hearn Shipyard (the builders), Volvo Penta and virtually every stakeholder in the greater Charleston waterfront community. Arguably, though, the highlight of the day was a guided tour and short excursion aboard the versatile vessel. Humming along in the bay – scarcely a tremor in the vessel's spacious and high tech wheelhouse – the vessel's captain was asked how fast the boat was moving. The boat's captain simply smiled and simply pointed to the speed gauge: 28+ KT. In short, the well-designed "Fort Ripley" is destined to have real impact in the Palmetto State. Looking beyond that, it is clear that Volvo Penta's turnkey IPS propulsion package will soon

The magic moment ... Anne Smith, wife of longtime Charleston Branch Pilots' President Whit Smith, christens the M/V "FORT RIPLEY"

have the same effect on the North American workboat scene.

The Fort Ripley, powered by triple Volvo Penta IPS drives, is a U.S. Coast Guard-certificated 64-ft. aluminum boat, owned by Southeast Ocean Response Services Inc. Built by Gladding-Hearn Shipbuilding, Duclos Corporation, and designed by C. Raymond Hunt Associates, the boat's primary mission will be to allow ships to meet federal requirements for rapid offshore firefighting, salvage and emergency response, providing coverage between Morehead City, N.C., and St. Augustine, Fla. It will also serve as a fireboat in Charleston Harbor, a supply boat for ships at anchor and an additional launch for the Charleston Pilots and other marine operators in the region.

The three IPS drives, each powered by a commercially rated Volvo Penta D13-700 diesel engine, are independently steerable, with dual counter-rotating forward-facing propellers to maximize efficiency and increase maneuverability. The IPS can be controlled from the wheelhouse or either of the two aft docking stations using a three-axis joystick. The Dynamic Positioning System (DPS) provides fully automatic hands-off precise station-keeping under GPS control. The triple engine configuration allows the center engine to decouple from the drive and power a 3,500-GPM fire pump while the two outboard drives easily maneuver the vessel to maintain position automatically using DPS.

John Cameron, President, Southeast Ocean Response Services, said, "We chose the Volvo Penta triple IPS system because it has the power we need to get offshore to the scene of an incident rapidly, while also having the versatility to provide dedicated power to the fire pump as needed.

Fort Ripley at a Glance ...

Builder: Gladding Hearn Shipbuilding	Draft: 6' 11"	Fuel Capacity: 2,100 gallons
Designer: C. Raymond Hunt Associates, Inc.	Length: 62'4"	Tonnages: 95 GRT, 45 NRT
Displacement: 130,000 pounds (loaded)	Top Speed: 28 knots	Construction: Aluminum
Horsepower: 3 x 700 mhp @ 2,250 rpm	Cruise Speed: 23 knots	Propulsion: Volvo Penta IPS900
Generators: (2) 30 kW Northern Lights	Range: 500 miles @ 28 kt	Hull Design: Hunt Deep V
Main engine: (3) Volvo Penta D 13 diesel units	Beam: 21'3"	Fuel Capacity 2100 gallons

Peter Boyce Hunt Design

signed, and environmentally compliant, Fort Ripley is arguably the quintessential definition of the modern workboat: nothing left to chance, and everything included. The Charleston Pilots have, quite possibly, changed the business model for harbor pilots everywhere. As a minimum, the blueprint is now clear. And "multi-missioned" is the catch phrase.

RPM	Speed Knots	Fuel Burn Gal/hr	Fuel Economy nmi/gal	90% Fuel Cap Range Nmi
Idle	6.2	3.5	1.77	3348
1000	9.8	12.8	0.77	1447
1400	12.8	33.3	0.38	726
1600	15.2	47.1	0.32	610
1800	18.7	61.5	0.30	575
2000	22.9	78.8	0.29	549
2200	26.4	97.6	0.27	511
2250 (WOT)	28.4	104.5	0.27	514

Certainly, the predicted 30 percent improved fuel efficiency, which we actually exceeded in trials, along with the EPA Tier III technology, made this system the obvious choice."

"Fort Ripley is a truly revolutionary boat," said Ron Huibers, President, Volvo Penta of the Americas. "The combination of the Hunt-designed hull and our IPS drives with DPS sets a new standard in terms of speed, maneuverability, fuel economy and seaworthiness to meet multiple mission requirements. This vessel represents the future of the next generation of multi-purpose response boats."

In addition to its 3,500 GPM dual-monitor foam firefighting system, Fort Ripley features a diver platform, dual-purpose breathing apparatus recharging system, 1,000-pound crane, four-ton deck cargo capacity, VHF and satellite voice communications, day/night cameras with satellite data uplink, and a PYROLANCE steel-penetrating nozzle system. It is U.S. Coast Guard certificated for a 12-person response team. Multi-missioned, economical to run, U.S.-built and de-

Gladding-Hearn Delivers
Third of Five for NYPD

With over a dozen patrol boats and a fireboat built by Gladding-Hearn Shipbuilding, Duclos Corporation, operating in New York Harbor, the Somerset, Mass., shipyard delivered a third 61-foot patrol/rescue boat to the New York Harbor Unit. Two 70-footers are also being built for the NYPD harbor patrol. Designed by C. Raymond Hunt and featuring the shipyard's popular Chesapeake Class pilot boat deep-V hull, the boat also notably sports a functional "squared-off" bow, with fendering and knees raised above the main deck to facilitate bow landings. Designed and built to respond to emergencies across New York City's waterways, the boat is both versatile and highly functional. The heated forward-leaning windows in the front and the side and aft windows on the flush-mounted pilothouse offer 360-degree visibility of search and rescue operations. The boat is chock full of other multi-missions features, as well. In the forecastle is a patient triage area, with two upper and lower berths. Aft of the pilothouse is the diver's ready-room, with a settee and table and a work counter. Behind the ready room, the open aft deck is partially covered by a removable canopy for the divers' dressing table, gear, and scuba tanks, and a decontamination shower. On the aft deck is also a 13-foot inflatable tender, launched by a hydraulic, knuckle-boom crane. The boat's main propulsion comes from twin 10 cylinder MTU-10V2000M94 diesel engines, each producing 1600 Bhp at 2,450 rpm, giving the boat a top speed of over 35 knots, and at 25 knots a range of about 180 miles. The engines turn a pair of Hamilton HM521 water-jets through ZF3000 gearboxes. A 30 kW Northern Lights/Alaska Diesel generator provides service power.

Vessel Data at a glance

Vessel Name: LAUNCH 628	Vessel length: 61.6 feet	Gears: (2) ZF 3000
Type: Monohull (dive boat)	Vessel beam: 17.4 feet	Gensets: 30 kW Northern Lights/Alaska Diesel
Propulsion: (2) MTU diesels	Vessel depth: 9.9 feet	Water jets: (2) Hamilton HM521
Radar: Furuno DRS4A 4 kW	Vessel draft: 2.11 feet	VHF: Vertex 5500

Brunswick, NASBLA Announce Patrol Edition Vessel

Brunswick Commercial & Government Products (BCGP) and the National Association of State Boating Law Administrators (NASBLA) have partnered to create a patrol vessel designed for the recreational boating safety (RBS) patrol officer and maritime first responders. The NASBLA Patrol Edition Boston Whaler 21-foot Guardian is intended for near-shore and inland waterways, specifically aimed to meet the needs of law enforcement and emergency rescue personnel. Equipped with a 250hp Mercury outboard engine and many industry-standard features customized for the law enforcement professional, the Patrol Edition vessel has been identified by the NASBLA Enforcement & Training Committee as the best boat for this mission. The first Patrol Edition vessel was delivered to Maine Department of Marine Resources, Bureau of Marine Patrol in October.

Escort/Multi-Purpose RAmparts Class Tugs for Signet Maritime

Signet Maritime has taken delivery of the SIGNET ARCTURUS and SIGNET POLARIS, the 8th and 9th tugs designed for them by Robert Allan Ltd. of Vancouver, Canada to add to their fleet of 37 conventional and ASD vessels. The tugs were constructed at Patti Marine Enterprises in Pensacola, FL. These tugs are based on the SIGNET WEATHERLY design, but with additional power and higher bollard pull. The vessels are intended for multi-disciplinary work including offshore support, towing, ship-assist, ship escort, subsea and rig moves. A number of design modifications were incorporated from the original design to increase the vessel's capabilities for this multi-disciplinary work. SIGNET ARCTURUS and SIGNET POLARIS are of the RAmparts 3200 Class Z-drive tug design from Robert Allan Ltd., a series of customizable well-proven designs which is extremely popular and successful, with now well over 100 of this class in service worldwide. The tugs are also USCG inspected vessels built under USCG Subchapter-I (NVIC 10-82), and are SOLAS compliant. Fire-fighting is to ABS Fi-Fi 1 Class, using FFS 250x350XP pumps, driven off the front end of the main engines, and FSS1200 LB Monitors.

SIGNET ARCTURUS, SIGNET POLARIS at a Glance:

Length overall: 105'	Propulsion: Caterpillar C175	Class: ABS
Beam, molded: 38'	Hawser Winch: Markey DEPCF	Bollard Pull: 83.45 tonnes
Depth, molded: 18'-2"	Power: 2 x 3,420 bhp	Fuel oil: 88,300 Gal
Speed: 14.5 knots	Maximum draft (overall): 19'-5"	Engine lube oil: 500 Gal

Vigor Delivers EBDG Designed 15,000 Barrel Tank Barge

The Seattle divisions of Vigor Fab and Elliott Bay Design Group (EBDG) have delivered the 15,000-barrel tank barge GLOBAL PILOT to Maxum Petroleum. Designed to balance performance with fabrication cost, the 15,000-barrel tank barge features a recessed machinery space aft for improved visibility and a state-of-the-art tankerman's office. It also has dimensionally identical cargo tanks, corrugated plate tank bulkheads, and plate seams arranged to maximize material usage of standard 8-foot and 10-foot plates. The 15,000-barrel tank barge is one of several barges that have been delivered by Vigor to EBDG's designs over the past decade. EBDG provided the contract design to Maxum and provided Production Support services to Vigor.

Crowley Christens New Ocean Class,
DP2 Tugboat, Ocean Sun, in Louisiana

As part of the company's new vessel build program, Crowley Maritime Corp. last month christened the latest of its four tugboats in the ocean class series, Ocean Sun, today in Lake Charles. The ceremony served to formally welcome the fourth dynamic positioning 2 (DP2) tugboat to the company's expanded ocean towing fleet, which has been involved in most of the major offshore oil production installations in the U.S. Gulf of Mexico over the past 18 months. Todd Busch, senior vice president and general manager of Crowley's solutions group, opened the ceremony to approximately 80 guests. He was followed by a series of speakers which included Tom Crowley, chairman and CEO of Crowley and Robert Socha, executive vice president, sales and marketing, Bollinger. The Ocean Sun, which features DP2 technology, is part of a feature-rich, four-vessel family of tugs suited to work with Crowley's new 455 series high-deck strength barges, which measure 400 feet long by 105 feet wide (121.92 meters by 32 meters). Crowley's ocean class tugs are outfitted for long-range, high-capacity ocean towing, rig moves, platform and floating production, storage and offloading (FPSO)

unit tows, emergency response and firefighting. All four of the ocean class tugboats are designed to have a minimum bollard pull of 150 metric tons and a range of approximately 12,600 nautical miles at 15 knots free running. They are outfitted with twin-screw, controllable-pitch propellers in nozzles and high lift rudders for a combination of performance and fuel economy.

Cummins Auxiliaries for
Powerful New Offshore Vessel

Reliable auxiliary power is as important to a modern offshore vessel as are the main propulsion engines. Ample and reliable electrical power is essential to the basic support systems from the galley appliances to the wheelhouse navigational devices. The Ms. Charlotte, recently delivered to Edison Chouest by Bollinger Shipyards is designated a 300 Class Deep Water Support Vessel, fitted with a pair of GE 3,125 hp 8L250 main propulsion engines. The ship has extensive electrical requirements, including cargo pumps and dual bow and stern thrusters for the Dynamic Positioning 2 system. To meet these requirements and to provide redundancy, the Ms. Charlotte is fitted with two Cummins QSK19-powered 525-kW generator sets and two Stamford PM734F 1500 kW shaft generators. To meet SOLAS requirements there is also a Cummins 6CTA8.3-DM powered 175 kW emergency generator set. Originally built by Bollinger for their Bee Mar subsidiary, the Ms. Charlotte was one of seven vessels transferred to Edison Chouest when that firm purchased the Bee Mar fleet.

2015 Editorial Calendar

Marine News

ISSUE	EDITORIAL	BONUS DISTRIBUTION
JANUARY **Ad Close:** Dec 12	**Passenger Vessels & Ferries** Market: Training & Education Technical: Arctic / Cold Weather Operations Product: Winches, Ropes & Cranes	**PVA/Maritrends** Jan. 31 - Feb 3, Long Beach, CA REGIONAL FOCUS: West Coast
FEBRUARY **Ad Close:** Jan 15	**Dredging & Marine Construction** Market: U.S. Coast Guard Technical: Naval Architecture Product: Fire & Safety Equipment	**ASNE Day** March 4 - 5, Crystal City, VA
MARCH **Ad Close:** Feb 14	**Fleet Optimization** Market: Management Software Technical: SATCOM for Workboats Product: Water Treatment & Technology	**CMA Shipping 2015** March 23 - 25, Stamford, CT REGIONAL FOCUS: US East Coast
APRIL **Ad Close:** March 14	**Shipyard Report: Construction & Repair** Market: Push Boats & Barges Technical: Marine Coatings/Corrosion Control Product: Interior Outfitting / Design / HVAC	**Sea-Air-Space** April 13 - 15, National Harbor, MD
MAY **Ad Close:** April 14	**Offshore Annual** Market: OSV and Offshore Vessel Trends Technical: Safety & Prevention Product: Oil Pollution: Prevention & Response	**OTC Houston** May 4 - 7, Houston, TX
JUNE **Ad Close:** May 14	**Combat & Patrol Craft Annual** Technical: Shortsea Shipping / Bulk Transport Technical: Lubricants, Fuels & Additives Product: Inland Boat Builders	**Inland Marine Expo** June 15 - 17, St. Louis, MO **MACC** June, Virgina Beach, VA **Seawork** June 16- - 18, Southampton, UK REGIONAL FOCUS: Inland Rivers
JULY **Ad Close:** June 15	**Propulsion Technology** Market: ATBs – Expanding Roles & Types Technical: Deck Machinery Product: Safety & Prevention	
AUGUST **Ad Close:** July 15	**MN 100 Market Leaders** Market: Workboat Boatbuilding & Repair Technical: Marine Operators Product: E-Solutions & Technology	***Marine News*** **25th Anniversary Edition**
SEPTEMBER **Ad Close:** Aug 15	**Inland Waterways** Market: Navigation, E-Solutions & Software Technical: Training/Regulatory Compliance Product: Cordage, Wire Ropes & Rigging	**ShippingInsight** Stamford, CT REGIONAL FOCUS: Great Lakes
OCTOBER **Ad Close:** Sept 15	**Salvage & Spill Response** Market: Maritime Security Workboats Technical: Emissions Control/Management Product: Deck Machinery/Cargo Equipment	**SNAME** Nov. 4 - 6, Providence, RI **CleanGulf** Nov. 10 - 12, New Orleans, LA
NOVEMBER **Ad Close:** Oct 16	**Workboat Annual** Market: Outfitting the Modern Workboat Technical: Pumps, Pipes & Valves Product: Marine Propulsion	**International Workboat Show** Dec. 2 - 4, New Orleans, LA REGIONAL FOCUS: Gulf Coast
DECEMBER **Ad Close:** Nov 15	**Innovative Products & Boats of 2015** Market: Fire, Patrol & Escort Craft Technical: Onboard / Wireless Comms Product: CAD/CAM Software	

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

Shuster, McConnell Receive AMP Awards

Rep. Bill Shuster (R-PA) and Sen. Mitch McConnell (R-KY) have both received Champion of Maritime Awards from the American Maritime Partnership (AMP), the voice of the domestic maritime industry. The prestigious awards recognize individuals who have displayed extraordinary dedication to and consistent support for the American maritime industry. As Chairman of the House Transportation Committee, Rep. Shuster has consistently highlighted the critical role America's domestic maritime industry plays in the nation's national, economic and homeland security. McConnell's home state of Kentucky ranks fifth in the nation in per capita domestic maritime jobs and the state's 13,260 domestic maritime jobs pump more than $2.7 billion annually into the Kentucky economy and maritime worker income in the state totals more than $720 million.

Barczak

Chandler

Allee

Paitl

Alan C. McClure Associates has announced that Registered Professional Engineer **Nicholas Barczak** has joined the ACMA team as a Naval Architect. Nick received his Masters of Engineering in Naval Architecture and Small Craft Design in 2008 from the University of Southampton. He also attended Michigan Technological University where he studied Mechanical Engineering. Prior to joining ACMA, Nick worked with Art Anderson Associates and Elliott Bay Design Group.

Lynn Chandler has celebrated his 25th Anniversary with Bay Diesel. In 1979, his military career led him to the Hampton Roads area where he eventually joined Bay Diesel. Lynn has over 40 years experience in the engine business. Over the years, Lynn's dedication has helped build Bay Diesel as a company and allowed him to work his way to an executive position where he is now a shareholder.

Don Allee will assume control of the Port of New Orleans Cruise and Tourism Division in January. Allee comes to New Orleans with nearly 30 years of port industry experience, recently serving as executive director and CEO of the Mississippi State Port Authority from 2002 to 2012 and later as a consultant for PLG Consulting, providing services to port and terminal operators. He is a graduate of Sam Houston State University.

LNG America has named **Captain George "Joe" Paitl** VP Marine Operations and HSSE Compliance. Capt. Paitl is a retired US Coast Guard officer who most recently held the position of Commanding Officer and Captain of the Port, Marine Safety Unit Port Arthur, where he oversaw safety, security, law enforcement, and environmental regulatory compliance. Paitl brings leadership, executive management, and maritime-related experience to LNG America.

DNV GL has established a group of LNG experts in North America. **Bjørn-Harald Bangstein** is the Director of Operations Maritime Advisory, Americas. In addition to deep LNG expertise, the Houston-based "LNG Solutions Group - Americas" is also experienced in risk and regulatory matters specific to the North American market. Drawing on experiences also from previous LNG projects around the world, the group can offer class and advisory services throughout the value chain of LNG.

Mickey Cook has joined Horizon Shipbuilding as Vice President of Operations for the Bayou La Batre shipyard. Mr. Cook, one of the founders of C&G Boatworks, where he served as General Manager, brings 38 years of experience to Horizon. Cook has held positions in all aspects of shipbuilding, including Ship Repair Estimator, Project Engineer, Project


Bangstein


Cook & Short


Beck


St. Lawrence


Meissner

Coordinator, Yard Superintendent, Operations Manager and Assistant General Manager.

Bob Beck Jr. and **Renée St. Lawrence** have joined the Willard Marine Sales team. Beck brings more than 24 years of experience in the U.S. Coast Guard, as well as time spent as Zodiac's Coast Guard Customer Support Manager and Director of the Maritime Training Academy, most recently serving as Chief Operating Officer overseeing government and professional markets. St. Lawrence was Zodiac's Federal Sales and Contract Manager where she spearheaded a variety of contracts from initiation through product delivery and oversaw Zodiac's safety program and developed dealer training requirements. St. Lawrence has also held positions managing government contracting and regulations such as GSA contracts and compliance with FAR, OSHA and ANSI codes.

Martin Meissner has assumed the position of Marketing and Communications Manager for the Industrial Technology division of the ZF Group in North America. Meissner, the Marketing and Communications Manager for ZF's Marine business in North America, will now be responsible for all facets of marketing related activities in North America for the Industrial Technology division.


Stanley


Flores


Gallagher


Shilo


Long

Keith Stanley has been named Product Line Manager – Pleasure Craft for North and Central America, for ZF Marine Propulsion Systems Miramar LLC. Stanley joined ZF in 2011 as Key Account Manager. He was promoted to Engineering Manager in 2012, with responsibility for application engineering activities for the region. Stanley will now have responsibility for both activities. He completed his Bachelor of Science in Mechanical Engineering at NC State.

Jan M. Flores has joined Netsco as Sr. Director of Business Development. He comes to Netsco from Overseas Shipholding Group where he headed the FSO Group and was responsible for Business Development in the offshore market. Flores has also worked for Crowley Maritime as Manager of New builds. Educated at the Florida Institute of Technology, Jan is a Registered Professional Engineer.

Paul Gallagher is rejoining the Foss team to work in the commercial services group on major transportation project opportunities. Paul brings more than twenty-five years of experience within the maritime industry, and during his career he has been involved in all aspects of maritime operations and cargo transportation. Paul began at Foss in 1991 and served in a variety of roles including Director of Sales for Marine Transportation, PNW Regional Operations Manager and Director of Oilfield Services.

Recently, he has served as Director of Project Services at TOTE Logistics and has worked collaboratively with Carlile, Totem Ocean Trailer Express, Delta Western, Northern Air Cargo and Foss Maritime on a wide variety of projects. Paul attended Maine Maritime Academy where he earned a BS in Nautical Science.

Shilo Hutton, Ballard Marine Construction's Founder and President, announced that Ballard Marine has been granted Women's Business Enterprise (WBE) certification by Women's Business Enterprise National Council (WBENC). Shilo Hutton owns 95% of the company that has grown over the years from a garage start-up company to offices in Alaska, California, Illinois and Wisconsin. Ballard Marine Construction, Inc. is a specialty contractor serving the marine infrastructure market.

Lumitec, an engineering firm focused on the development and manufacture of extreme environment LED lighting, has appointed **Chris Long** as VP of Engineering of R&D/manufacturing. Chris brings to the role more than 25 years' experience leading engineering teams and partners in the design of technology-focused electrical and electromechanical products. He has a BSE in Mechanical and Aerospace Engineering from Princeton University, an MBA from Florida International University (FIU), is a licensed Professional Engineer, and holds 6 patents.

Adel Kamel has been named a Supervising Engineer in the Tampa office of Parsons Brinckerhoff. Kamel will be responsible for the design, construction, and managing of ports and marine projects throughout the Southeast. He has over 20 years of professional experience, including design of marine and coastal engineering projects. Kamel received a B.Sc. in civil engineering from Zakazik University and a post-graduate certificate in environmental engineering from Ain Shams University in Cairo. He is a licensed professional engineer.

Kamel

Kelton

IRPT

Allegretti

Elliott Bay Design Group (EBDG) has hired **Jeff Kelton** as its Field Liaison Engineer in Ketchikan. Kelton is a naval architect with more than 38 years of experience. His background includes expertise in shipyards and ship design offices on the West and Gulf Coasts and in Japan. He holds a BS in Naval Architecture and Marine Engineering from the University of Michigan.

The Inland Rivers, Ports and Terminals (IRPT) Trade Association announced that it has entered into a memorandum of understanding with Lewis & Clark Community College - National Great Rivers Research and Education Center (NGRREC) and the Mississippi River Transportation, Distribution and Logistics (MRTDL) Consortium. This partnership creates the opportunity to educate and guide future leaders and create and expand innovative partnerships between community colleges and businesses to educate and train workers with the skills every river employer needs.

Tom Allegretti, Chairman of the American Maritime Partnership (AMP), the voice of the domestic maritime industry, last month highlighted the continued renaissance of the nation's maritime sector, particularly its robust response to meet new water transportation demands created by the surge in domestic energy production. "The domestic maritime industry, with the Jones Act as its statutory foundation, is investing heavily to meet the transportation demands of a booming energy economy," Allegretti said. "We are witnessing a new era of domestic vessel construction that is adding nearly 16 million barrels of inland and oceangoing tank vessel capacity. The Jones Act provides the certainty American companies need to commit the capital that makes this construction, and the jobs that go with it, a reality." Allegretti also questioned the assumptions of out-of-the-mainstream Jones Act critics.

Crowley Maritime

Crowley Maritime Corporation last month presented four California Maritime Academy students with Thomas B. Crowley Sr. Memorial scholarships during Containerization and Intermodal Institute's Connie Awards dinner. Andrew Bahnsen, Bonnie Claire Muchnick, Andrew Leonard, and Ryan Cazneaux all received scholarships. Since 1984, Crowley has provided more than $3 million dollars in scholarship funding for more than 1,000 students studying at maritime academies and other select institutions in the U.S., Puerto Rico and Central America.


Foti


Guidry


Ingram

Vigor Alaska to Build Two State of Alaska Ferries

Vigor Alaska has been selected to build the Alaska's two newest day ferries. The ferries, owned and operated by Alaska Marine Highway System (AMHS), will be built by Alaskans for Alaska to serve citizens along the Lynn Canal route between Juneau, Haines and Skagway and will cost $101 million to construct; a reduction in the original price. To keeping Alaskan dollars in the state, Vigor Alaska says that it made significant cuts to the initial estimates for the project and delivered a price that was below the independent government price estimate. Vigor CEO Frank Foti said, "It's fitting and downright awesome that the Vigor Alaska's workers will be stamping 'MADE IN ALASKA' on new ferry construction." Construction of both vessels is scheduled to begin in October 2014 and will take approximately four years to complete. The design and estimating process included collaboration between Vigor Alaska, the State of Alaska and the Elliot Bay Design Group.

Harvey Gulf Continues Strategic Growth with Expansion into Mexico

Harvey Gulf International Marine, LLC has established Harvey Gulf International Marine de Mexico S.A.P.I. de C.V. Harvey Gulf is now able to fully service the needs of its clients currently operating in the offshore oil and gas segment of Mexico, and positions itself to fully service the needs of future clients that will enter the market. Recent changes in Mexican law allow foreign ownership in hydrocarbons which facilitates this growth. Shane Guidry, Harvey Gulf CEO explained, "We recognize the growth potential in the Mexican market for our business," adding, "The initial area of operation will primarily be in Ciudad del Carmen, Mexico; however we will be able to operate in any other port facility locations along the Mexican coast to support operations."

EPA Grants Target Diesel Emissions at Ports

The U.S. Environmental Protection Agency (EPA) has up to $5 million in grant funding available to establish clean diesel projects aimed at reducing emissions from marine and inland water ports located in areas of poor air quality. Applicants may request up to $2 million in funding toward eligible projects, which may include drayage trucks, marine engines, locomotives and cargo handling equipment at marine or inland water ports. Port authorities, governmental or public agencies operating ports and state and local governments are eligible to apply. Community groups, terminal operators, shipping carriers and other related entities are encouraged to participate through partnerships with eligible applicants.

Ingram Barge Company to Build 20 Tank Barges

Ingram Barge Company announced that they will be building 20 tank barges in 2015 to meet growing demand for chemical shipments. Ingram Barge's CEO, Orrin Ingram, said, "The petrochemical industry remains strong and is one of our strategic areas for investment," adding, "We're building to replace retiring barges and to grow with our customers." While most of the company's recent tank barges have come through acquisitions, this continued expansion in their barge fleet coincides with a 10-year plan that began in 2007 to build barges with Trinity Industries. The building strategy has allowed Ingram to maintain their fleet size as barges reach retirement age. Ingram has nearly 5000 barges.

BSEE, Coast Guard Sign MOA Regulating Fixed OCS Facilities

Bureau of Safety and Environmental Enforcement (BSEE) Director Brian Salerno and U.S. Coast Guard Rear Admiral Paul Thomas have signed a Memorandum of Agreement (MOA) for regulating fixed Outer Continental Shelf (OCS) facilities. Through this agreement, both BSEE and the Coast Guard will review regulatory responsibilities for systems

RADM Thomas, Brian Salerno Sign OCS MOA

Bouchard

and sub-systems on fixed OCS facilities and collaborate on joint training activities. The MOA ensures a comprehensive joint approach in regulations and clearly outlines responsibilities of each agency for inspection and oversight duties.

SUNY Maritime Opens Bouchard Tug & Barge Simulation Center

In October, President and CEO of Bouchard Transportation, Morton S. Bouchard III joined Morton S. Bouchard IV, Congressman Joseph Crowley (NY-14), SUNY Maritime President, Rear Adm. Michael A. Alfultis and Brendan Bouchard at the ribbon-cutting for the Bouchard Transportation Co., Inc. Tug & Barge Simulation Center located in historic Fort Schuyler on the SUNY Maritime campus. The Bouchard 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 debriefing area. Funded by a gift from the Bouchard Transportation Co., Inc., the simulation facility is available to professional mariners currently working on tugs and barges. Students at SUNY Maritime College will be trained with this new technology as part of their program of study.

PalmScope Video Inspection System

The PalmScope (DCS950) from General Tools & Instruments is a pocket-sized video inspection system built to survive harsh environments of vessel maintenance and offshore maintenance. The clamshell design allows the camera-tipped probe to be coiled safely and conveniently inside the device. Retailing for less than $150, the video zoom button allows the user to zoom up to 4X, increasing the odds of spotting problems.

www.generaltools.com

J D Neuhaus Hydraulic Lifts

J D Neuhaus has added Profi and EH monorail hoist ranges, units providing 75 and 100 metric ton lift capacities, to their offerings. Where heavy loads are lifted and transported in restricted spaces with only minimum headroom, then a JDN ultra-low monorail hydraulic hoist range has been introduced, initially available with 50 and 100 metric ton lift capacities.

www.jdngroup.com

NVision 3D Scanning Speeds Design Processes

NVision's 3D mapping captures geometrical information within a tolerance of +/- .001". The NVision Handheld scanner is a powerful portable scanning device that is capable of capturing 3D geometry from objects of almost any size or shape, freeing users to capture data with a high degree of resolution. The scanner generates a point cloud consisting of millions points each with x,y,z coordinates and i,j,k vectors.

www.nvision3d.com

BRP to Install Evinrude E-TEC Engines

BRP's Evinrude E-TEC and revolutionary E-TEC G2 engines will be installed on Campion Boats. Campion Boats include Chase high-performance boats, Svfara tow boats, Infinyte dinghies, and Explorer utility boats. BRP's newest engine; the Evinrude E-TEC G2 outboard, features a new design, clean rigging and best-in-class fuel efficiency. BRP's full Evinrude E-TEC line-up from 3.5 to 300 horsepower offers value across a range of applications.

www.brp.com

Introducing the all new MJP Hybrid

The MJP Hybrid waterjet combines the best of the MJP DRB series with the MJP Ultrajet series. The hybrid optimized for high-speed applications came soon after MJP's merger with Ultrajet. The concept involves a duplex stainless steel jet pump, adding in mixed-flow technology with minimum tip clearance and inboard hydraulics mounted in an aluminum frame – an attractive package suitable for all high-speed applications.

www.marinejetpower.com

Tier 4 Final Gensets from Cummins

Cummins' certified Tier 4 Final QSB7 and QSL9 engine platforms form the basis for mobile sets that meet EPA regulations. US EPA Tier 4 Final certified mobile generator sets with 150 kW to 275 kW power outputs are now available from Cummins Power Generation for the rental market. The new units have undergone refinements to meet the stringent EPA Tier 4 Final regulations.

http://power.cummins.com

MagnaShear Marine Duty Motor Crane Brakes

The MagnaShear marine duty motor brake from Force Control Industries employs oil shear technology, providing longer service life even in demanding applications like the frequent start/stop cycles seen on cranes, hoists, winches, and other marine material handling equipment. High grade castings, marine duty coatings, stainless steel fasteners and accessories make these brakes an ideal solution for onshore and offshore crane applications.

www.forcecontrol.com

Modular Power Solution for FPSO, Offshore Platforms

Caterpillar Oil & Gas has a new Offshore Power Generation Module for FPSO and offshore platforms. The system marries Caterpillar engine technology with the vessel design expertise of Deltamarin, a Finnish naval architecture and engineering company. The Cat power generation solution was designed for cases where a gas turbine is not ideal. The power module is equipped with remote monitoring.

www.catoilandgasinfo.com

Bestobell Innovates to Extend Valve Choices

Bestobell Marine now offers butt weld and flanged connections for all its Globe and Check valves. The valves allow Bestobell to offer greater flexibility to customers. Flanged connections are in demand with shipbuilding companies, as they are easier to install, involving less welding. Bestobell's Marine division designs and produces valves to meet marine requirements, while supplying cryogenic valves to shipyards building LNG Carriers.

www.bestobellvalves.com

Southco Next Generation Display Mounting Solution

Southco, Inc. has expanded its AV Display Mount offering with three new models that provide enhanced functionality and design flexibility. The AV-D32 Series includes a next generation Tilt and Swivel Mount (K Series), a Tilt, Swivel and Single Swing Arm (A Series), and a Tilt, Swivel and Dual Swing Arm (A Series) designed with integrated Positioning Technology for precise control and customized operation.

www.southco.com

Hostar Hydraulic Trailers for Navy Transport

SAFE Boats International's Riverine Command Boats (RCB) requires stable over-the-road passage, and the US-based boatbuilder chose HOSTAR SBI-RCB-4500MT hydraulic road trailers to move the RCBs. Designed to handle SAFE Boats' RCB, the HOSTAR SBI-RCB-4500MT hydraulic road trailer is over 58' in length, approximately 11', 5-1/4" wide and weighs 18,750 lbs. This trailer/craft combination meets MIL-HDBK-1791 for C-5 and C-17 air transport.

www.hostarmarine.com

Waterjet Manufacturer Jet Edge Launches New Website

Jet Edge, Inc. recently launched a new website. Featuring multilingual content and a design that functions across devices, the new jetedge.com provides access to Jet Edge's diverse product line as well as extensive information about waterjet's many applications. The content-rich website also features a resource center for waterjet operators, improved search capabilities, and access to Jet Edge's online waterjet parts store and maintenance training registration.

www.jetedge.com

ESAB'S Low Manganese Emission Welding Wire

ESAB Welding & Cutting Products' Coreweld C6 LF is a low manganese emission, high efficiency metal-cored welding wire developed to meet new EPA regulations and guidelines from ACGIH (American Conference of Government Industrial Hygienists) for manganese exposure limits. Coreweld C6 LF has 50 percent lower manganese content and provides excellent operating qualities while reducing welding manganese exposure when compared to standard metal-cored electrodes.

www.esabna.com

Tyco Strengthens Portable Fire Protection Offerings

Tyco Fire Protection Products recently launched the ANSUL SENTRY High-Flow, Stored-Pressure Fire Extinguisher. Designed for commercial, compliance markets, this portable extinguisher provides cost-effective fire suppression to meet the requirements of NFPA 10 Standard for Portable Fire Extinguishers. Available in 10-pound and 20-pound models with standard or corrosion-resistant coatings, the SENTRY High-Flow, Stored-Pressure Fire Extinguisher is designed to meet commercial requirements.

www.ansul.com / www.tycofsbp.com

Armored Wireless Camera with External Ignition Protection

The HC170 / HC173 HoistCam is an ignition protection rated, rapidly deployable wireless electronic night/day camera platform. HoistCam places the eyes of the crane operator anywhere on the job. Safety is increased, and efficiency improved by making instant visual information available anywhere. The unit comes with a rugged Transport Case with HoistCam, Monitor, Charger, Video Receiver Box and Antenna.

www.HoistCam.com

Romica's Containerized Mooring System

Romica Engineering's 4000m capacity winch system, with hydraulic power unit, is used at sea for various large mooring operations. This winch system will be freighted worldwide in an ISO 20'open topped container. An electrically driven hydraulic power unit is also supplied in a 10' ISO certified container, containing all peripherals for the winch system (spares/remote/cables and hoses).

www.romica.co.uk

Shell's Complete Lubricant Solution for ECA-Bound Vessels

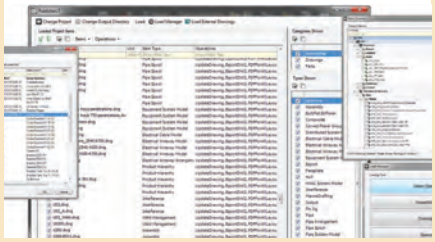
Shell Marine Products' Shell Alexia S3 is a solution for vessels with two-stroke engines entering into waters where the revised emission control area (ECA) regulations will come into force on 1 January 2015. Shell Alexia S3 will be available to customers from December 2014 in major ports across SMP's network of over 500 ports in over 40 countries.

www.shell.com

SSI Introduces EnterprisePlatform PublisherLT

Highly skilled naval architects, marine engineers and draftsmen should be focused on tasks where they can add maximum value consistent with their training and expertise: designing, engineering and drafting. To enhance this capability, SSI (makers of ShipConstructor CAD/CAM software) has introduced PublisherLT, an EnterprisePlatform software product. PublisherLT eliminates much of the repetitive, time consuming, and manual processes that keep individuals away from doing their jobs.

www.ssi-corporate.com



Pettit Water-Based Antifouling Paint

Pettit Marine Paint's entry-level water-based antifouling paint, Neptune 5 is an ecofriendly bottom paint that provides lower applied cost per square foot, easier application and is low priced. Strong enough to handle tough marine environments, it also self-polishes similar to seasonal ablatives. User-friendly in application, with low VOC release – well suited to environmentally conscious boatyards – it can be applied over other bottom paints.

www.pettitpaint.com

Lumitec LED Fixtures

Lumitec's extreme environment LED lighting technology has demonstrated a staggering rate of evolution over the last 10 years. Its market share has greatly increased as a result of decreasing prices, rapid innovation, and ever-increasing performance. Advantages over conventional technology include substantially longer life, an 80-90% increase in energy efficiency and an array of new color, control, and luminaire design options.

www.lumiteclighting.com

Arbor Solution's Gladius Tablets

Arbor Solution's Gladius family of rugged tablets now includes the Gladius G0975, a 9.7" Windows version. Arbor Solution's Gladius G0975 features support for Linux, as well as Windows 7 & 8 and their embedded versions. It withstands drops of up to four feet, shocks and spills, and has an integrated WLAN, WWAN, WiFi and Bluetooth connection with up to 512 GB memory.

www.arborsolution.com

Pressurize and Depressurize Safer with Marco

Marco Group International's (patent pending) Blastmaster Automated Depressurization System enables the user to pressurize and depressurize bulk abrasive blasting pots with a flip of a toggle switch from ground level. No longer required to climb the blast pot to manually adjust ball valves, the operator is more efficient. Operator safety is enhanced by providing visual indicators of abrasive blasting pot pressurization and depressurization.

www.marco.us

Victor Thermal Dynamics Manual Cutting System

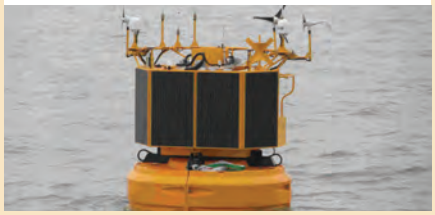
Victor Thermal Dynamics' PAK 200i manual plasma cutting and gouging system satisfies demanding manual plasma requirements. The system delivers 100% duty cycle at 200 Amps, is capable of hand cutting up to 2 ¾" on mild steel, as well as 10 ipm (254 mm/min) on 2" carbon steel, and will remove up to 25 lbs. (11.3 kg) of carbon steel per hour.

www.victortechnologies.com

Renewable NRG Systems and FLiDAR enter exclusive partnership for the Americas

Renewable NRG Systems and FLiDAR have entered a partnership for the distribution of FLiDAR's offshore wind measurement buoys in the Americas. Renewable NRG Systems will provide WindCube Lidar systems to FLiDAR to equip the floating wind measurement technology. FLIDAR is a floating wind measurement system that measures wind speed and direction, and has multiple third party validation tests with DNV GL, and others.

www.renewablenrgsystems.com / www.flidar.com



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Bouchard Transportation Co., Inc.

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Qualifications:
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- STCW
- TWIC

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

Tug Mate
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MASSACHUSETTS MARITIME ACADEMY

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

POSITIONS AVAILABLE

Professional Maritime Faculty (2 positions available)
Director, Chief Mate Training Ship Kennedy
Tenure-track Engineering Faculty (2 positions available)
Tenure-track Marine Transportation Faculty (2 positions available)
Engineering Lab Tech

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

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

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

VESSELS FOR SALE / BARGES FOR RENT

NEW PRODUCTS

Marine Marketplace

NEW PRODUCTS

Marine Marketplace

NEW PRODUCTS

PROFESSIONALS

ADVERTISER INDEX

Page#	Advertiser	Website	Phone#
109	Ahead Sanitation	www.aheadtank.com	(337) 237-5011
95	All American Marine	www.allamericanmarine.com	(360) 647-7602
83	Aluminum and Stainless, Inc.	www.aluminumandstainless.com	(337) 837-4381
71	Amerijet International, Inc.	www.amerijet.com	(800) 927-6059
84	Baldwin Filter	www.baldwinfilters.com	(800) 822-5394
51	Biobor Fuel Additives	www.biobor.com	(800) 548-9166
51	Bollinger Shipyards	www.bollingershipyards.com	(985) 532-2554
99	Breaux Bay Craft	Please call us at	(337) 280-1431
1	Brunswick Commercial & Gov. Products, Inc.	www.brunswickcgp.com	(386) 423-2900
79	Burger Boats	www.burgerboat.com	(920) 684-1600
73	Charles Industries	www.charlesindustries.com	(586) 770-1779
19	Citgo Petroleum-Clarion	www.clarionenvirosafety.com	1-855-MY-CLARION
39	Cobham Seatel	www.cobham.com	Visit us online
22	Continental Underwriters Ltd	www.cultd.com	(985) 898-5300
21	Cummins Marine Inc.	www.marine.cummins.com	Visit us online
53	CWF Hamilton Jet	www.hamiltonjet.com	(425) 527-3000
81	Cygnus Instruments Inc.	www.cygnusinstruments.com	(410) 267-9771
47	David Clark Company	www.davidclark.com	(800) 298-6235
79	DeFelsko	www.defelsko.com	(315) 393-4450
75	Dynamat Inc.	www.dynamat.qc.ca	(450) 662-1803
27	Eastern Shipbuilding Group	www.easternshipbuilding.com	(850) 763-1900
25	Engines Inc	www.enginespower.com	(870) 268-3700
95	Environmental Solution, Inc.	www.totalbiosolution.com	(919) 740-0546
43	GE Transportation	www.getransportation.com	(814) 875-5710
55	Gencorp Insurance Group	www.gencorp-ins.com	(401) 884-7800
101	Gladding Hearn	www.gladding-hearn.com	(508) 676-8596
77	GP Link LLC	www.gplink.com	Visit us online
74	Grand Bahama Shipyard Limted	www.grandbahamashipyard.com	(242) 350-4000
67	Great American Insurance	www.GreatAmericanOcean.com	(212) 510-0135
85	Hawboldt Industries	www.hawboldt.ca	Visit us online
103	Hilliard Corp.	www.hilliardcorp.com	(607) 733-7121
3	Hornbeck Offshore	www.hornbeckoffshore.com	(985) 727-2000
89	International Workboat Show	www.workboatshow.com	Visit us online
31	J.A. MOODY INC.	www.jamoody.com	(610) 647-3810
105	JMS Naval Architects	www.jmsnet.com	(860) 536-0009
41	John Bludworth Shipyard, LLC	www.jbludshipyard.com	(361) 887-7981
38	John Deere Power Systems	www.johndeere.com/marine	Visit us online
37	Jotun Paints	www.jotun.com	(800) 229-3538
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