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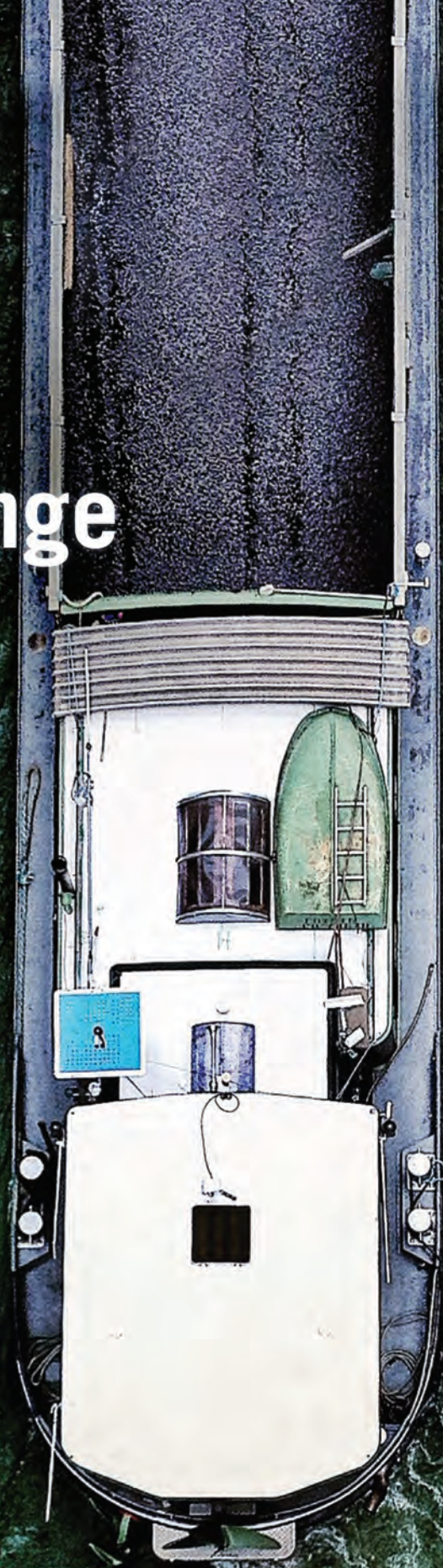

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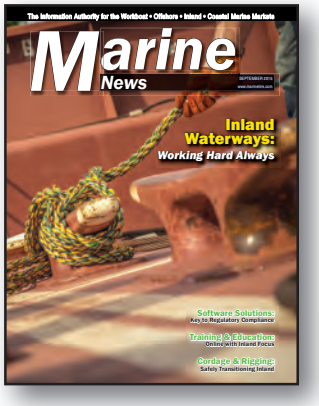
A deckhand tends lines as a tow gets underway on the inland rivers.

(Credit: Jon Walker, West KY Community & Technical College, AEP River Operations Archives)

This workforce image was funded by a grant awarded by the U.S. Department of Labor's Employment and Training Administration and does not necessarily reflect the official position of the U.S. Department of Labor.



MarineNews

ISSN#1087-3864 USPS#013-952
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MarineNews ISSN#1087-3864 is published monthly, 12 times a year by Maritime Activity Reports, Inc., 118 East 25th Street, New York, N.Y. 10160-1062. The publisher assumes no responsibility for any misprints or claims and actions taken by advertisers. The publisher reserves the right to refuse any advertising. Contents of this publication either in whole or in part may not be reproduced without the express permission of the publisher.

POSTMASTER: Send address changes to ***MarineNews***, 850 Montauk Hwy. #867 Bayport, NY 11705.
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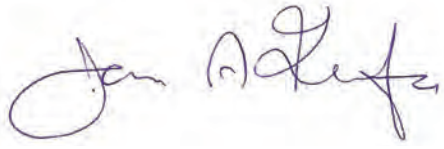
On a recent swing through Houston, Texas, and hopelessly ensnared in the mother-of-all-traffic jams on the 610-Loop, I happened to glance down at the dashboard where the outside temperature was flashing back at me at 106° F. But, that's just Crazy Talk. Everyone knows that it couldn't have been a shade less than 109° F. I took the moment – also nervously eyeing the engine temperature gauge on my economy class rental – to contemplate the current state of the domestic inland waterways situation.

Our heartland brown water business situation is red hot, for many obvious reasons. It is also likely to stay that way, in part for reasons that you may not think about on a daily basis. In that regard, the current state of the U.S. regulatory climate immediately comes to mind. As we go to press with this edition, the latest rumor from Washington is that the final version of the long awaited, unusually well supported, so-called subchapter M towboat rule has once again slipped back into yet another calendar year. Optimistic estimates call for a February edict, but I wouldn't bet the 401K farm on it.

Inland operators and the vendors that support them aren't sitting on their hands. To that end, software providers and regulatory consultants alike are gearing up to lend a hand before and after the final rule. I can't think of a better place come up to speed on 'subM' than veteran journalist Patricia Keefe's comprehensive look at the nuts and bolts of what's to come, what to do about it and the stakeholders who will ultimately shape the final chapter of the story. That exclusive report starts on page 32.

Marine safety and uninspected vessels don't comprise the full measure of the regulatory hammer impinging on the largest and most important sector of the domestic merchant fleet. That's because – running right alongside our waterways – railcars full of dangerous liquid cargoes operate in ever greater numbers and carry staggering cubic volumes, at safety standards that pale in comparison to that enforced on the water. Also in this edition, environmental expert Dagmar Etkin, Ph.D, takes a bird's eye view of what is happening on the nation's railways when it comes to dangerous cargo. The unsettling facts point to the need to move these cargoes off the rails – where and when possible (preferably now) – and onto the water.

There is plenty more to talk about. And, yes; some of that moves closer to the commercial side of the equation. Not lost on us here at *MarineNews* – nor should it escape your attention – is the fact that all commercial issues seem to have a common denominator. Sure, the regulations define what you must do, but it is my experience that the vast majority of workboat operators make decisions based on a much higher plane. Last month, on a steaming hot visit to the Bayou City, I saw that metric in play, time and time again. Arguably, those who do not embrace that standard are likely to get burned.



Joseph Keefe, Editor, keefe@marinelink.com

Subchapter M: Tricks, Traps, Deadlines and Facts – *the good, bad & the ugly*

According to Pat Folan of Tug and Barge Solutions, it takes from 5 to 7 years to change any organization's culture. Meeting the new regulations for safety and hardware at a cost that fits your budget is another thing altogether. Folan says that – in some cases – a viewpoint from outside your company will enable your company culture to change. Fortunately or unfortunately – and depending on your current situation – the continually moving timeline of a final rule from the Department of Homeland Security's U.S. Coast Guard has now (reportedly) backed up to February 2016. But, it has moved before, and that could be further delayed. That doesn't mean that you should put off getting started.

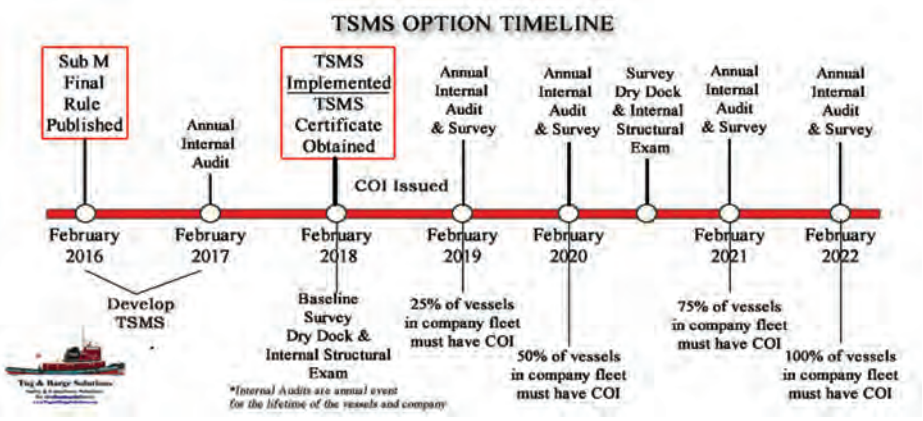
There are many opinions about the ultimate impact of the pending subchapter M towing rule, the breadth of its reach, and its final cost. Depending on whom you talk to, those firms already aligned and participating in the highly respected American Waterway Organization's (AWO) Responsible Carrier Program (RCP) will have a leg up on the pack when the Coast Guard finally fires the starter's pistol. But, the process may or may not play out that way for the estimated 5,208 vessels and some 1,059 companies that will ultimately be impacted. And, because RCP members represent just 241 operators and about 1,600 self-inspected vessels, that number leaves a lot of vessels that may or may not be in compliance with the new regs, coming out of the gate.

Well-respected maritime attorney Gary English had dire predictions back in May of 2013. Some of the 1,059 companies and 5,208 towing vessels, he said, will probably "go the way of the dinosaur." Some estimates, he added, have the rate of attrition – whether that entails consolidation, failure or outright exit from the industry – at as much as 20 to 33 percent. Looking on the bright side, improved safety within the towing industry ought to be an outcome along with a significant reduction in fatalities, injuries, property damage and oil spills. English quantified this benefit at $256.2 million over ten years.

In August of this year, Folan led ***MarineNews*** through (his view of) the SubM compliance journey. It makes for interesting reading and Folan's visuals – as shown on this page and the next – are compelling.

Assuming the same inspection scheme as outlined in the USCG's NPRM for Subchapter M, you will have two options – implement a Towing Safety Management System within your company and have third party audits performed or have the USCG inspect you yearly. The two timelines are illustrated below and on page 10.

The TSMS Option requires that the TSMS be certified two years after publication of Sub M. This option will require annual internal audits and surveys. Third party audits will be required to initially certify the TSMS and the vessels. Third party audits of the management system will be required midway through the five year period and at the fifth year in order to renew the TSMS Certificate and once per vessel during the five year period and then at year 5 to renew. Towing Safety Management Systems must contain a framework to ensure that all levels of the organization are working within the framework of the TSMS. A TSMS Certificate will be issued after the successful management audit and successful audits of all vessels operating under the TSMS. The external audits will be looking for the required annual internal audits. The external audits must be performed by approved third party organizations. The TSMS Certificates are valid for 5 years.



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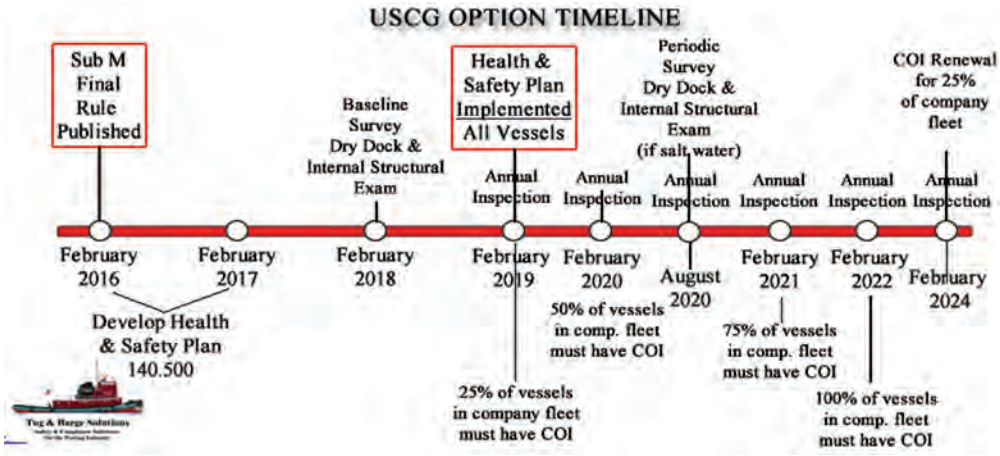
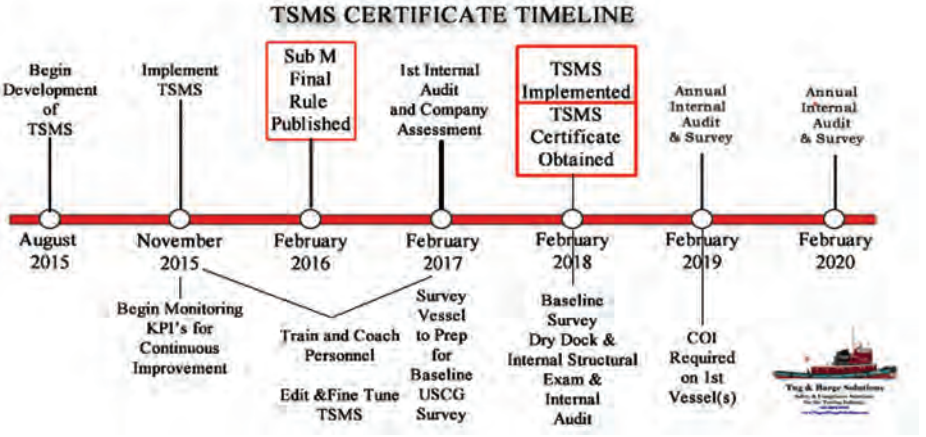
The Coast Guard option is a traditional inspection scheme. USCG inspector(s) will come aboard annually and inspect your vessel. This inspection will include all of your safety equipment and systems. These inspections will be the same as though for certification, but will cover less detail. Every 2-½ years, the vessel will undergo a periodic inspection which is the same as the certification inspection. A Health and Safety Plan must also be developed and implemented and inspectors will audit it for compliance.





Whatever route you choose, there are a lot of things to consider, *BY THE NUMBERS:*

2:	Number of years allowed to create TSMS, approved by a 3rd Party.
4:	Years from date of TSMS certificate to bring all owned vessels under TSMS and obtain COI.
5:	Number of years the new COI would be valid for.
25:	Percentage subject to significant economic impact (>1% or revenue) in years 1 & 2.
26:	Expected Cutoff LOA of exempted vessels in feet (unless towing barge/or dangerous bulk cargo).
175:	Minimum number of additional auditors needed throughout inland waterways.
1,059:	Number of Owners & Operators that will incur 'significant costs.'
5,208:	Number of vessels owned and operated by these companies.
32,000:	Estimated minimum cost in USD of a drydocking.
100,000:	Minimum estimated cost in USD to start an SMS from the ground up.
143,000:	Minimum estimated high cost to bring an existing SMS into compliance.
251,626:	Industry hours expended in first 3 years compliance in subchapter M.
12 Million:	Estimated cost in USD to Government to implement subchapter M.
153 Million:	Estimated eventual cost in USD to industry.
256 Million:	Estimated (safety) benefit to industry in USD as a result of subchapter M.

33
Percentage of existing companies (attrition) that may cease to exist as a result of subchapter M.

Contact Tug and Barge Solutions at: www.tugandbargesolutions.com or telephone: 251-300-0017

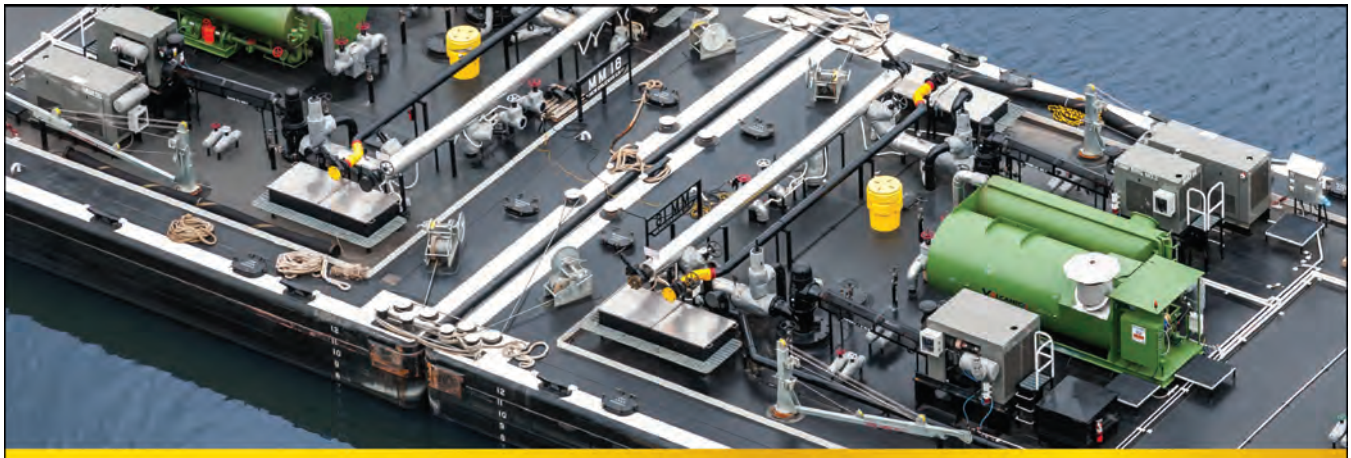
Director-Government Relations,
Waterways Council, Inc.

Washington-based Tracy Zea advocates for Waterways Council (WCI) goals for authorizations and appropriations which support a modern, efficient, and reliable inland waterways transportation system. Zea also works to enhance WCI's stakeholder relationship with the U.S. Army Corps of Engineers while additionally tracking implementation of WRRDA legislation and ensuring that WCI's views are reflected in the outcomes. Before joining WCI, Zea served on the House Committee on Transportation and Infrastructure (T&I) for five years. During his time on the Committee, he assisted in legislation related to the Federal Aviation Administration reauthorization, Map-21 highway reauthorization, and played an integral part in the enactment of the Water Resources Reform and Development Act (WRRDA) of 2014. Prior to joining the T&I Committee, he worked for Senator John Thune (R-SD). Armed with a Bachelor of Science degree in Political Science earned from from South Dakota State University, Zea knows his way around any transportation issue and has already hit the ground running at WCI. ***MarineNews*** caught up with him just after assuming his new role inside the Beltway. Listen in this month for his 'SITREP' on all things 'inland.'

You previously worked on the Committee on Transportation and Infrastructure at the United States House of Representatives. What was the best and most important 'take away' from that job? Why?

I believe my time on the Committee on Transportation and Infrastructure, Subcommittee on Water Resources and Environment prepared me for my current role. During that time, I developed a keen understanding of what the Corps of Engineers does in its Civil Works mission, learned their authorities, along with the principles and guidelines from which the Corps operates. The best and most important take away from my time on the Transportation and Infrastructure Committee is being an integral part of the Water Resources Reform and Development Act (WRRDA) of 2014. WRRDA 2014 represents the most policy and reform focused bill since WRDA 1986. My understanding of the new policies and reforms, along with the new authorization process, will benefit the members of WCI not only during WRRDA implementation, but for years to come.

It has been a busy two years for inland waterways: a new WRRDA bill, and the industry backed fuel tax



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to support infrastructure improvements among the highlights for waterways users. List a few other important milestones for us.

Recent highlights include the cost-share for Olmsted Lock and Dam being changed from 50 percent Inland Waterways Trust Fund/50 percent General Fund to 15 percent Inland Waterways Trust Fund/ 85 percent General Fund. This will free more Trust Fund dollars to be spent on other lock and dam improvement projects, which should help reduce the growing backlog of projects. The Capital Projects Prioritization list by the Secretary of the Army is set to come due any day now, and should hopefully look very much as envisioned in the Capital Projects Business Model or Capital Development Plan as it is widely known.

Federal funding for dredging operations sometimes is queued as a function of tonnage on the waterway. But, some potentially valuable waterways – the AIWA, for example – don't currently have the tonnage because they don't have the draft. It's a chicken and egg thing. What can be done?

Tonnage is usually the best reflection of how busy a certain corridor of a waterway is, but depending on the time of the year, it can drastically fluctuate. For instance, the Upper Mississippi River is busiest during the fall harvest season, so the spring and summer months may be lighter in tonnage. But does this mean we should not maintain the river to its authorized depths during non-harvest months? The AIWA is an interesting example because they pay into the Inland Waterways Trust Fund but are operated and maintained from the Harbor Maintenance Trust Fund. This makes competition for Operations and Maintenance funding for dredging extremely difficult to receive. The Corps has a hard time justifying providing valuable dollars to the AIWA which is primarily used for recreation instead of commercial navigation, when the Corps currently cannot maintain all of the nation's ports.

You arrive at WCI as the new Director of Government Relations at a busy time for inland stakeholders. That said; what is your number one priority at this moment? Why?

WCI's number one priority is to make sure the inland waterways system receives the proper and efficient, necessary funding. The average age of a U.S. lock and dam is 59.1 years, meaning the majority of locks and dams are outdated and need to undergo major rehabilitation. WRRDA 2014 was a major success for inland waterways users from the standpoint of receiving authorization, but just because the project or program receives authorization doesn't mean it will result in appropriated dollars. It is WCI's mission to advocate for inland waterways users to ensure the system is properly funded and operational at all times for the transportation of our nation's freight.

WCI supports the Electricity Security and Affordability Act (S. 1905; H.R. 3826) to ensure the viability of American coal as an affordable energy source. But, globally, it arguably looks like coal could be "going away." What's the reality for the future of coal? Does it have a place in a Tier 4 engine world where carbon credits, carbon taxes and LNG seem to be the new normal?

Americans deserve low-cost, affordable options for electricity in their homes and places of work. The waterways transport more than 20 percent of the coal used for this electric power generation and coal transported on the Ohio River represents more than 60 percent of the total commodity tonnage on that river. WCI supports the Electricity Security and Affordability Act to ensure the viability of American coal as an affordable energy source. This legislation will help fortify coal producers that ship on the inland waterways and elsewhere. Access to affordable energy sources in all forms strengthens our nation's economy. The implementation of the EPA's new, stringent standards for the coal industry threatens the livelihood of coal miners, producers, shippers and specific coal-producing states.

Would inland users be better served to diversify now in order to avoid the full impact of the loss of coal as a viable freight income source?

Some shippers are already doing this, and have been for some time. The modernization of the Panama Canal may open new markets for export coal.

In theory, the easing of coal volumes ought to make the movement of grain and other bulk commodities a bit easier on crowded, busy waterways. Is there enough capacity on the rivers today to satisfy the needs of Midwest farmers moving their product to international markets?

There is actually excess capacity on our nation's inland waterways to satisfy the needs of all of the shippers who utilize this mode. The U.S. Department of Transportation projects 1.1 billion tons of increased freight will move on the inland waterways by 2040, so this capacity is there and ready. The infrastructure just needs to keep pace with what's to come and we are seeing the trend for higher funding levels on the upswing, where it needs to be and continue.

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DATABASE PACKAGE Full online Database Access (updated daily, details for 240 floating production projects in the planning stage, 75 production and storage units being built, 365 floating production projects in operation and 25 production floaters off field and looking for redeployment contracts.) with Key Contacts	No	Yes	Yes	Yes
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What sort of role do you see for inland barge operators for future intermodal / container movements? Is this a niche 'play' or, will it develop to ease the burden off highways and rail? More importantly, could & should it be a viable source of freight commerce on the inland rivers? Where can WCI help in that regard?

Container on barge is an area that some in the industry have tested and are continuing to test in certain markets. While it seems an easy prospect from the outside, there are issues of necessary equipment and port access for this kind of service, so testing will continue and it could certainly become a future niche market that could, indeed, ease congestion on other modes.

WCI supports increasing the budget for inland waterways Operations and Maintenance (O&M) by around $300 million. What kind of chance do we have to make that happen? And, hasn't the increased fuel tax already solved much of that shortfall?

I believe that there is a very good chance that we can see an increase in the O&M budget by $300 million. The fact is that the money is in the Harbor Maintenance Trust Fund but not being spent on its intended purposes; instead the money is funding other programs within the Energy and Water Appropriations bill. The increase in the fuel tax is intended to fund capital investment, not O&M.

WCI says that "it will vigorously advocate for these annual appropriations" to realize the goal of completing the modernization of our inland waterways transportation system as contained in the new WRRDA bill. But, doesn't the bill specify that that these things HAVE to be done? Clarify that for our readers.

WRRDA is a policy-based bill. Appropriations fund the policies in those bills and they must be sought each year, so WCI's mission is to advocate for the most efficient levels year after year.

The fourth "R" – [rivers], along with the better known big three – runways, roads and rail – is getting a bit more attention these days. But, is it enough? What can WCI and you do in the halls of Congress to make the health of the fourth "R" move along just a little bit quicker?

I believe that the fourth "R" is finally receiving much more attention due to Chairman Bill Shuster of the House Committee on Transportation and Infrastructure, then-Chairwoman Barbara Boxer and then-Ranking Member David Vitter of the Senate Environment and Public Works Committee, who made getting WRRDA enacted their top priority of the 113th Congress. In WRRDA 2014, section 1052, there was a commitment from the House and Senate to consider a WRDA bill every Congress. With such a high turnover rate in Congress, the best thing that WCI can do is to continue to help Members and staff to understand the importance of our nation's rivers to the transportation supply chain. Continuing to educate Congress and staff who were not here during the last WRDA/WRRDA is critically important.

What important issue or talking point (if any) have we missed in this dialogue? Why is it important? What is being done about it?

With shrinking budgets, the Corps and the federal government need to look toward multi-purpose programs. One such example is the Navigation Ecosystem Sustainability Program (NESP). Authorized in WRDA 2007 but not yet under construction, NESP is an unprecedented, multi-purpose authority allowing the U.S. Army Corps of Engineers to integrate management of the Upper Mississippi River System's infrastructure with ecosystem improvements. The program includes construction of seven modern 1,200-foot navigation locks at the most congested lock locations (Locks and Dams 20, 21, 22, 24 and 25 on the Upper Mississippi River, and La Grange and Peoria Locks on the Illinois Waterway). Congress further authorized smaller-scale navigation efficiency improvements. NESP's authorization includes $1.948 billion for the new locks and $256 million for the small-scale efficiency measures; $1.717 billion was authorized for a 15-year ecosystem restoration program and $10.42 million annually for its monitoring. The unique NESP program facilitates both a healthier economy and river ecosystem. It will create and support tens of millions of job-hours for skilled construction trades, as well as expand and sustain jobs at grain elevators, manufacturing facilities, ports and terminals, and within the tourism sector. By modernizing navigation capacity, NESP will increase the economic potential of the American farmer and bolster the positive trade balance in the agriculture sector. By also investing in our marine ecosystems, job opportunities can be created for habitat managers, water quality scientists, and aquatic restoration specialists. In fact, approximately 300 jobs can be derived from PED funding, with potentially 6,000 jobs from a $200 million construction appropriation. Recently, 67 organizations that support the NESP program signed a letter to Key Members of Congress to urge an FY '16 appropriation of Pre-Engineering Design (PED) funding ($10 million) for this important program.

Spotlight:
Cyber Risk Management

By LCDR Jennifer Osburn and LCDR Josh Rose

Osburn

Rose

An increasing number of systems on ships and at marine facilities depend on cyber technologies for routine operations.

While cyber technology has improved efficiencies in the marine industry and around the world, it has also created potential vulnerabilities.

For example, the towboats that move goods through the Western Rivers and along our coasts rely heavily on electronic navigation systems, including Automatic Identification System (AIS) and Global Positioning System (GPS), to safely transit around riverbends, capes, and shoals. In addition to signal interference, such as jamming, the software systems that integrate and display the signals are vulnerable to various types of malware. Propulsion, cargo, ballast, communications, and other systems on vessels and shore facilities have similar vulnerabilities. Even systems "not connected to the internet" are vulnerable if a careless employee plugs in an infected phone or thumb drive to an USB port.

Mariners and facility operators are learning to include 'cyber' in the risk assessment activities they perform on every watch and shift. Understanding the interconnectedness of cyber with vessel operations illustrates the relationship of dependence and vulnerability we all face with regards to a cyber failure or attack. To help picture this relationship, think of your vessel's cyber risk management plan as the preventive measures and incentives you take to ensure your personal health and well-being. In general, a healthy lifestyle includes preventative measures, assessing risks, and coverage for life threatening events. These activities correlate to cyber risk measures you can enact to safeguard your vessel.

Protection of Vital Systems

Parents stress to their children the importance of washing their hands, not talking to strangers, and eating fruits and vegetables. Like washing your hands, practicing cyber hygiene reduces risk of infection to your IT infrastructure. Not talking to strangers is the equivalent of not opening emails or attachments from unknown sources. In addition to your own security practices, scrutinize any outside organization's security practices that might be tied to your own system. Just as it is important to put healthy foods in your body, it is equally important for operating systems to have updated software and security programs. Educating employees on proper cyber practices is a proactive approach to increase your vessel's cyber resilience. The U.S. Department of homeland Security's Industrial Control Systems Cyber Emergency Response Team (ICS-CERT) (**https://ics-cert.us-cert.gov/**) offers information and recommended practices on many of these topics.

Risk & Vulnerability Assessment

Assessing your vessel's cyber vulnerabilities is like getting regular check-ups to identify your risk factors to-

wards certain health conditions. For example, early detection of high cholesterol will help you to modify your diet or habits to help lower your risk of further health issues. Fortunately, there are measures that companies can and should consider to reduce their cyber risk. For example, the U.S. Department of Commerce's National Institute of Standards and Technology (NIST) has developed the NIST Framework (http://www.nist.gov/cyberframework/), a voluntary collection of industry standards and best practices to address cyber risk. The U.S. Coast Guard encourages maritime companies to review the Framework and use it to identify, evaluate and address cyber risks within their organization.

Assessing cyber risks should not be left only to IT professionals. Vessel and facility operators and security personnel must be part of the process. They understand the mechanical systems the cyber systems control and will have to deal with the consequences should they fail. Each individual offers a unique perspective on consequences of any incidents and how cyber incidents can be prevented. This can make a substantial difference in reducing the risk of a transportation security incident, safety, or pollution incident that could harm people, the environment, property, or otherwise disrupt business activity.

Planning for the Future

Anticipating your vessel's future cyber needs can have a positive influence to its future infrastructure health. Vessel and facility owners should carefully plan the installation of any new cyber systems, identify connections, ensure they are compatible with other systems, and establish appropriate technical and operating/training procedures to ensure they are secure. Planning and investing in your future can provide peace of mind for both your health and well-being, and your cyber infrastructure. As the future unfolds, so will cyber risks. Vessels should exercise their cyber risk management plan as they would any other operational plan they use.

When to call the Doctor?

In general, we understand when it's time to see our doctor if injured or ill. Coast Guard regulations require vessel and facility operators to notify the Coast Guard of a breach in security and of suspicious activity. These requirements apply equally for cyber and non-cyber related incidents, provided the cyber activity could plausibly lead to a TSI, pollution incident or marine casualty. Attacks or unexplained failures of industrial control and SCADA systems with connections to the MTS fall within this category. Reporting informs the Captain of the Port of the potential for more widespread cyber and physical attacks and to take appropriate action.

As cyber risks are real and growing, so too is our commitment to address them. The U.S. Coast Guard is working to develop voluntary risked-based vulnerability assessment tools and standards for ports, vessels and facilities to help industry address cyber risk management in a systematic way. We are also taking measures to protect our own systems, and to address cyber at the Port level through Area Maritime Security Committees (AMSCs). Participation in your local AMSC is an excellent way to learn more about cyber risks and to promote cyber security and resilience in the maritime domain. For more information, go to the cyber security section of Homeport on www.uscg.mil.

While cyber is a new type of risk, it is also just the latest in a long line of challenges that the marine industry and the Coast Guard have addressed and solved together. In order to produce the best policies, we need the help of professional mariners and the public. Please reach out to your local U.S. Coast Guard units and begin the discussion about cyber as it relates to your operations. Let us know about best practices that can be shared with other partners, and recommendations you have to increase cyber awareness within the port. Also, visit **https://homeport.uscg.mil/** for up-to-date cybersecurity information from the U.S. Coast Guard. Just as your healthcare is a team effort, so, too, is cyber risk management. By working together, we can reduce the risk to our country's cyber health.

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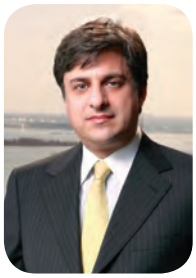
Lieutenant Commander Jennifer Osburn *is assigned to Coast Guard Headquarters in the Cargo and Facility Security Branch where she is responsible for, among other things, enforcement of the Maritime Transportation Security Act. Osburn joined the Coast Guard in 1992 and completed Officer Candidate School in 2003. She has earned a BS in Business Management and a Masters in Management.*

Lending & Financial Markets

A new seascape for domestic owners & a new course line for brown water credit.

Basil M Karatzas, CEO of Karatzas Marine Advisors & Co.



U.S.-based institutional investors have raised more than $750 billion in committed funding and have been looking for investment opportunities in several industries. Likewise, in an environment of exceptionally very low interest rates, U.S. lenders are hard at work seeking for good opportunities to lend to. Seven years after the collapse of Lehman Brothers, it seems that the financial world has come to a full circle, and liquidity and access to capital is plentiful and competitively priced.

It would seem that for many small businesses in industries that are capital intensive, like, for example, 'brown water' shipping asset owners and operators, these are the times to feel robust, strong and swimming in money. With each passing day, the story of shale oil reaches deeper into national conscience that it's a solid opportunity for the long term, despite the growing pains, and companies in the domestic shipping business and inland transport / 'brown water' would be exploiting the plentifully available capital to expand their fleets and their businesses.

Sea Change

Unlike the international water transportation industry that has experienced a sea change of epic proportions (first, by having the industry proxy index Baltic Dry Index (BDI) dropping from 13,000 in May 2008 to below 1,000 points by the December of that year and presently only around the 1,200 mark, and also the international shipping banks 'abandoning' the industry since then), the domestic shipping industry only experienced mostly seasonal variations. The shock of the financial crisis in 2008 was softened domestically by several factors, including the statutory privileges of the Jones Act nature of the business, and the providentially well-timed discovery of shale oil helped to a more expedient recovery. It would thus appear that domestic owners came out of the crisis rather unscathed and in ship-shape form to benefit from the availability of capital.

If only the markets were so easy to benefit from!

Talking to investors and lenders, on the other hand, one gets a diametrically opposite assessment of the market; lenders, and financiers in general, see a highly fragmented market, a market dominated by local, family-owned companies with little competitive advantage in terms of market expertise, critical mass, and strong ambition to get on a national level, or even 'do things different' in the new, different market environment. And, indeed, it's a different market environment: the events that followed post-Lehman typically made big financial players bigger (that is, for those who survived the shock of the crisis), diluted market expertise and loosened up client relationships, while, on the other hand, increased regulation and hurdles for providing financing, and the boxes to be checked for any transaction.

Super-banks such as Bank of America, Wells Fargo and J.P. Morgan got to absorb several of the smaller players, some of which had exposure to domestic shipping and 'brown water' industry. 'Too big to fail' offered them the implicit assistance of the government as systemic institutions; however, the monstrous balance sheets now can afford opportunities only big national players who have the capacity to seek financing to the tune of $100 mil or more at a time. Again, when a super-bank's balance sheet can now exceed a trillion, deals have to be of certain size in order to move the needle, as they say, which automatically excludes many qualified borrowers who lack scale.

National banks and banks at a local level may have not received all the benefits of the super-banks, but in general, they were found with larger balance sheets and lower cost if funding after the crisis as well, but also higher hurdles of doing business. Larger balance sheets may imply higher number of transactions, but often lead to a need for larger-sized transactions. Thus, their target market of local borrowers has had to be upped in size. Documentation and due diligence for transactions in the new order of things became of paramount importance, which leads to a higher cost for originating and administering transactions; since such costs are typically 'fixed' with minimized incremental cost for the size of the transaction, even for smaller banks, size of a transaction has come to matter.

There are the so-called 'Five C's of Lending':

Credit (ability to repay), Capital (amount borrowed), Collateral (quality of mortgaged asset), Character (track record) and Conditions (covenants). **These Five C's have always been crucial, and the changing market conditions at present don't erase any of them.** Instead, it merely shifts the relative weighting during the financing process.

New Normal

Higher documentation and due diligence hurdles also have meant that much of the information has to be in black-and-white, tangible and quantifiable, for origination purposes to begin with, but also, for auditing and second-guessing purposes, as well. The process is now more 'transparent,' at least as far as 'optics' are concerned, and the element of 'relationship lending' where a handshake and personal verbal promise to repay have moved lower on the totem pole of importance for receiving credit. As the process has become more quantifiable, with a grading system favoring certain types of transactions in terms of credit and size, the subjective element and personal relationship have been relegated a couple of notches lower.

Higher documentation and due diligence hurdles also have meant that preparation and access to the borrowers financials become imperative. Access to borrowers' financials has been a typical prerequisite to lending, but now dependence on the 'numbers' becomes ever more crucial, with lesser personal discretion to work around the numbers. Also, bigger banks and higher standards have meant that lenders are now satisfied with purely accounting reports, but they want to see 'vision' and strategy, through a business plan or other proof for desire to grow with the market.

It's not only how good the numbers are, but also financiers are asking themselves the question on whether they are financing a 'winning horse' player in the market; after all, financing two more tug boats or ten tank-barges requires the same effort whether for mom-and-pop-TX or mom-and-pop-LA, but the differentiating factor will be which company has a better plan to be a strategic player over time, to have stronger resources to withstand any market headwinds, and ultimately, that they will be players in the market when the loan matures and bring repeat business to the financiers (again, repeat business means lower costs to originate and administer financing, providing high probability of growth.)

Drivers

Zooming out and trying to see the domestic sea-transport industry from 10,000 feet, one can see that coal becomes less important source of energy domestically and globally (for whatever reasons, right or wrong) while shale oil and natural gas have been substituting it in the energy markets. As with the international tanker market, transport of oil and gas is a much more concentrated industry in terms of asset ownership, terminal and charterers, and also segment of the industry held to higher operating and regulatory standards.

For shipping asset owners and operators in the 'brown water' industry, in order to be successful, at least in the eyes of the financiers, they have to demonstrate that they operate on the 'right side of the history,' with larger, modern fleets that have critical mass and can offer full shipping solutions to the larger charterers. And these larger charterers are getting larger and more sophisticated themselves, even to the extent that they are large, well-established, institutional clients like the ever-more-active in the Jones Act market Kinder Morgan as a provider of transport solutions to their energy clients.

There are 'fads' and 'trends' in all industries all the time, and right now the 'brown water' industry faces a changing seascape brought onto them by structural factors but also variables in other industries, such as in the financial and banking industry. We are of the opinion that the present changes in the industry are more than just a 'fad' and require the attention of the owners and operators who would like to position their companies favorably in order to benefit from the new order of things. And, for such a capital industry, positioning favorably for the future requires competitive access to capital.

There is more than sufficient amount of capital at present looking for opportunities to get deployed, but such capital has only been prepared to be invested for the right opportunities, mostly for owners who can demonstrate that they

have or prepared to have critical mass, can gear up to higher corporate levels than small family business. The vast majority of the 'brown water' players, despite their small size and local present, are great companies and they represent the backbone of industry.

The call for change doesn't not mean that these family business have been doing anything wrong; just that the nature of the 'scorecard' has been changing as these changes are reflected from the financial industry, and shale oil's 'game changer' nature.

Fundamentals

Some things never change. There are the so-called 'Five C's of Lending': Credit (ability to repay), Capital (amount borrowed), Collateral (quality of mortgaged asset), Character (track record) and Conditions (covenants).

These Five C's have always been crucial, and the changing market conditions at present don't erase any of them. Instead, it merely shifts the relative weighting during the financing process.

While 'Capital' has increased in availability, 'Credit' has become contingent on benefiting from the market rather than depending on 'Collateral' alone, while 'Character' and 'Conditions' have become more bureaucratic in nature. For successful companies, there is a clear need to be better prepared, advised and keen to think 'outside the box'.

KARATZAS MARINE ADVISORS & Co.

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Online Education and Training

By Captain Stan Wallace

The emerging technology tool is embraced by award winning West Kentucky Community & Technical College's Inland Logistics and Marine Institute and its students.

Wallace

Years ago, it was not uncommon for a deckhand on a towboat with no higher education to work his way up the ladder to become a Captain or Chief Engineer. Today as technologies are added and new U.S. Coast Guard regulations are put into place, individuals are finding that working on America's Inland Waterways requires not only a love of the waterways, but also a commitment to continuous learning.

The Marine River Industry, like its deep-water counterpart is moving fast into a new technically advanced era. An era where advances in navigation equipment, communications, and shipboard systems that diagnosis themselves and communicate problems has quickly outpaced our ability to have a well-trained and educated work force to deal with it.

Training means Logistics, Logistics, Logistics

Part of the problem is the ability to schedule the needed training for industry personnel. When can the company schedule allow sufficient personnel to go and receive needed educational updates and still be able to conduct daily shipping business? Beyond this, there's the cost of coordinating and arranging travel and locating a training facility to accommodate this task.

In the past, providing marine industry education and training centered on using the traditional method of students in a structured physical classroom environment. Entering the scene right behind these advances in emerging technology is a newer concept of training and education through the online environment. The idea is to get industry to embrace the use of online technology that is a more cost effective and timely method of providing ever-changing education and training.

Online education has come a long way in a few short years. Today, many nationally accredited colleges as well as U. S. Coast Guard approved schools and training centers take the time to develop competency-based courses taught through secure online venues. Not only is the training material reviewed, but the delivery, and security of safeguarding content and student information is verified as well. West Kentucky Community & Technical College (WKCTC) located in Paducah, KY – and the very heart of America's river economy – has two such programs, "Marine Technology" and "Logistics and Operations Management," offered in the new and innovative means of achieving higher education through the online Blackboard learning environment. The Marine Technology program gives professional mariners the opportunity to rise above the crowd and establish themselves as a leader in the Industry as well as improve their opportunities to advance professionally. The curriculum for the Marine Technology program is taught online with flexible schedules to accommodate the ever-changing schedules of the mariner.

WKCTC's online courses offer a fresh new opportunity to working adults who no longer have the ability or time to juggle job, family, and trips to a college campus in order to achieve a college degree. With a focus on the Marine River Industry and that of Logistics, workers in those fields or individuals in other jobs who are looking for a change, have the opportunity to improve their skills and knowledge.

WKCTC OnLine

Developing courses that engage the students through the use of 3D technology, online lab exercises, and other interactive material, both the Marine Technology and Logistics programs at WKCTC offer a more focused, easier to use learning experience.

The two programs are overseen through WKCTC's new Inland Logistics and Marine Institute located in Paducah. This satellite campus lies near the marine industries served in Paducah and the Ohio River, allowing Institute personnel to work closely with local marine leaders to receive

feedback in order to adapt and refine what is taught in the programs.

Students are able to accomplish college admission online and can enroll online for the courses leading to an Associate in Applied Science degree from WKCTC. They attend the courses through a secure learning online environment known as "Blackboard," completing assignments, taking exams, and tracking grades all online.

Notably, students in these online WKCTC programs are not required to pay higher, out of state tuition regardless of their state of residence. Instead, they pay the lower in-state tuition for any online class they take from WKCTC. Students can even purchase textbooks, apply for financial aid, and pay tuition online.

Providing training and education for the work force is a primary goal of any industry and a well trained workforce is a safer and more efficient tool in getting the job done in a timely manner and under budget. The cost of training and education provided online offers an additional benefit in scheduling time for training of personnel, eliminating travel costs, and empowering the work force. Some in the industry even see the advantage of using tuition assistance as a cost effective incentive tool for their employees when compared to previous educational/training budgets.

Catering well to the inland community of mariners and employers alike, West Kentucky Community & Technical College has been named one of the top 3 community colleges in the nation by the prestigious Aspen Institute. The college was also recently named one of the top 25 colleges for online learning by "Best Colleges.com." As more individuals seek to improve their knowledge or skills in the Marine industry, West Kentucky Community & Technical College's Inland Logistics and Marine Institute is responding by offering online courses that meet the challenging needs of today's workers.

Captain Stan Wallace *served over 35 years as a professional mariner aboard offshore, coastal, and inland waterways vessels with the U.S. Coast Guard, the commercial merchant fleet, and as an instructor. He is program coordinator of Marine Technology at West Kentucky Community and Technical College's Inland Logistics & Marine Institute.*

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Boatbuilding Gone Bad

By Joe Hudspeth

Owners, designers, builders and the crew can collaborate in a meaningful way to ensure that the delivered product meets everyone's expectations. You can get there from here.

Hudspeth

We have all gone aboard or below decks on vessels and looked around with a myriad of instantaneous questions forming in our minds as to why the builder would construct a vessel in such a convoluted fashion. Builders will always get the bad rap for any eyesores and systems designs gone awry. It is true; some builders and designers are to blame and their list of faults should be clearly inscribed on the transom. On the flip side, there is often very little verbalized appreciation for the hours upon hours of pre-engineering that goes into specifying the right system, establishing a good fit, and maintaining overall mission goals, weight, balance, trim, tonnage, performance, etc. No builder is perfect and a philosophy of continuous improvement is generally ascribed to, but sometimes custom built boats leave the ways, nevertheless lacking their fullest potential.

Getting the Hull Story

What may seem like an inherent design flaw may prove to be intentional or at least a best case alternative. Customers themselves are not blameless and have been known to request change orders during the construction phase that can be design-altering. Good builders will do their best to jump through any hoops the customer holds, but the laws of physics, sound engineering, and applicable regulations always take precedence and impact the end result.

One boat buyer was dismayed to discover that a poorly placed raw water intake created a plumbing pipe hurdle right at the entrance to the engine room. The customer's previously purchased sister ship did not have such an obstacle – why should this boat with the same engine model be any different? Simple changes to some plumbing configurations have occurred as a result of EPA-driven engine redesigns. Intakes that previously existed out of the way at an opposite corner of the engine now leave a mandate for the builder to lay a pipe maze that the owner will have to surmount every day. Such changes in technology and new model designs will constantly occur, inducing builders to reconcile awkward plumbing, wiring, and serviceable connections that in the end can leave engine rooms looking anything but ship shape despite best efforts.

Builder in a Box

Vessel builders do get it; we understand that new builds are a rare opportunity and come at a significant investment. Establishing clear specifications is certainly the right way to direct shipyards and designers towards the expected results. Careful attention should be made to ensure that specifications are not conflicting and provide enough flexibility for the designers to establish symbiotic relationships between all systems and the confines of the vessel's infrastructure. To start with, avoid backing the builder into the corner of a poorly constructed box.

Problems usually stem from specifications driven by committee, where everyone is looking to make a lasting mark. This situation is overly common in public procurements and competitive bid solicitations. Builders have seen rigid design specifications that restrict all the particulars and set performance requirements without accounting for the feasibility of appropriately sized and available engines, propulsion systems, and possible inefficiencies or cavitations that may develop as a result of extreme hull tapers or necessitated prop tunnel designs. It becomes quite problematic when there is a limitation set for a 3' draft and performance requirements mandate a conventional prop and shaft configuration with a 40" propeller.

It can be fun to 'play' at being a naval architect, but this also comes with the responsibility of verifying that the minimum deck size, maximum length, beam, and air draft that will house the remaining requirements for accommodation space, heads, ADA standards, work stations, deck machin-

ery, stores, and whatever else is deemed to be mission critical, actually match. Builders are happy to give you the galley sink, but may have to draw some lines with everything else. Penciling out your plans "to scale" on graph paper is somewhat helpful initially, but bear in mind that things will have to change with the addition of structural supports, plumbing, and wireways. Putting a ship in a bottle may start to look like a more obtainable proposition after all.

It is also important to avoid being caught in the trough of archaism. Just because a long time employee and mariner wants the 3,000 gallon fuel tank he has become accustomed to, this does not necessarily mean it makes sense for practicality and efficiency. Depending on the fuel efficiency of the selected modern engine, the requisite range and reserve may exist with a smaller more appropriately sized tank. Specs should be calculated, not guessed.

Allow the builder to offer a streamlined design and walk you through the rationale and justification. Furthermore, customers must fully understand the limitations of the design. For example, hull designs built to sustain 20 knots in 10' seas do not (necessarily) cover any other equipment that may not be rated for such vertical accelerations. Just because equipment such as a crane may be rated for a certain reach and payload for operations over the stern does not automatically equate to an equally safe pick over the side. Smart builders and designers will raise these flags.

Midstream Course Change

In some instances, it does take the builder a second time around to get things right and rectify issues spawned from their own craftsmanship, nonproductive components, or oversight. Sometimes the bullet has to be bitten and the limitations of a one year warranty must be overlooked when a critical system fails and the builder's reputation is on the line. Boats are sold and repeat orders are obtained through reputation and a demonstration of lasting quality. All builders go through a transition at some point where their "go-to," time-tested equipment and/or installation techniques will no longer pass muster and the builder must step up and supply something new. Hopefully, the fix is not as drastic as replacing an ineptly sized engine, but builders who offer goodwill have assumed responsibility to repair cracked welds, blast and replace poorly performing paint, upgrade HVAC systems, substitute interior finishes, and other such items that could easily be argued as outside the scope of a latent defect warranty or construed as questionable beyond normal intended use.

Patching the Hole

Construction contracts are often signed before structural engineering and system designs are complete. General arrangement drawings are provided on the basis of only being a "general representation." The ambiguity can be lightened with detailed construction specifications. If the budget justifies, 3D modeling can be utilized to map out the hull and systems in a tangible perspective. Builders should review each system and piece of working machinery with the customer and preferably the crew prior to construction. Upfront, there should be a clear understanding as to what is and was possible with the design and how the vessel can and should be used.

If the initial proposal is not likeable, offer an opportunity to rework and revise the draft. Determinations should flow to the owner's representative on what has been agreed upon and the builder should amend the construction specification following review and approval from the naval architect. Similarly, the final step of commissioning and sea trials should always be supplemented with crew training so that everyone understands how the owner's original vision translated from the naval architect's plans into the vessel's actual working design and capabilities.

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. Hudspeth has been involved with maritime sales, marketing and product development since 2000. He currently serves as a regional co-chairman for the Passenger Vessel Association and participates on several committees concerned with marine industry issues.*
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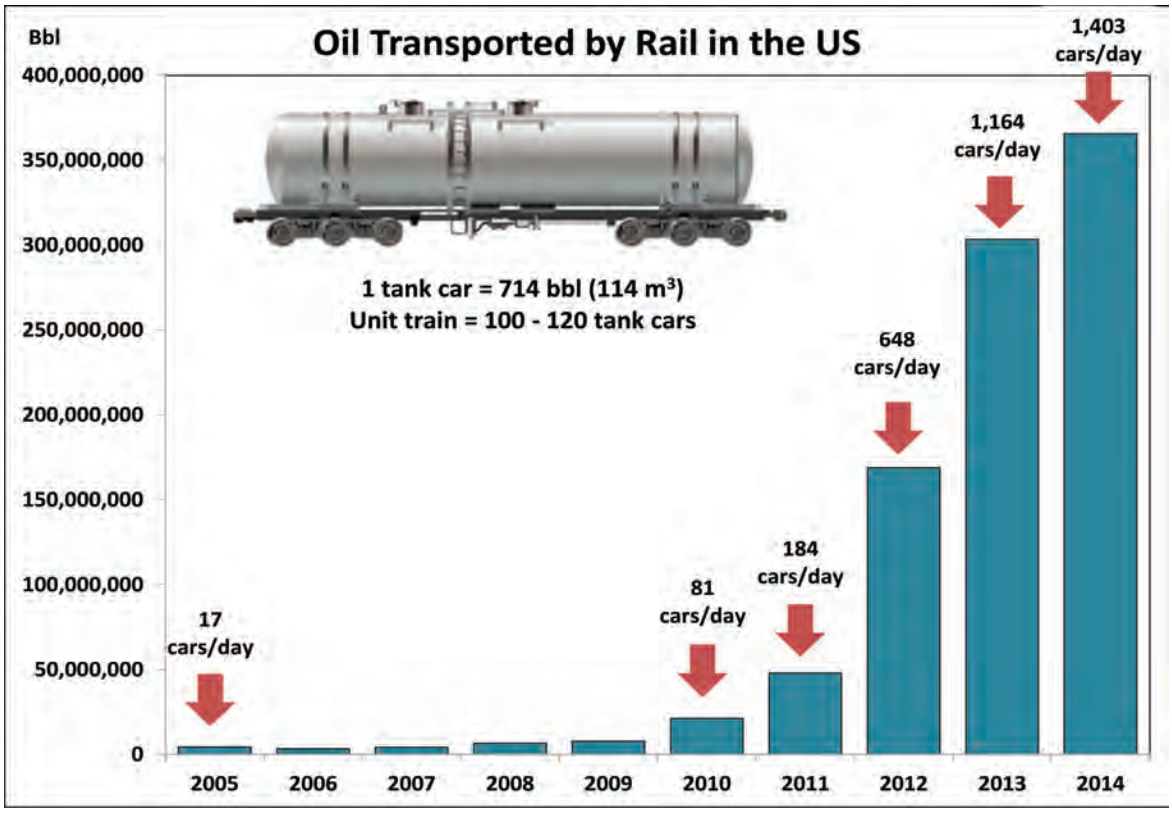
New RISKS Moving Crude Oil by Rail

By Dagmar Etkin

The rapidly changing landscape of crude oil exploration and drilling in the US and Canada, together with economic considerations, logistical issues related to pipeline transport, and the availability of new types of crude oils, including Bakken crude and various forms of bitumen, have resulted in a very sudden and dramatic increase in the transport of crude oil by railroad. "Unit trains" containing 100 or more tank cars are transporting crude oil through regions that have not previously experienced this type of rail transport, and there are significant concerns about safety. The July 2013 crude oil train accident in Lac-Mégantic, Quebec, Canada, which resulted in 47 fatalities (Transportation Safety Board of Canada, 2014) has caused significant concern about the safety of crude-by-rail (CBR) transportation of very volatile Bakken crude in particular.

These changes have had rippling effects in the US and worldwide. Increased production of oil in North America has decreased the need to import oil by tanker. But at the same time, the increase in rail transport has also brought an increase in tank barge, ATB, and smaller tanker traffic in some regions. In places like Washington State and



New York, oil is being transferred from rail to tank vessels in the Columbia and Hudson Rivers, and there are plans to increase this traffic with the construction of new terminal facilities. With some of the oil being transported being diluted bitumen, there is concern about the potential for submerged oil that may result from spills from tank vessels or from rail spills into inland waterways.

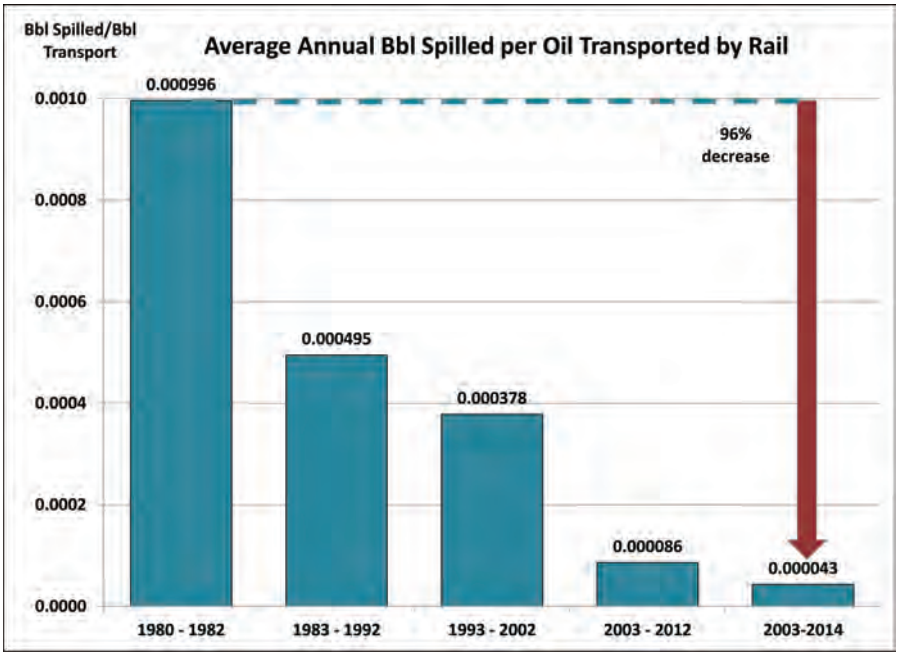
These unprecedented changes have left federal and state officials scrambling to institute safety and environmental protection regulations to prevent, prepare, and respond to both oil spills and possible fires and explosions. Besides the Lac-Mégantic tragedy, there have been several other derailments of crude oil trains in the last couple of years in both the US and Canada that are making people think that this is happening "all the time" now. There are even website that will give you a map of the "blast zones" in your own neighborhood. But how real is the danger? What do the numbers tell us?

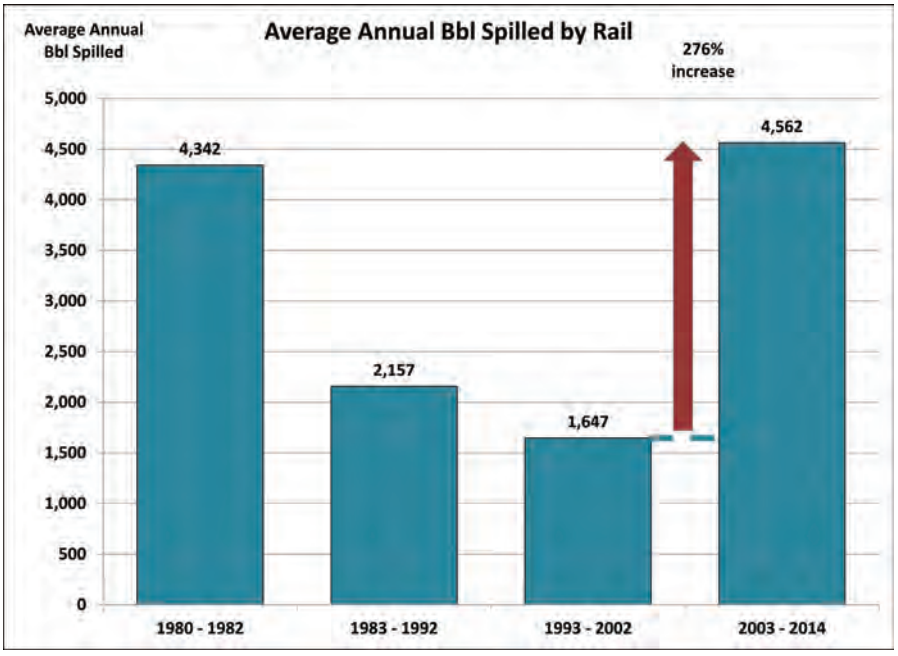
Real Numbers Analyzed

Transporting oil by rail is not an entirely new phenomenon, but in the past, this was mainly limited to occasional tank cars usually carrying refined fuel cargo as part of mixed manifest trains. Each tank car holds about 700 barrels of oil. But this all started to change about five years ago. In 2010, about 55,000 barrels of crude oil were being transported by rail daily in the US – less than one unit train of 100 cars per day. By 2014, more than one million barrels of crude oil were being transported by rail – or about 14 unit trains daily. Most of this traffic was from North Dakota to refineries in the East (New Jersey, Pennsylvania), with some crude oil going also to refineries in Washington and Louisiana. A lesser amount of oil sands crude was coming from Alberta, Canada, to the same locations.

Actually, over the last 35 years or so, the amount of oil being transported that then spilled was decreasing rapidly – in the early 1980s, about one barrel of oil spilled for every 1,000 barrels transported. Over the last decade, there has been a 91% decrease in the spillage rate since the 1980s – so that one barrel spilled for every 12,000 barrels transported. In the last two years, the rate of spillage per oil transported has decreased to one barrel spilled for every 23,000 barrels transported. But, with the dramatic increase in the overall amount of oil transported by rail, the absolute amount of oil spilled each year has increased by 276%. The most

by 276%. The most likely cause of a major spill from a crude-by-rail (CBR) train is a derailment. Despite the number of news stories on derailments, the frequency (derailments per train mile) for freight trains has actually decreased significantly over the last 40 years, and even in the last decade. This is attributable to safety improvements in rail operations. The number of freight cars that derails in each incident has averaged about eight. (Note: not every car that derails involves spillage – only about 9% of incidents involving hazardous material tank cars results in spillage.)





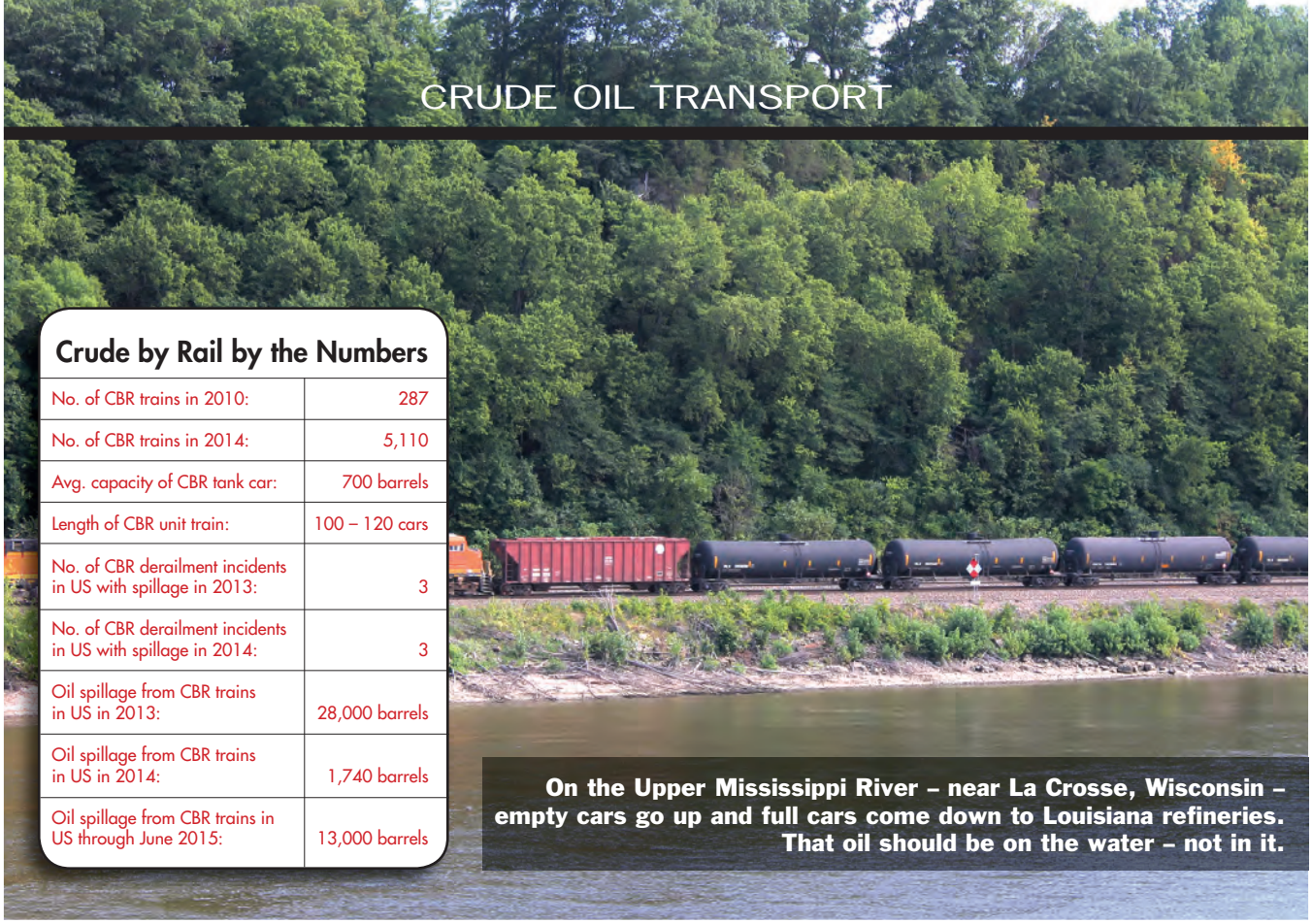
Bigger volumes, Bigger Stakes

But, there is a lot more at stake now. In the past, a train derailment that involved spillage of oil might have involved a small amount of oil spilled from a locomotive or a single tank car. Now, with unit trains of 100 to as many as 120 tank cars carrying oil, often volatile Bakken crude, the potential for larger spill volumes has increased, as has the possibility of a fire and/or explosion.

There are not enough data on CBR derailments and spills to analyze the probability of different spill volumes, but analyzing 40 years of freight train derailments gives us a sense of the possible spill scenarios. Evaluating these scenarios is important for response planning purposes. The median case involves about five derailed cars with total spillage of less than one tank car – 700 barrels or so. The 99th percentile case (only 1% incidents would be expected to be larger) involves 37 derailed cars with about 2,400 to 4,400 barrels of spilled oil from three to six cars. The worst case scenario with 122 cars derailing has happened only once in 40 years (and that incident didn't actually involve CBR tank cars). Theoretically, if this many cars would derail and they were all CBR tank cars, the most that would probably spill would be about 15,000 barrels. However, even one or two tank cars of Bakken crude spilled could result in a significant fire, or possibly an explosion.

Mitigating Risk

The most effective means of risk mitigation is preventing incidents from occurring in the first place. This is exactly what the most recent federal regulations are aiming to do. On May 1, 2015, the Department of Transpor-



Crude by Rail by the Numbers

No. of CBR trains in 2010:	287
No. of CBR trains in 2014:	5,110
Avg. capacity of CBR tank car:	700 barrels
Length of CBR unit train:	100 – 120 cars
No. of CBR derailment incidents in US with spillage in 2013:	3
No. of CBR derailment incidents in US with spillage in 2014:	3
Oil spillage from CBR trains in US in 2013:	28,000 barrels
Oil spillage from CBR trains in US in 2014:	1,740 barrels
Oil spillage from CBR trains in US through June 2015:	13,000 barrels

On the Upper Mississippi River – near La Crosse, Wisconsin – empty cars go up and full cars come down to Louisiana refineries. That oil should be on the water – not in it.

Photo: Dagmar Etkin

tation (DOT) issued a final rulemaking "Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains," that included a number of provisions aimed at reducing risk from "high-hazard flammable trains" (HHFTs). HFFTs are trains that have a continuous block of 20 or more tank cars loaded with a flammable liquid or 35 or more cares loaded with a flammable dispersed through a train (i.e., with other cargo-type cars interspersed).

The rule contains a new standard for tank cars – the DOT-117 specification. The timeline for retrofitting of affected tank cars for use in North America for high-hazard flammable freight trains (HHFTs), including CBR trains, to be implemented over the course of the next decade. In addition to provisions for tank car standards, this rulemaking also contains regulations regarding enhanced braking, operating speeds, classification of unrefined petroleum-based products, rail routing risk assessments, and rail routing information access. Positive train control (PTC), an advanced automated train protection systems will be mandated for all railroads by the end of 2015.

In addition to these measures, the National Transportation Safety Board recommended thermal protection systems for tank cars, which would reduce the heat flux to tank car containers when exposed to fire. Another prevention measure that is being implemented is the conditioning of Bakken crude in the North Dakota oil fields to reduce its volatility. This change has already paid off after a CBR derailment incident in West Virginia in which the derailed cars burned but did not explode, which prevented further damage.

While prevention measures are being implemented, the other part of risk mitigation – response – is also being addressed in affected areas. There are clearly more challenges that face states and local communities, as well as railroads, for increasing emergency and spill preparedness. Again, flammability of Bakken and related crude oils is an important consideration, but the locations of CBR rail lines are also important.

In some cases the remoteness and inaccessibility of the tracks impedes response actions; in other cases, the tracks being in the vicinity of highly-populated areas is a major safety concern.

Dagmar Schmidt Etkin *has 30 years of experience in environmental analysis — 14 years investigating issues in population biology and ecological systems, and 16 years specializing in the analysis of oil spills. She has earned a Ph.D. from Harvard University, Organismic & Evolutionary Biology (ecology, statistics, population modeling), 1982, a Masters degree from Harvard University (Biology), and a B.A. from the University of Rochester in 1977.*

SubM Debut Now Set for *February 2016*

Outsourcing, E-Solutions Help Mariners "Say What You Mean, Mean What You Say, and Prove it."

By Patricia Keefe

The perennial "Year of Subchapter M" has been kicked forward again, this time to February 2016. That means that the clock is now ticking loudly for those towing operations that have yet to climb onboard the safety train. Quality operators see standardized safety practices as a way of leveling the playing field, integral to maintaining the health and profitability of their fleets, and key to winning business from quality customers.

Subchapter M will be a phased-in over a period of years. It's not as much time as you think. If you haven't started yet, you are already running late, say industry observers, and it's important to get it right. The obvious reason is your operation will be dead in the water if you don't.

Get In the Game

Roughly 5,000 uninspected vessels will be affected by Subchapter M, some of which are members of the AWO, which mandates that all members within a year of joining, be certified on its own U.S. Coast Guard-approved SMS, the Responsible Carrier Program (RCP). While they wait for SubM to wend its way through the regulatory process, operators can get SMS-certified by going either with RCP and IMO's ISM program.

ISM certification exempts holders from Subchapter M. It focuses on safety requirements and practices, and less on vessel type. RCP, by contrast, may need some tweaks to meet SubM equivalency, but was designed for the domestic towing industry. AWO will accept ISM certification from members, but only if they implement the industry-specific features of RCP. Widely seen as the driving force behind Subchapter M, AWO's RCP program "is the gold standard" in the industry, says Helm Operations CEO Ron deBruyne. In June, the USCG gave AWO assurances that its revised program will pass muster as an alternative to SubM (with minimal tweaks likely once the rule is finalized). AWO members have until January 2016 to implement those changes or lose their RCP certification. A series of AWO explanatory workshops on the changes bring members up to speed. Once Subchapter M goes live, operators can get certified under that program, RCP or ISM, or take the USGS option, which does not currently require an SMS, but requires annual Coast Guard inspections. Each program specifies an approved source for auditing.

In 2013, citing numbers submitted to the Coast Guard by the American Bureau of Shipping (ABS) and the Towing Safety Advisory Committee (TSAC), it was estimated that the cost to install an SMS could reach $2.9 million for an average company. Smaller operators can feel overwhelmed, but it doesn't have to be that way. Subchapter M, RCP, ISM and other SMS plans are all designed to be scalable to fit the needs of every operation, be it a one-boat outfit or a fleet of 100. It can be as simple or sophisticated as it needs to be. Having a safety compliance officer is not required, although larger operations will probably need them. Fortunately, SubM assistance abounds.

Tug and Barge Solutions

Gulf Coast Tugs does it all on paper, teaming with Tug and Barge Solutions (TBS), run by Pat Folan, a former tug owner whose partner runs a two-vessel operation. That combination allows him to both draw on that expertise and field-test his processes before taking them to clients.

TBS helps to write the TSMS plan, does an annual internal audit, and provides clients with all the manuals, forms and reports they'll need up front, and then, based on the information received, sends a fresh batch every few months to use in the upcoming weeks. That includes daily task lists and credentials the crew has to meet, as well as reminders for regular safety meetings and schedules for fixing any nonconformities. Data collected onboard is input into

those forms, given to Hebert, who checks it and sends it back to TBS every two weeks during crew changes. TBS processes and stores the data on a cloud, and provides feedback. Ken M. Hebert, President & CEO of Gulf Coast Tugs, says the time lag has never been an issue. "We're getting it done."

Folan packages everything needed to ensure safe operations, including an SMS, record-keeping system, 24-hour support, first aid and Hazcom manuals, training materials, vessel response and security plans, OSHA regulation guidance etc., into a bright orange, floatable, tote-able plastic box he calls The Safety Block. "I rely heavily on Pat; he's our third-party safety guy. He is there to coach me, and tell me what I need to do. I consider him an employee of Gulf Coast," says Hebert.

"It's coming whether they like it or not. You got to embrace it; get ready! Sometimes change is good for the industry."
– Kenny Hebert,
President/CEO, Gulf Coast Tugs, Inc.

MarineCFO

To support clients who want automation, Folan partners with Marine CFO, which offers upwards of 70 modules coverings all aspects of various maritime operations and requirements, and targets affordability and scalability for small to mid-size operators. The focus is on ease-of-use and simplicity, says Dean Shoultz, MarineCFO CTO. "Our software is scalable and configurable. Regardless of size of fleet and operation, our cloud-based system will support it. It's just a matter of throwing switches to get simpler or more complicated."

MarineCFO partners with TMS because, "They bring [Germanischer] Lloyd and ABS quality down to the masses," says Shoultz. "We thought if we took their domain-level knowledge and coupled that with our technical expertise, we'd be able to add a lot of value. By digitizing their domain expertise, they took us to another level." To whatever the degree to a client wants to automate, MarineCFO

Left image: Pat Folan, Vice President & Founder, Tug and Barge Solutions
Right image: The name of Tug and Barge Solutions' product offering comes from manufacturing, where a safety block was a prop inserted between upper and lower dies that prevented the slide from falling of its own deadweight. "We feel our program is the safety block that keeps the company from falling under the weight of Sub M and other regulations." Plus, the materials are in a rugged, watertight orange box that the crew can't miss.

probably has the solution in its library of modules, first introduced to the marine industry in 2006. The software is Microsoft-based, utilizing Web Services, Office and SQL Server, and runs behind a corporate firewall or as a native .NET 2.0 web application.

The company offers web-based applications that feature 100% configurable and dynamic interfaces that are easy to use for inputting, collecting, processing and transmitting data. The application travels with the laptop via a roaming user profile, and has sections for the captain, maintenance engineer and electrician. The database can quickly produce any data requested by an auditor. Specific to the needs of vessels plying the inland coastal waterways, MarineCFO supports functions such as waterways management, materials and hazardous materials management and billing.

Helm Operations

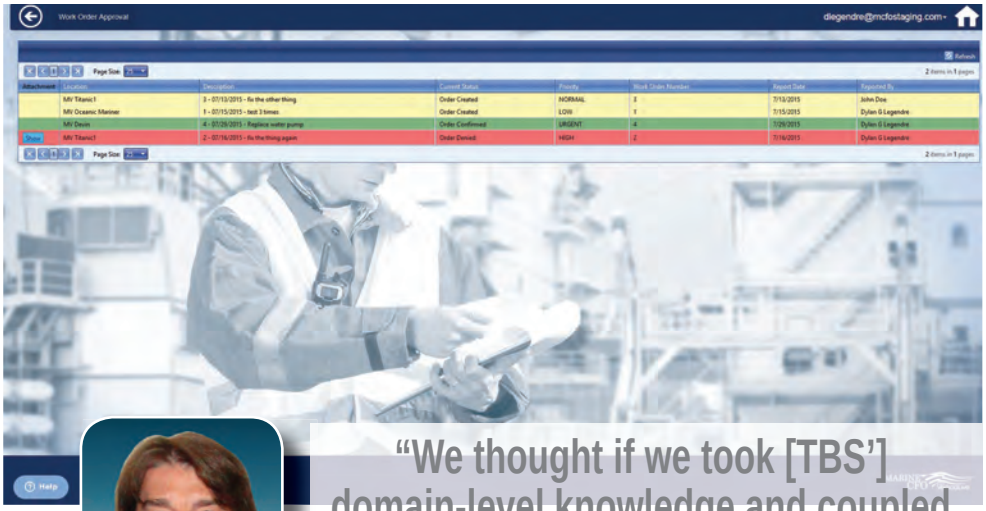
Noting the adage, "say what you do, do what you say, then prove it," Helm CEO Ron deBruyne points out that making sure safety meetings, checklists, planned maintenance and inspections are done, is a "critical piece of being compliant."

"This is where an electronic system can assist, by keeping track of the different things and daily tasks that need to be done, by sending messages to the appropriate parties, and organizing data," says deBruyne, whose company sells Helm CONNECT, a database-centered solution that automates tracking of compliance and preventative maintenance.

It's important to get the buy-in of frontline staff, he says. Tell them, "Here is what you need to do today,' then you need an escalating system of notification that lets the responsible parties know what needs to be done, and what's not done."

Paper systems can't match computers for data retrieval. They generate "thousands of pieces of paper you have to deal with – if one piece goes missing there is no way to get it back. Electronic systems have the ability to sort, filter and summarize all those thousands of piece of data any way the auditor wants." The typical two-week delay in processing paper reports is another problem if the boat is not doing what it is supposed to do, warns deBruyne.

"Paper is passive, it can only record what people have noticed; electronic is active. You can just "set it and forget it'." Helm CONNECT was developed to address all these issues, with a focus on simplicity. "We want to be the Apple of the industry. You should be able to buy a piece of software and



"We thought if we took [TBS'] domain-level knowledge and coupled that with our technical expertise, we'd be able to add a lot of value. By digitizing their domain expertise, they took us to another level."

– Dean Shoultz, MarineCFO CTO

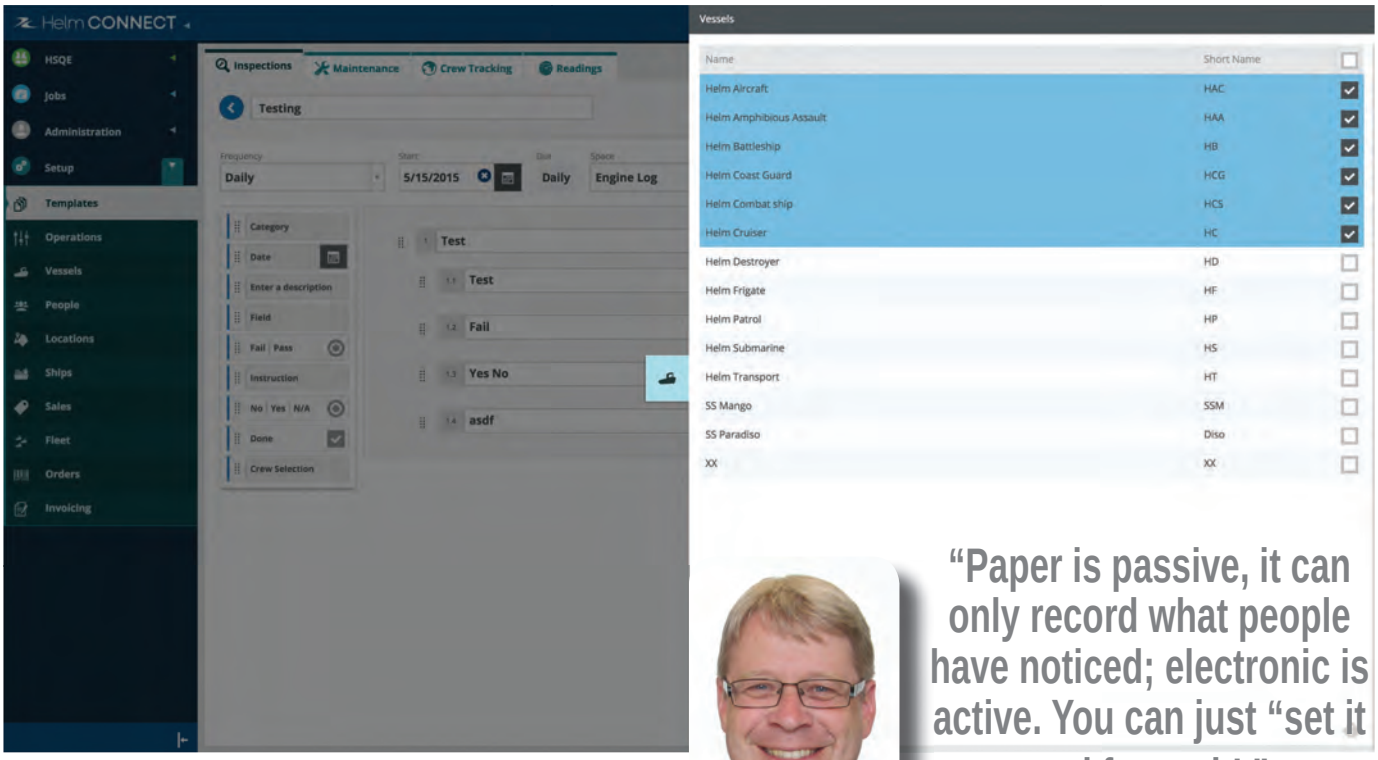
start to use it without months of training and implementation - the hidden costs of software."

Since CONNECT is web-based, users just need a laptop, or a tablet or smart phone, running on either Chrome or Microsoft Internet Explorer 11. The software is hosted in Amazon Web Services. Clients can set up their templates, inspections, checklists and routines themselves. "It's all drag and drop," says deBruyne. "To my mind, the happy medium for smaller operations is to work with an outsourced safety manager, but [use] an electronic compliance system," says deBruyne. Helm partners with sister company Safety Management Systems, LLC (SMSLLC) to help clients build their SMS. Helm's focus on the simplicity of the end-user experience marries well with SMS objectives for ease-of-management system understanding and ongoing implementation, says William Mahoney, SMSLLC Director of Safety Management Systems. Both companies are owned by ClassNK America. SMSLLC will jointly host a series of Subchapter M workshops with ClassNK America starting in late fall.

ClassNK America, along with other USCG-approved Classification Societies, will be the only auditors with pre-approved subM audit authority.

American Bureau of Shipping (ABS)

With the help of several other ABS units, ABS and its independent sister company ABS Group, which provides non-class services, offer a virtual one-stop shop when it comes to safety management and compliance. With presence in every major US shipyard, and over 30 locations in the U.S. staffed with over 300 surveyors and auditors, and more than 200 engineers and naval architects, ABS offers a wide range of services needed to help opera-



Setup Templates Inspections Edit: Once an inspection or maintenance checklist has been created in Helm CONNECT it can easily be deployed to one vessel, multiple vessels or your whole fleet through the overlay selection tab.

"Paper is passive, it can only record what people have noticed; electronic is active. You can just "set it and forget it'."
– Ron deBruyne, Helm Operations CEO

tors achieve and maintain compliance when Subchapter M regulations go into effect.

"We are the only company out there that offers a totality of solutions. We can do the class, the third-party inspections, set up an ISM – when we can't do something it's because we are try to maintain independent status and not be auditing out own work," says Robert Whitney, manager, marketing and communications, ABS Americas. Combining class with an ABS certification of a vessel to the ISM code will meet subM requirements. In addition, ABS Rules have been appointed the default standard under Subchapter M for new towing vessels. Combined with third-party inspection service provided by ABS Group, owners can demonstrate compliance.

ABS Nautical Systems (NS) Fleet Management Software (FMS) has traditionally supported ISM and TSMS compliance. The NS5 Enterprise Safety Management suite provides a standardized method both on and offshore for recording and analyzing safety-related data collected across a fleet, and includes an HSQE Manager and an Internal Inspection Manager.

The NS group is developing a version of its FMS to support Subchapter M in the form of a slimmed down, simplified dashboard, which will support all subM regulations, streamline data entry and generate compliance reports, using subscription-based pricing. The group will provide SubM implementation support and training, including informational seminars to bring industry up to speed on SubChapter M requirements.

Baker, Lyman & Co., Inc.

Baker, Lyman's software offering in the subM space is the CORSAIR Towing Vessel Record application, CORSAIR TVR v.2., which is said to be an easy-to-use, scalable TVR that meets or exceeds safety, assessment, inspection, training, recordkeeping and other documentation requirements. It provides users of Baker Lyman's navigation, scheduling, safety, training, compliance and planned maintenance assessments with pre-formatted vessel, barge, and crew log entries, VGP permit tracking, and enhanced daily logging functions. If it can be tracked – CORSAIR tracks it – all without a sheet of paper.

The latest version has enhanced SIRE and RCP reporting capabilities, while other regulatory-required recordkeeping

Ian McVicker, towing vessel coordinator for ABS Group

ABS and ABS Group are conducting seminars for industry stakeholders seeking to learn more about Subchapter M and compliance options. Pictured here are attendees and speakers at a recent event in Paducah, KY.

processes have been added, such as VGP and ballast reporting. The SQLServer-based system requires a Pentium-grade processor, Windows XP or later and 4GB RAM. It supports IE 8, Chrome 3.0, Safari 4.0 and Firefox 3.6 browsers. Baker Lyman also offers its TSMS Transition Program, and RCP-TSMS Transition Program, both of which assist tug owners in becoming Sub-Chapter M- compliant prior to the "final rule." It also provides internal third-party safety audits of SMS.

Paper or Plastic

The classic choice of "paper or plastic" – as in computerizing some or all aspects of the program – may seem obvious, but SMS can be done on paper. Regardless of platform choice, a first good step is the Towing Vessel Bridging Program, launched in 2009 by the AWO and Coast Guard to prepare industry for the forthcoming regulations. To date, it has completed over 6,000 examinations.

From there operators should turn to their own operator's manual and procedures, the foundation upon which the SMS is built. While generic SMS forms and consulting services can help, constructing the SMS is the one area that operators will need to fully immerse themselves and their crews in, as the plan has to reflect its specific policies and rules. For companies that don't have the manpower or mind space to spend tracking their safety tasks and compliance, outsourcing is can be a godsend. Let's get started!

Get Started!

Benefits, Advice Abound for SMS Laggards

By Patricia Keefe

When industry players say "the handwriting is on the wall," they aren't just talking about the pending Subchapter M regulations, but also about the already existing demand for safety management systems (SMS) in general for the domestic towing industry. While the U.S. Coast Guard and Homeland Security work to finalize Subchapter M requirements, operators are already finding it harder to win bids without some level of a Towing Safety Management System (TSMS) and ensuing proof of compliance.

The oil majors, Mexico and many clients already insist on adherence to safety standards, and in some cases they are aggressively conducting their own audits of contractors and reminding them to use JSAs. That has spurred companies like McAllister Towing and Transportation Co., Inc. to add International Safety Management (ISM) compliance to their SMS toolbox along with its American Waterways Operators' (AWO) Responsible Carrier Program (RCP) certification.

"Clients definitely care. There are certain rig companies that only allow ISM companies to move their rigs," says Anthony Roberts, marine traffic/operations officer for Louisiana International Marine (LIM), which is also ISM compliant. That's why savvy operators aren't waiting for the SubM ball to drop. They've already gotten, or are in the process of getting, certified under the IMO's ISM program and or the AWO's RCP, which is mandatory for its members.

"When our safety officer looked into Subchapter M a few years ago, at the time, we didn't know if it would ever come into effect. We figured we'd do ISM and do the voluntary inspections," Roberts says, noting that ISM compliance will put the company on par with whatever Subchapter M requires. "We figured that we would be ahead of the game as far as safety standards and wanted to be better than the next guy."

Gulf Coast Tugs is another company that decided early on to embrace ISM certification. "I knew I'd be on top of the food chain as far as any requirements," says president and owner Ken Hebert. "It puts you among the elite in that clients know what we have and how we run the ship and company professionally."

Not waiting carries many benefits, not the least of which is crew safety. "I don't think you can really measure the impact of less injuries monetarily. If you do these things, if you train people, you will automatically cut down on accidents. Saves you right off the bat," says Roberts. A tangible money saver is having the time to schedule required inspections of your vessels between runs, when it's convenient for the operators. "If you are waiting for Sub M to be finalized, you are going to be in big trouble," says Hebert. "The cost will be a lot more if it hits all your boats at once. You'll have to take your boat(s) out of service. If it's not working, there's no revenue, you can't pay people," he notes.

"How smart do you want to be? You know the company and the industry are always changing, and you gotta change with it," says Hebert.

So where do the companies who have done little or nothing in terms of formalizing safety management begin?

"Every organization has some sort of operations manual; that's really what you are starting with," says Buckley McAllister, president of McAllister Towing. From there, he says, the AWO RCP "is a pretty good firm checklist of what folks want to see in an SMS, so that's a pretty good starting point."

SMS tutorials and webinars are another option. One such example is the Subchapter M seminar run by class society ABS and its sister company ABS Group. Ian McVicker, towing vessel coordinator for ABS Group, who gives a soup-to-nuts presentation on the subject, ticks off the following to-do list for those just embarking on the journey to safety compliance and certification:

- *Visit or Revisit the U.S. Coast Guard's August 2011 notice of proposed rulemaking.*
- *Before the rule comes out, document all that you can during current dry docks. Some of that documentation can be used as objective evidence toward a Certificate of Inspection.*
- *Talk to your partners, be it a shipyard, service vendor or other partner, and discuss compliance options and how they fit into the SubM mix.*
- *Discuss process and criteria for third-party selection.*
- *Figure out the training needed for SubM compliance.*
- *Assess your vessels. How close are they already to meeting the proposed rule, and what needs to be done to meet the requirements?*
- *Start planning how you will approach SubM.*

Some vendor web sites, such as Helm Operations, offer up a wealth of tips, explainers and advice on how to get started. Here's a quick to-do list from Helm:

- *Pull your vessels out of the water and get them inspected. Check the U.S. Coast Guard for a list of the 10 most common towing vessel deficiencies.*
- *Begin developing a safety management system*
- *Develop internal audit expertise*
- *Install and train on new required equipment, like automatic external defibrillators*
- *Analyze your training gaps*
- *Learn and prepare*

Marine Sanitary Devices: Size Matters

When it comes to marine sewage, it pays to measure. It turns out that the physical size of the equipment itself is not your only worry.

By Joseph Keefe

Marine Sanitation Devices: (perhaps) the three dirtiest words in the nautical lexicon. Nevertheless, Marine Sanitary Devices – or MSD's, as they are affectionately known – are pre-engineered, pre-packaged blackwater/greywater treatment systems. We don't like to talk about it, we know that waste streams are treated and – we hope – that they are also in compliance. Installed on all manners of vessels, nowhere are these devices (arguably) as important as the ones that provide service on the myriad of inland and brown water workboats.

Sewage, that product that everyone loves to hate, is defined indelicately under the US EPA Clean Water Act as: *"human body wastes and the waste from toilets and other receptacles intended to receive or retain body wastes", and includes greywater discharges from commercial vessels operating on the Great Lakes."* But, what do the regulations actually say?

For starters, towboats operating on the domestic waters (coastal as well as inland) of the United States are subject to U.S. Coast Guard regulation 33CFR 159 c. 1975. This specifies Type I discharge standards for vessels under 65' in length and Type II standards for vessels over 65' in length. There are three different types of MSDs that can be certified by the U.S. Coast Guard to meet the requirements in 33 CFR Part 159, each having its own design, certification, and discharge criteria.

Then again, what if things change again? Not to worry, says, Robert Rebori, CEO and President of MSD manufacturer Scienco/FAST. "This is a common question asked by vessel operators and naval architects," he offered, adding, "Since the US Coast Guard, which is based upon the Water Pollution Control Act of 1970 amended 1972, issued 33CFR159 in 1975. Very little has changed in 40 years for the vessels operating United States waterways. Perhaps the major change is that greywater is now considered sewage on the Great Lakes."

Today, in real practice, and despite many years of recognized need, there is little accommodation for holding and pumpout to shore on the inland rivers of the United

Coast Guard MSD Definitions

Type I – (relies on maceration/chlorination) flow through discharge device producing effluent having a fecal coliform bacteria count not greater than 1,000 per 100 milliliters and no visible floating solids.
Type II – (typically biological/aerobic digestion-based system – like Scienco/FAST's offerings) flow through discharge device producing effluent having a fecal coliform bacteria count not greater than 200 per 100 milliliters and suspended solids not greater than 150 milligrams per liter.
Type III – (typically a holding tank) prevents the overboard discharge of treated or untreated sewage or any waste derived from sewage. This type of device may include other types of technology including incineration, recirculation, or composting.

SCIENCO/FAST
a division of Bio-Microbics, Inc.

"Since the US Coast Guard, which is based upon the Water Pollution Control Act of 1970 amended 1972, issued 33CFR159 in 1975. Very little has changed in 40 years for the vessels operating United States waterways. Perhaps the major change is that greywater is now considered sewage on the Great Lakes."
– Robert Rebori, CEO & President of Scienco/FAST

States. Beyond this, remember that most line towboats do not come in to dock but stay in midstream while tugs add and remove barges from their tows. Hence, the opportunity to do anything except 'treat on board' rarely presents itself. That doesn't make compliance any easier, nor does it lessen the laundry list of regulatory requirements hanging over all aspects of industry, like the proverbial Sword of Damocles.

For wastewater treatment application manufacturers, therefore, the market spans newbuild construction, system upgrades, and retrofits (***think:*** SubM, perhaps) from failed systems not in compliance. Over time, the cost of fines has increased making it making it decidedly costly to roll the dice and remain out of compliance. And, in an era where the U.S. Department of Justice's favorite weapon is the obscure *Migratory Bird Act*, do you really want to be the operator who kills the seagull with improperly treated waster effluent?

Sewage: Measure Thrice, Treat Once

Alan Fleischer, of Scienco/FAST (a Division of Bio-Microbics, Inc.) told MarineNews in August, "If graywater is to be considered and treated as sewage, it substantially increases both the hydraulic and the organic loading on the sewage treatment system." Translated into simpler nomenclature, Fleischer gently warns those who build, operate and design today's workboats that when it comes to MSD capacities, size does matter. That Type II system, depending on the model that you choose, could take up half of your machinery space. It doesn't have to, according to Fleischer – a subject matter expert on MSD's – but at the same time, he says, it does need to handle more volume than you probably know.

Scienco/FAST is an original equipment manufacturer specializing in marine sewage devices, environmentally-friendly cleaners and other industrial water management technologies. Now celebrating its 30th anniversary, Scienco/FAST has several different models to offer, depending on physical footprint, weight of operating unit, access for retrofit installations, and price. Scienco/FAST's Fleischer said in August, "There are many factors and waste streams to be considered when deciding just how much 'MSD' your particular vessel needs."

Graywater, blackwater and other sources of wastewater simply present organic and hydraulic loading; nothing more, nothing less. If the treatment system is sized to handle the increased loading, there should be no problem. For example, says Fleischer, although ground food waste is not considered sewage by the Coast Guard, Fleischer shows the effect (in the table below) upon organic loading. He adds, "Note that the effects are significant. A unit designed to

The ABC's of MSD's

Approved Equipment: Certified U.S. Coast Guard MSD's are issued a Certificate of Approval that is valid for five years and are entered into the Coast Guard Maritime Information Exchange (CGMIX).
International Standards: Shipboard sewage systems manufactured in compliance with MARPOL Annex IV may be certified by the U.S. Coast Guard Marine Safety Center (MSC) as meeting the requirements of both 33 CFR Part 159 and MARPOL Annex IV. (NAVC No. 1-09).
Vessel Builders: Manufacturers may not sell vessels having an installed toilet facility, unless it is equipped with an installed and operational MSD of the type approved by the U.S. Coast Guard (33 CFR Part 159).
Vessel Operators: No person may operate any Vessel having an installed toilet facility, unless it is equipped with an installed and operable MSD of a type approved by the U.S. Coast Guard to meet the requirements of 33 CFR Part 159.
Inspected Vessels: In addition to MSD requirements in 33 CFR Part 159, inspected vessels must also comply with the marine engineering regulations in 46 CFR Subchapter F and the marine electrical regulations in 46 CFR Subchapter J. The U.S. Coast Guard Certificate of Approval and device label will both indicate inspected vessel for those devices that meet these additional requirements and therefore are suitable for installation onboard inspected vessels. (33 CFR 159.97). ***HINT:*** there are about to be another ~ 5,000 vessels entering the Coast Guard's ***inspected*** domain.

handle blackwater only from 30 persons will only handle blackwater plus all graywater from 20."

Fleischer continues, "It is very common in the US to use in-sink garbage disposal units, but this is not considered sewage in the marine regulations. Rather it is considered garbage and is covered by MARPOL Annex V, not Annex IV. But, if it is mixed with the sewage, then it must be treated to the same standard. I present that figure to discourage people who want to be all things to all people without counting the size, weight and cost of the unnecessary result."

When it comes to MSD capacities, Fleischer obviously is a careful calculator. When it comes to the rule changes for Great Lakes operators, he opines, "The effect upon our existing installations on Great Lakes vessels was less than one might expect for two reasons – First, vessel manning has gradually been reduced over the past 40 years or so. Beyond this, and thanks to process improvements, we have been able to substantially increase capacity of both existing and new units of the same model."

The Scienco/FAST Approach

Vessel builders and operators have many options when it comes to choosing MSD applications. The MarineFAST MSD process, as it is called, for example, uses an efficient, aerobic fixed film process capable of meeting or exceeding any known effluent standard worldwide. Combined with a disinfection system to prevent the spread of aquatic invasive species, the MarineFAST MSD System offers compact, modular designs with simple, fully automatic operation to provide trouble-free solutions. Too voluminous to list in this edition, the Scienco/FAST client and install list since 1978 spans 36 pages, thousands of systems, and reads like *"who's who"* of domestic inland operators, with dozens of repeat clients.

Of interest to workboat operators, the Scienco LX-Series was originally developed for smaller vessels where the high cost of properly designed and built epoxy coated steel tanks was prohibitive. The LX-Series employ salvage drums and overpacks already certified by DOT for transport of toxic waste. The tanks are fabricated from high density polyethylene and cross linked polyethylene, and are insensitive to marine corrosion or vibration. Fleischman explains, "We are only able to employ them for our smaller systems and larger such tanks are simply not available."

According to Fleischman, the FAST process is more efficient volumetrically than most competitive processes of similar capacity. But, these units are designed for long service lives in continuous duty and cannot compete with units designed only to marginally pass a ten day certification test. Similarly, 'dilution machines' that simply dilute the sewage with large volumes of seawater are inherently more compact – because they really don't do anything. Emphasizing the situation, Fleischman says simply, "Note how many large fleets continue to purchase our FAST units over a period of years even though we are rarely if ever the low bidder."

It turns out that, when it comes to sewage, size does matter – and, for more than one reason. Chances are you never gave very much thought to something that is typically named, provided, installed and generically stocked by someone else on your newbuild delivery. It's way past time that you did. **www.sciencofast.com**

Sewage Service Factors

Type of Waste	factor
Blackwater	1.00
Personal washwater	0.32
Laundry	0.36
Dishwashing	0.80
TOTAL: blackwater & all greywater	2.48
Ground food waste	1.06
All Domestic Sewage	3.54

Source: Scienco/FAST

The Carrousel-RAVE Design
Ship-Handling Wizard

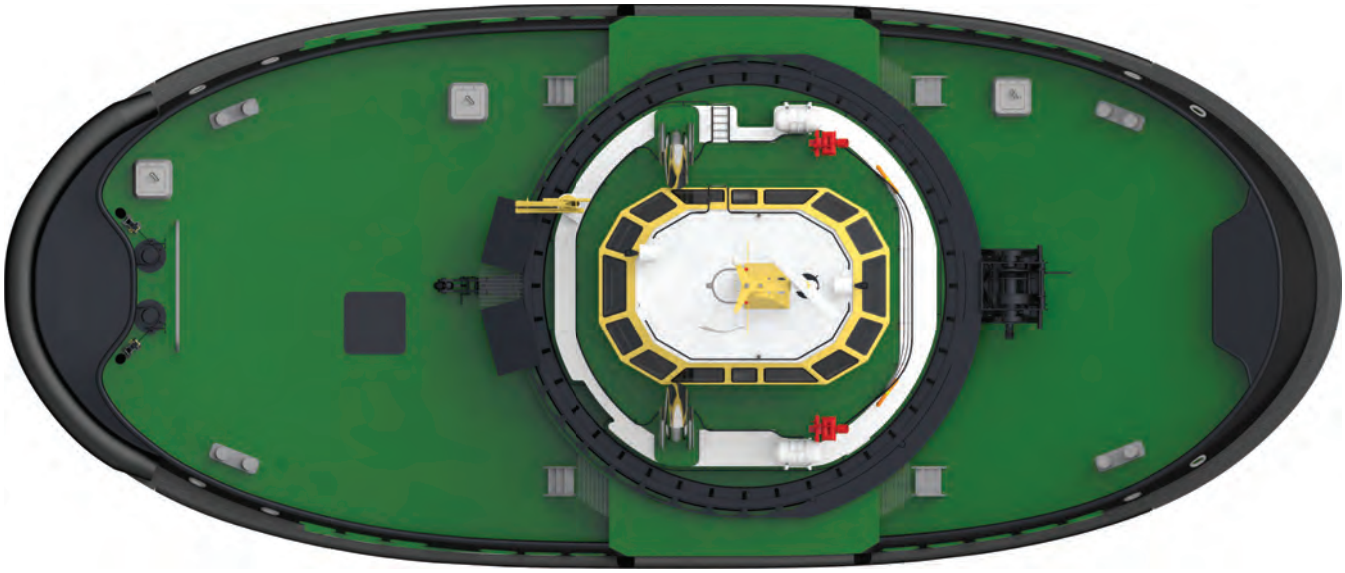
Edited by Joseph Keefe

In 2010, Robert Allan Ltd. began exploring the merits of a new concept in escort tug design, using two Voith cycloidal propellers placed linearly fore and aft in the tug, rather than the conventional "Voith Tractor" location forward. Eventually, Robert Allan Ltd. and Voith agreed on a program of joint applied research to properly and fully explore the hydrodynamic and technical challenges that this new Robert Allan Ltd. – Voith Escort (RAVE) configuration offered. Over the next two years both companies conducted extensive CFD and model test analysis and design concept reviews to ultimately establish that indeed this idea had significant benefits, not only for escorting but perhaps more importantly for the broad range of ship-handling applications.

The major finding was that placing the drive units fore and aft with approximately four diameters of separation, and with the VSP pitch settings optimized, the result was almost no interference effects between the two drives. The resulting thrust vector diagram is an almost perfect circle as illustrated in Figure 1, providing a 33% increase in athwartships thrust capability compared to a standard VSP tractor.

Multraship's Carrousel Towing System joins the party

As these results were being consolidated, the Multraship organization of the Netherlands approached the RAL-Voith project team with the possibility to combine the RAVE design concept with their unique Carrousel towing system. The latter consists of a custom designed, light weight, high performance winch mounted on a freely-



rotating ring which surrounds the deckhouse, of approximately the same diameter as the beam of the tug.

The Carrousel system provides the highest possible degree of towing safety against girting of any device available today. In addition to this key safety factor, the system also provides very significant operational advantages by simply using the resistance and hydrodynamic forces generated by the tug's hull for steering and braking the tow. Very significant fuel savings can be achieved as the tug basically "harvests" kinetic energy that is already available in the moving tow rather than adding energy with its engines to perform its job, obviously with much lower emissions. Much reduced mechanical wear on the propulsion train of the tug is also a clear operational advantage.

Another round of detailed research to evaluate the merits of this combination, and also to ensure optimal placement of the Carrousel system was begun. The objectives were to (a.) ensure that any potential propulsion failure resulted in a "fail-safe" attitude of the tug "end-on" to the line forces (even though even beam-to the Carrousel towing system is inherently fail-safe), and (b.) to establish that the tension in the line can always be controlled simply by changing the tug's orientation, even at high speeds. After another extensive series of CFD analyses and model tests, any concerns were alleviated and many important lessons had been learned, unlocking a combination of design elements which is anticipated to have far-reaching implications on tug operations and towing safety worldwide.

CRT's Versatility & Utility

Figures 2 through 4 illustrate how the Carrousel-RAVE Tug (CRT) can be deployed as either a bow tug, stern tug,

Figure 1: Thrust Vector Diagram for Carrousel-RAVE vs. Conventional VSP Water Tractor

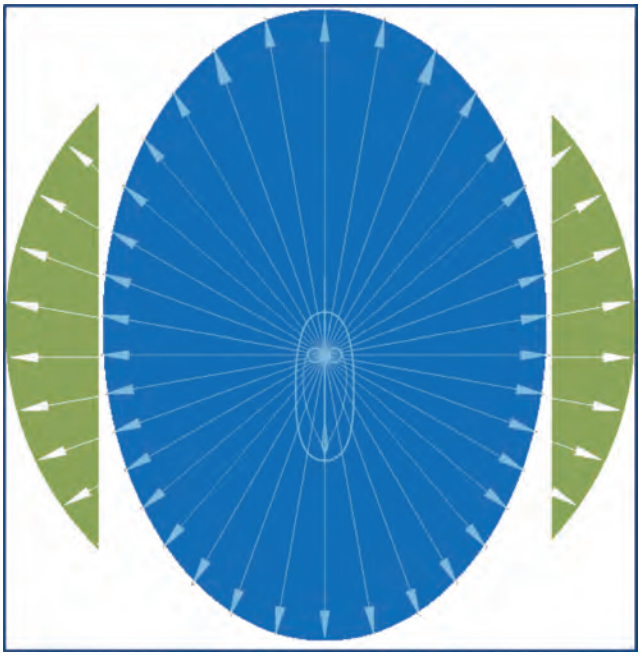


Figure 2:
CRT as a Bow Tug.

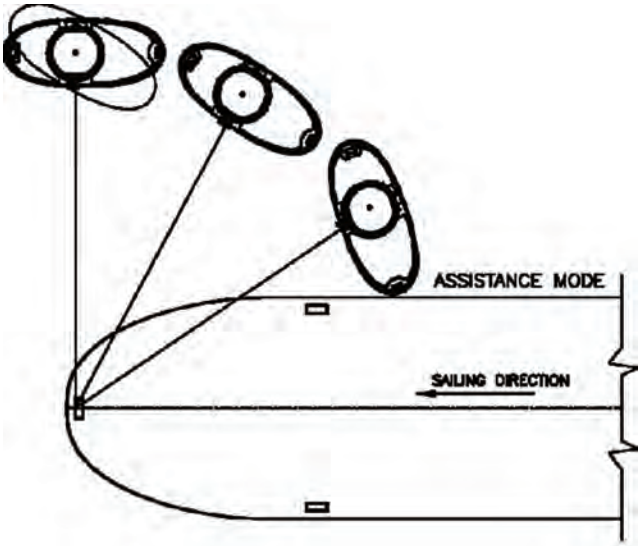


Figure 3:
CRT as a Stern Tug.

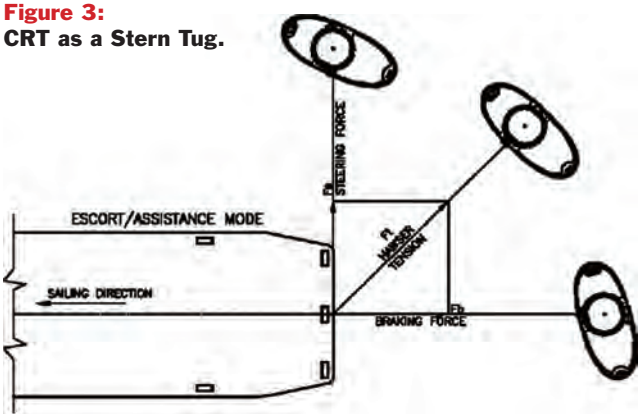
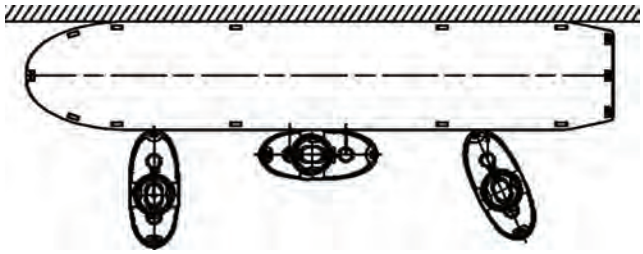


Figure 4: CRT can be used in any Attitude with Equal Effectiveness



or side tug and how in the first two scenarios line tension remains essentially constant regardless of tug position or attitude. As a bow tug, the CRT is uniquely capable of safely braking the tow in the manner illustrated. Critically, the heeling forces are mitigated by the action of the Carrousel system. The hydrodynamic forces created during such maneuvers are very high, with the result that thrust delivered by the engines and drives can be significantly reduced at towing speeds, thus reducing fuel consumption and emissions. Model tests demonstrated that a compact 32 meter CRT with Gross Tonnage below 500 can generate a line force in excess of 160 tonnes at 10 knots with a maximum heel angle of approximately 15°, in which case only 2,800 kW (3,753 bhp) is applied.

Figures 5 and 6 illustrate how the line forces developed by the CRT compare to a conventional VSP tractor as a function of propeller pitch setting. Another very unique feature of this design is the fact that in enclosed or confined waterways such as locks and canals, the VSP drives adapt almost instantaneously to turbulent flow conditions, such as those induced by combinations of ship and tug wash, as well as the wash reflected off the confining walls. The longitudinally symmetrical propulsion configuration can also be used to control a tow in the confined environment of a lock, by placing the tug perpendicular to the tow and then precisely directing the propeller wash as required to keep the tow off the lock walls. Combining all these features with the very fast (approx. 4 seconds) thrust response time of the VSP drives compared to a typical 12–14 second time for thrust reversal of a Z-drive makes the CRT concept extremely reliable and ensures the highest possible standard of ship control in such confined conditions.

As a consequence of this detailed research and study, a complete new design has evolved, which was introduced to the tug industry in London in May 2015. Announcement of a construction contract for the first of class CRT 3200 is, according to Robert Allan Ltd.,

Figure 5
Thrust performance of the CRT as a function of Bow VSP pitch settings.

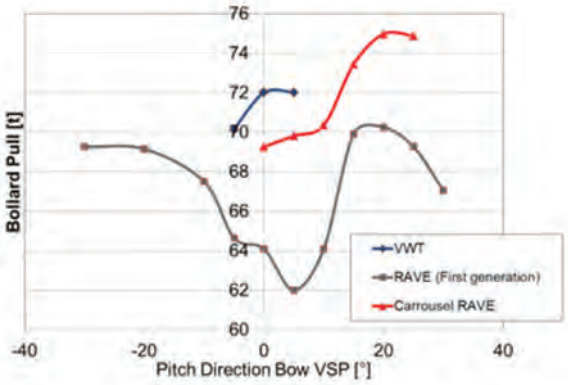


Figure 6:
Thrust Performance of the CRT as a function of Stern VSP pitch settings.

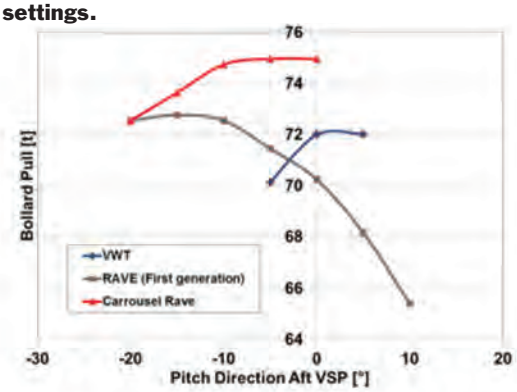


Figure 6 Thrust Performance of theCRT as a Function of Stern VSP Pitch Settings

imminent. Figure 7 illustrates the new design, intended for service in the major ports of Western Europe, many of which have extensive lock systems.

The CRT 3200 at a glance:

LOA: ..... 31.9 m
Designer: ..... Robert Allan
Beam, molded: ..... 13.2 m
Power: ..... 2 x 2,650 kW (total 7,100 bhp)
Gross Tons: ..... < 500
Load draft: ..... 6.3 m
Depth, moulded: ..... 5.4 m
Drives: ..... Voith Model 32R5 EC/250-2
Speed: ..... 14.1 KT
BP: ..... 70+ tonnes
Line Force: ..... 160 t @ 10 KT
Towing System: ..... Multraship Carousel

After introducing the Carrousel concept about a decade ago, Multraship invested significant time and effort into the development and refinement of the concept. This includes the development of a fully functional prototype tug with which all sorts of tests and experiments, as well as many hundreds of real ship assists were performed. This research and testing has led to a clear grasp of the full spectrum of operational possibilities and benefits of the Carrousel towing system, with the ultimate aim to come up with the basic blueprint for a tug design which is optimized for it. Inline propulsion was always clearly envisaged in that context, and the ultimate marriage of this unique safety device to the outstanding performance of the RAVE hull and VSP propulsion system promises to move tug design, operational efficiency and safety ahead by a quantum leap. Today, the Carrousel-RAVE is an option that tug owners worldwide should consider very seriously for any future new tug acquisitions.

Jensen-Designed LNG ATB Receives ABS AIP

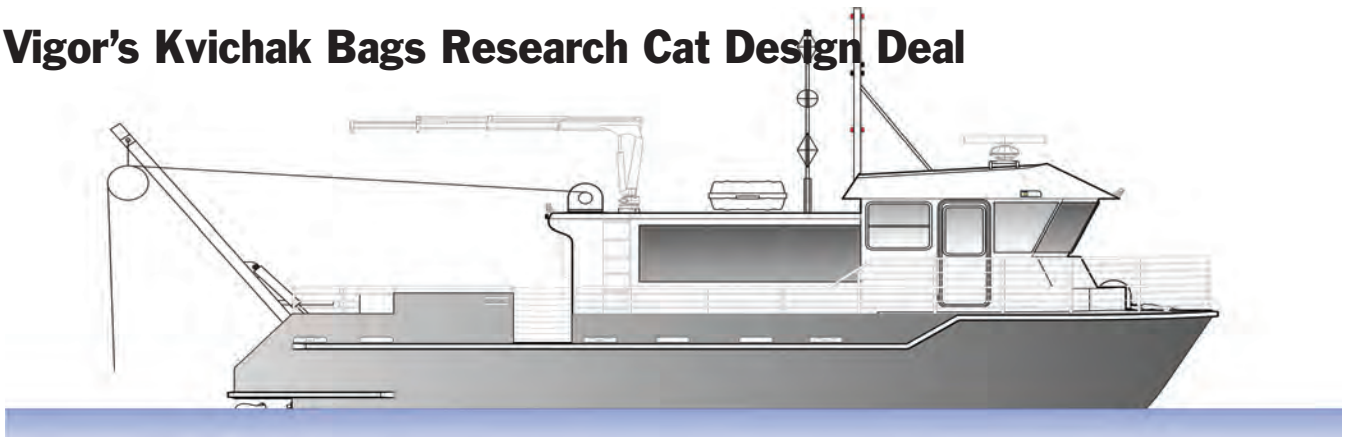
A Jensen Maritime-designed, liquefied natural gas (LNG)-bunkering articulated tug-barge (ATB) has been granted "approval in principle" by classification society American Bureau of Shipping (ABS). The designation establishes that Jensen's vessel concept, which is classed as an A1 Liquefied Gas Tank Barge, is compliant in principle with ABS rules and guides. Ideal for mobile bunkering, Jensen's ATB is also oceans rated, meaning that it is not limited to the intracoastal waterways, like many other similar types of LNG ATBs. This flexible design feature allows the vessel to facilitate the transfer and use of small-scale LNG in places with limited infrastructure, including offshore locations. The ATB will be built with four 1,000- m3 Type C LNG tanks (seven bar working pressure), enough LNG to fill up a large containership twice before having to replenish its own supply. This capacity, combined with flexible operational areas, makes it an ideal solution for a customer who has significant LNG needs at one or more ports not located near an LNG terminal.

Safety features include a double hull, designed to help to protect the ATB's 4,000-gallon fuel tank, and firefighting capabilities. Classed as a firefighting vessel (FFV-1), the vessel is well equipped to handle emergencies on board and can satisfy most requirements to have at least one FFV-classed tug escorting LNG tankers into port. Finally, because there is no linkage between the tug and barge, the two can disconnect quickly in the event of emergency. Expected time to build the ATB is between 18 to 30 months.

The ATB Barge at a glance …

LOA:	360 feet
Beam:	60 feet
Combined tug-and-barge LOA	452 feet
Speed:	12 knots
Crew:	12
Engines:	GE 6L250 engines (Tier 3)
Ballast:	90,100 gallons
Fresh Water:	30,800 gallons
Fuel:	4,000 gallons
Designer:	Jensen Maritime
HP:	2,035 (each engine)
Z-Drives:	Rolls Royce 205

Vigor's Kvichak Bags Research Cat Design Deal



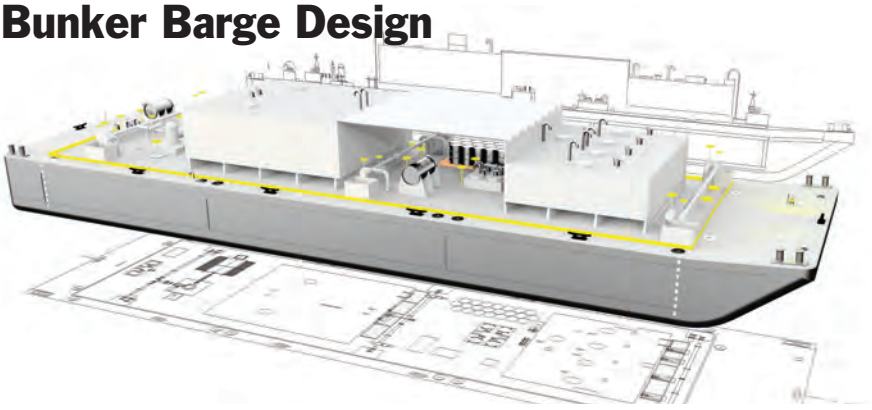
Kvichak Marine Industries, a Vigor Company, was recently awarded a contract to design and build a 48' all-aluminum foil assisted research catamaran for the King County Environmental Laboratory. The vessel will operate in Puget Sound, the Straits of Juan de Fuca and adjoining inland waterways. The vessel will be conducting water sampling research along with marine buoy calibration, maintenance and retrieval, tours and shoreline surveys, dive and ROV operations. This will be the thirteenth foil assisted catamaran Kvichak has built since 2000. Kvichak's unique foil design enhances seakeeping at top speeds leading to reduced fuel consumption and greater efficiency. Delivery is scheduled for summer of 2016.

The ATB Barge at a glance …

Length, o.a.:	48 feet
Beam (overall w/fender):	18.7 feet
Engines:	Cummins Tier III
Gears:	Twin Disc
Water Jets:	Hamilton

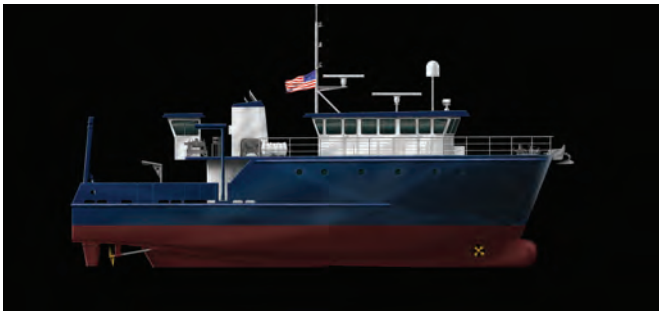
The Shearer Group Bunker Barge Design

The Shearer Group, Inc. (TSGI) has recently completed the design of a double skin bunker barge for a Gulf Coast marine fuel supplier. The barge features below deck piping for cleaner and safer deck operations. Above deck are five (5) oil tanks and one potable water tank.



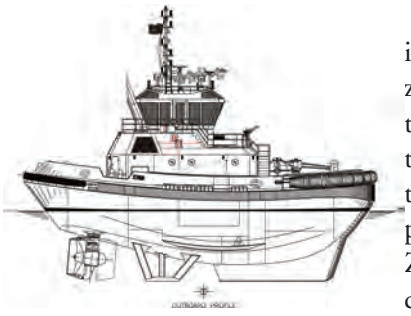
Boksa Marine Design Awarded Design of 78' RV

Boksa Marine Design has signed a contract with an oceanography institute for the design and engineering of a new coastal class research vessel. The new boat will replace an existing vessel which has been used as a floating laboratory for scientists and students studying in the waterways of the Gulf of Mexico and the Bahamas for more than 35 years. The overall goal of the design will address the limitations of a vessel that was originally built in 1968 and has become increasingly more expensive to maintain. Similarly, the design will ensure the vessel meets the known and anticipated requirements of varied research missions in the years to come. At 78' in length and 26' at the beam, the new ship will be both longer and wider than its predecessor. The



design will offer the new vessel more working space, including separated wet and dry labs, a larger work deck, separate galley and more comfortable arrangements for berthing.

Eastern to Build 4 Tugs for Bay-Houston



Eastern Shipbuilding will build four new z-drive tractor/ASD tugs for Bay-Houston towing Co. The new tugs will utilize the popular and proven Z-Tech 2400 series designed by naval architect Robert Allen. The new builds are currently under construction with the delivery of the first tug scheduled in December of this year. The tug's compact profile is needed to work in the tight confines of slips in the upper reaches of the Houston Ship Channel. In addition, the infinite thrust angles from the z-drives combined with the large skeg enable the tug to perform power indirect and direct maneuvers that are required for escort service. The four new Z-Tech 2400's will join their sister tug, the CHLOE K, which is currently servicing ships calling the Port of Houston. With eight z-drive tugs already in service, these four additional tugs will provide Bay-Houston's fleet a total compliment of 22 harbor tugs servicing the Ports of Houston, Galveston, Texas City, Corpus Christi and Freeport, Texas.

Bay Houston's ASD Tugs at a glance ...

Length:	80 feet
Draft:	16.9 feet
Beam:	38.25 feet
Engines:	Tier 3 Caterpillar 3516C
Design:	Robert Allen
Propulsion:	Schottel SRP 1215 Z-drives
HP:	2,575 x 2
Speed:	12 kt
Rope system:	500', 9" circ HMPE
Hawser Winches:	Markey DEPCF-48S
Bollard Pull:	60 mt
Winch Braking Capacity:	542,143 lb.

Bollinger Delivers 14th FRC to U.S. Coast Guard

Bollinger Shipyards delivered the Heriberto Hernandez, the 14th Fast Response Cutter (FRC) to the United States Coast Guard. The 154 foot patrol craft is built with and designed using proven, in-service parent craft design based on the Damen Stan Patrol Boat 4708. It has a flank speed of 28 knots, state of the art command, control, communications and computer technology, and a stern launch system for the vessel's 26 foot cutter boat. The FRC has been described as an operational "game changer," by senior Coast Guard officials. The Coast Guard took delivery on July 30, 2015 in Key West, FL, and is scheduled to commission the vessel in Puerto Rico during October, 2015.

Vane Brothers Welcome New Asphalt Barge

DS-509A at a glance ...

LOA:	361 ft.
Beam:	62 ft.
Builder:	Conrad Industries
Pumping Rate:	8
Heating:	thermal
Loading Rate:	10
Heating Temperature:	300 F
Capacity:	53,222 barrels
Service:	Asphalt

The Vane Brothers Company has taken delivery of the Double Skin 509A, the company's first newbuild barge designed specifically for moving asphalt. Constructed at Conrad Shipyard's Amelia, Louisiana, facility, the DS-509A boasts a 53,222 barrel cargo capacity.

Along with transporting asphalt, which is primarily used for Road construction, roofing and other building applications, the barge is generally Suited for moving heavy oil products. The DS-509A is one of several newbuild barges delivered recently for Vane. Earlier this year, the company welcomed the DS-501 and DS-503 into its fleet. Both 50,000 barrel barges were constructed at Jeffboat Shipyard, Headquartered in Jeffersonville, Indiana. Delivery of two more 50,000 barrel barges via Jeffboat is expected later this year.

Naiad Delivers 11.2 Meter Response/Crew Vessel

Naiad Inflatables has delivered the 11.2 Meter Response/Crew Vessel. The "Arctic Resolution" has twin Volvo D4 300s with ZF63 Gears and Hamilton 274 Jets. She is USCG certified for 12 passengers and two crew. Top speed is 34 knots. Based in Anchorage, AK, the vessel's instrumentation is Furuno technology and the cabin has Shockwave seats for the navigator and helmsman, and bench seating for the additional 12 passengers inside the cabin. The cabin is equipped with a Webasto diesel fired heater. The engines are equipped with auxiliary block heaters. She is the first Naiad equipped with a single point Henrikson hook system for davit launching off an offshore supply vessel. The OSV's davit system was custom designed for the Naiad and fitted prior to the Naiad's delivery to Alaska.

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Smith


Bratton


Gill


Hotz


Ouellette


Smith

Smith Joins Voith Turbo

Elliott Smith has joined Voith Turbo's Power, Oil & Gas Division as Vice President of Business Development and Strategy. Smith received his MBA at the University of North Carolina and is a graduate of the University of Central Florida and Jacksonville University.

Bratton Named GM

David Bratton, who joined Bay Diesel four years ago as a territory sales manager, is now the new general manager of Bay Diesel & Generator located in Richmond, VA.

Matson Promotes Gill

Kenny Gill, previously Senior Director of Operations for Horizon Lines' Alaska division, has been promoted to the position of Vice President, Alaska for Matson Lines. Gill now has management responsibility for all Matson operations in Alaska.

SAFE Boats Adds to Management Team

John Hotz has been named SAFE Boats' Director of International Business Development for Caribbean, Latin America and Mexico. Paul Ouellette has joined the firm as Business Development Director – U.S. East. He is a recently retired Major for the Florida Fish & Wildlife Conservation Commission (FWC). He earned his Bachelor of Science degree in Environmental Biology from Fort Lewis College.

Smith Rejoins Trinity

William S. Smith III (Billy) has been named Chief Operating Officer of Trinity Yachts.

Harvey Gulf Grows

Harvey Gulf International Marine (HGIM) has launched a new affiliate, Harvey Shipyard Group, to manage its shipbuilding assets. Harvey Shipyard Group acquired Gulf Coast Shipyard (Gulfport, MS) and Trinity Yachts (New Orleans, LA). HGIM alone is investing $350 million to construct its dual-fuel fleet. The firm expects the acquisitions to result in an expansion of operations in Gulfport and New Orleans as it continues to bring innovative dual-fuel ship design, engineering and construction to its marine transportation industry clients.

New President for IMCA

Bruno Faure, Group Senior Vice President Subsea Projects and Operations at Technip, has taken over the role of President of the International Marine Contractors Association (IMCA), the association representing over 1,000 offshore, marine and underwater engineering companies in more than 60 countries.

K&L Gates Grows, Adds Martinko to DC Offices

K&L Gates LLP has welcomed **Stephen Martinko** as a government affairs counselor in the public policy and law practice. Martinko joins the firm from the Port of Pittsburgh Commission (PPC), where he served as executive director of one of the largest inland ports in the United States. Previously, Martinko spent 12 years as a congressional aide, including serving as deputy staff director for the Committee on Transportation and Infrastructure of the U.S. House of Representatives, Prior to his deputy staff director role, he was chief of staff to Congressman Bill Shuster (R-PA).

Seaspan Names Hale VP

Brent Hale has joined Seaspan as Vice President, Human Resources. Brent joins the company from ICBC where he served as Director, Strategic HR and Governance. Brent completed a Bachelor of Commerce from the University of British Columbia in 1994. In 1996, he obtained a Master of Industrial Relations from Queen's University in Kingston, Ontario, and in 2004 he graduated from an Executive Leadership Program at Simon Fraser U.

SUNY Maritime: Burke, Clott Named ABS Chairs

The State University of New York Maritime College announced that **Dr. Richard Burke** and **Dr. Christopher Clott** have been selected as its inaugural ABS chairs. Made possible through the financial support of ABS, which provided an endowment of $3 million dollars, the positions allow SUNY Maritime to remain "first and foremost" in the fields of maritime education and training.


Bruno


Martinko


Hale


Burke


Clott


Calhoun

Calhoun New Voith Turbo VP of Sales – Oil & Gas

Shawn Calhoun has joined Voith Turbo's expanding Power, Oil & Gas Division as Vice President of Sales – Oil and Gas. Prior to joining Voith, Calhoun served as Director of Worldwide Sales and Marketing at Lufkin Industries. He previously served as General Manager of Lufkin's Gear Repair Division. Mr. Calhoun graduated from Centenary College with a Bachelor of Science degree in geology.

Zea is WCI's Director-Government Affairs

Waterways Council, Inc. (WCI) has named **Tracy R. Zea** as its Director-Government Relations. He will advocate for WCI's goals for authorizations and appropriations which support a modern, efficient, and reliable inland waterways transportation system.

(See "Insights" from Zea on page 12)

New MD at Dan-Bunkering (America) Inc.

Mikkel Søholm Vestergaard is the new Managing Director at Dan-Bunkering (America) Inc. Mikkel began his career with Dan-Bunkering back in 2003 in the head office in Middelfart where he was employed as Bunker Trader. Mikkel is replacing Hans Lind Dollerup who has taken up new challenges within the group.

Conrad Adds Leonard

Rene J. Leonard has been named Vice President of Business Development and Engineering at Conrad Industries. Rene has been in the shipyard business over 25 years in various capacities including naval architect, project engineer, program manager, director of commercial programs and more recently as Vice President – Engineering for the past ten years, overseeing all functional design development, regulatory approvals, and production engineering.

Webb Honors Crowley

Webb Institute presented **Thomas B. Crowley, Jr.,** CEO and chairman of the Board of Directors at Crowley Maritime, with an Honorary Doctorate of Commercial Science degree at Webb Institute's 119th commencement in June. Since 1994, Thomas B. Crowley, Jr. has served as chief executive officer and chairman of the Board of Directors of Crowley Maritime, succeeding his father and grandfather in these roles, dating back to the company's founding in 1892. Today, Crowley is a U.S.-based, $2 billion-a-year marine solutions, energy and logistics services company with operations around the world.

Duluth Ports Names Sharrow

James "Jim" Sharrow, who has served as the Duluth Port Authority's facilities manager since 2002, has been named Director of Port Planning and Resiliency. Sharrow will be responsible for overseeing the organization's capital programs, maritime policy, risk management and security plans. Sharrow spent 28 years with USS Great Lakes Fleet, serving as that company's engineering and maintenance director before leaving to work as a consultant in naval architecture and marine engineering.

Crowley Promotes Miller, Brown, Harrison

Crowley Maritime Corporation announced that **Mark Miller** has been promoted to vice president, corporate and marketing communications, within Crowley's corporate services group. Brad Brown has been promoted to vice president of information technology. Brown joined Crowley in 2001. Parker Harrison has been promoted to vice president of procurement. Harrison joined Crowley in 2013 from Shipowners Claims Bureau in New York where she managed employees across four offices worldwide.

USMMA Alumni Honor Kumar

The U.S. Merchant Marine Academy Alumni Association and Foundation Board of Directors in June voted to award the title of Honorary Alumnus to USMMA Academic Dean, **Shashi N. Kumar, Ph.D.** Dr. Kumar's numerous awards include a Fulbright Senior Specialist Fellowship to Ireland in 2012, two USMMA National Parents Association Awards for Exceptional Leadership, two USMMA Alumni Association and Foundation Awards


Zea


Soholm


Leonard


Crowley


Sharrow


Miller

for Distinguished Service, and the J. Liebertz Memorial Award for Distinguished Leadership.

Smith to Lead CG Recruiting Command

Coast Guard **Capt. Ron LaBrec** last month relinquished command of Coast Guard Recruiting Command to Capt. Robert Smith. The Coast Guard Recruiting Command has workforce of 451 personnel, across eight time zones, at 78 recruiting offices. Smith's previous unit was at Coast Guard Headquarters in Washington, D.C., where he served as the Director of Sexual Assault Prevention in the Response Military Campaign Office.

Fidelis Opens NY Office

Fidelis Group Holdings, LLC (FGH) with its subsidiary company Continental Underwriters, Ltd. (CUL), a National Marine Insurance coverage provider announced the opening of its new flagship office located in Lower Manhattan, New York. **H. Elder Brown, Jr.**, President and Chief Executive Officer of FGH commented, "We have been able to continue our growth pattern during these tough market conditions principally due to our proven business model and discerning hiring practices." FGH's Manhattan office is located at 100 William Street, Suite 310, New York, NY 10038. This location is the group's Inland Marine Division and Excess Marine Liabilities hub and also includes key personnel across all product lines.

VT Halter Announces Promotions

VT Halter Marine, Inc. (VT Halter Marine) announced the promotions of Richard A. Zubic to Executive Vice President, Shipbuilding; **Rob Mullins** to Senior Vice President, Strategy and Estimating; Harry Bell to Vice President, Sales and Marketing; Pawan Agrawal to Vice President Repair; and Phil Adams joins the VT Halter Marine team as Senior Vice President.

Silver Bell Awards 2015

In June the Seamen's Church Institute's (SCI) 38th Annual Silver Bell Awards Dinner honored individuals who have made remarkable contributions to the maritime industry. SCI presented a Lifetime Achievement Award to **Dr. Craig E. Philip**. Philip, past President & CEO of Ingram Barge Company and now Research Professor in the Department of Civil & Environmental Engineering at Vanderbilt University, has worked SCI to expand the Institute's mission to include the inland transportation sector, establishing its Center for Maritime Education in Paducah, KY. The event raised more than $962,000 for the programs and services provided by SCI.

Carlyle Group Acquires LMC

The Carlyle Group announced the acquisition of Lauderdale Marine Center (LMC), the nation's largest yacht repair facility in terms of the number of large vessels it can haul and service. Equity for the transaction comes from Carlyle Realty Partners VII, a U.S. real estate investment fund. Located in Fort Lauderdale, LMC is a 50-acre facility consisting of a boatyard, marina and marine service center. It accommodates boats up to 200 feet with 19 covered sheds and 156 wet slips, has three marine travel lifts with haul-out capacity up to 330 tons, and features 7,000 linear feet of dockage.

PVA, Coast Guard Partner for Safety

The Passenger Vessel Association (PVA) has partnered with the U.S. Coast Guard, through a chartered working group, to develop strategies to reduce slips, trips and falls aboard domestic passenger vessels. The group will work to identify the root causes of these types of accidents with the goal of developing non-regulatory guidelines for industry use. The working group will also take a broader look at best practices from outside the maritime environment by examining research done by the National Institute of Occupational Safety and Health (NIOSH) for service industries such as hospitals and restaurants.

MMA Cadets Win Crowley Sr. Scholarships

Crowley Maritime Corp.'s 2015-2016 Thomas B. Crowley Sr. Memorial Scholarships have helped to further educational opportunities for four students of Massachusetts Maritime


Brown


Hadjipateras


Kumar


Smith


Brown


Philip

Academy (MMA). The four recipients, **Bryan P. Wall**, **Robert M. Neal**, **Peter Persechino** and **Adam Szloch**, were chosen based on their excellent grades, demonstrated financial need and plans to pursue a career in the maritime industry. Wall is a freshman from Manasquan, NJ, majoring in marine transportation. Neal is a junior from North Billerica, MA, majoring in marine engineering. Persechino is a sophomore from Barkhamsted, CT, majoring in marine transportation. Szloch is a junior from Melrose, MA, and a marine transportation major.

Unified McMurdo Brand is Official

The strategy to transition McMurdo, Kannad, Sarbe, Techno-Sciences, Inc. and Boatracs brands into a unified McMurdo brand was started in February 2013. McMurdo CEO Jean-Yves Courtois announced in July that the name change became official. McMurdo intends for the brand change to strengthen its position as a provider of an end-to-end Emergency Readiness and Response platform and ecosystem.

NAMEPA Welcomes Board Member

The North American Marine Environment Protection Association (NAMEPA) has welcomed its newest board member, **Marina Hadjipateras**. Hadjipateras is Vice President Corporate Communications with Dorian LPG Ltd, a pure-play LPG shipping company and an operator of VLGCs.

Paducah Rigging Pushes Perfectly Positioned Rope

Samson's Saturn 12 Synthetic Line may soon become the ideal next generation river rope.

By Joseph Keefe

In 1974, the sole business of Paducah Rigging, with just four employees and operating out of a small office not much larger than a two-car garage, was to manufacture barge wires for a few area towboat companies in the immediate vicinity of Paducah, Kentucky. Today, Kentucky is still the headquarters of the firm, but the full service rigging company now has three other branches ideally positioned in Reserve, LA, Greenville, MS and further north in East St. Louis, Illinois.

That kind of geographic coverage allows the firm to service a wide range of inland towing needs, with a growing portfolio of equipment, lines and ropes. Along with a full-line of fabricated wire rope slings, chain slings, nylon slings, tie downs, barge and winch wires, crane wires with fittings, logging chokers, and many other related products – all custom-made to customer specifications – Paducah Rigging also stocks and sells Samson ropes. There's an important reason for that, says Paducah Rigging President Alex Edwards. Eventually, that reason will become as clear as the difference between the colors blue and orange, especially at home on the nation's inland rivers.

According to Edwards, the U.S. inland rivers began to transition from primarily using wires in the late 1980's to early 1990's. Amsteel-Blue – a Samson synthetic product – then took good hold with decent market penetration in the mid-1990's.

In general, on the water, barge-to-barge moorings today are typically wire. Barge to pushboat connections, on the other hand, have evolved to rope and synthetics.

Blue

Today's river standard – and color – is arguably blue. That's because Samson's AmSteel-Blue, made with its proprietary Dyneema fiber, is a torque-free 12-strand single braid that yields the maximum in strength-to-weight ratio and, size-for-size, is the same strength as steel—but it's so light, it floats. According to Edwards, AmSteel-Blue is an excellent wire rope replacement with extremely low stretch, and superior flex fatigue and wear resistance. Because of that, a large percentage of U.S. inland operators depend exclusively on the rope, especially in terms of facing, wing wires and tug winches.

According to Sampson, the unique blue color is there for more than just appearance — it is created by a proprietary Samthane coating that enhances rope wear life and snag resistance. AmSteel-Blue doesn't require lubrication because it doesn't rust or "fishhook." Its flexibility and extreme light weight will allow for an easier, faster and safer mooring sequence. And, Samson reports that the 12-strand construction of AmSteel-Blue is one of the easiest ropes to splice or re-splice.

Orange

The next generation in Samson's 12-strand working lines made with Dyneema fiber, Saturn-12, has a coating that improves abrasion resistance and increases residual strength as much as 15 to 20 percent when compared with other HMPE lines and their conventional coatings. This torque-free, flexible, and easy-to-handle construction is easy to in-

Samson's current product leader (blue) and the quickly upcoming product (orange) of the future.

spect and splice in the field. Alex Edwards insists, "Amsteel-Blue is the current market leader; hands-down." But, that's about to change because, says Edwards, all of the great features that make Amsteel-Blue a solid rope still apply to the bright orange Saturn 12, which is the exact same rope, but with a better coating for abrasion control.

Saturn 12 will come with about a 5 percent increase in price, but, says Edwards, the change is worth it.

Actually, Saturn 12 has been around since 2010 when it was introduced to the markets and by 2013 it had been introduced to inland rivers here in the United States. Edwards told ***MarineNews*** in August that while Amsteel-Blue's use on the rivers is widespread, the bigger operators are looking to upgrade to the next generation.

He adds, "This could happen before the end of this calendar year." Saturn 12 is commonly used for river pushboat facing and wing wires and for electric winch wires. Unofficially, U.S. Navy testing is said to be currently yielding a 15 to 20 percent increase in lifespan for the orange Saturn 12 brand.

Applications in Orange – Saturn 12:

- *Face and Wing Wire*
- *Shield Hauler*
- *Tug Pendant*
- *Lifting Sling / Mining*
- *Tug Mainline*
- *Winch Line / Tug*

Inland Waters: No Longer Blue?

Tomorrow's color on the inland rivers may very soon be defined by orange, not brown. That's because Saturn 12 comes with a size-for-size strength replacement for wire rope at only 1/7th the weight, a decreased coefficient of friction at winch surfaces, while at the same time being easy to handle, inspect and splice. Boasting improved performance over standard HMPE ropes, the flexible and floating Saturn 12 synthetic rope's proprietary coating reduces internal yarn to yarn abrasion. All of that adds up to an economical, safer and a more logical mooring solution for inland operators – and beyond.

PRODUCTS

SevenCs ECDIS Kernel

The SevenCs ECDIS Kernel SDK (Software Development Kit) 5.20 has been designed to meet all future requirements of the latest international standards in order to reduce implementation irregularities and improve the overall usability of chart display systems. The system also reflects the revised and new definitions for the chart and mariner's settings, i.e. display categories, viewing group layers and so-called display selectors.

www.sevencs.com

Tenneco's SCR System Achieves ABS PDA

Tenneco, a global supplier of Clean Air aftertreatment technologies, has been awarded three product design assessment (PDA) certificates from the American Bureau of Shipping for its new selective catalytic reduction (SCR) system for large engines. Tenneco's SCR aftertreatment system features a complete dosing control solution specifically designed for marine engine applications up to 7,500 kW or 10,000 hp. The PDA certificates cover key components of the system.

www.tenneco.com

Tank Coating Applications with PPG's NOVAGUARD 810

NOVAGUARD 810 from PPG Protective and Marine Coatings is a specialized tank storage coating providing outstanding resistance to a range of chemical and oil products. The solvent-free coating minimizes application hazards is suitable for newbuild or refurbishment of existing tanks. Rapid curing of a single coat means fast return to service. Smooth, light-colored finish enables easy cleaning and inspection. The coating is ideal for crude, petroleum products, solvents and a variety of chemicals.

www.ppg.com

Alfa Laval PureBallast USCG Approved for Barges

The explosion-proof version of Alfa Laval's chemical-free ballast water treatment system, PureBallast 3.1 EX, has received approval from the U.S. Coast Guard for use on barges sailing in U.S. coastal waters. The approval comes a year after Alfa Laval PureBallast received an IECEx Certificate of Conformity from the International Electrotechnical Commission (IEC) for use in explosive atmospheres on board ships in international waters.

www.alfalaval.com/marine

Sennebogen 870 Material Handlers

Purpose-built material handlers from Sennebogen – 870 R-HD and the 870 M – can each move 2,500 to 3,000 cubic yards of sediment per day from hopper barges filled with dredged sediments and water removed from the river. The machine moves quickly to keep pace with dredging operations and it accurately removes all sediments from the barge, without spillage. The 870 R-HD is a 200,000-pound, crawler-mounted material handler.

www.sennebogen-na.com

Gielle's Novec 1230 Firefighting System

Gielle's Novec1230 fluid firefighting system for engine rooms, pump rooms, transformer rooms and electrical rooms, for ship and offshore applications can replace, without significant modifications, old systems using Halon, Halotron IIB, carbon dioxide and water mist on board ships. The firefighting system designed by Gielle has approvals from ABS, BV, RINA, DNV-GL, and LR. The solution detects and rapidly extinguishes fires.

www.gielle.it

Lincoln Electric UltaCore HD Marine Electrode

Lincoln Electric continues to expand its consumable portfolio with the latest innovative solution, UltraCore HD Marine. This gas-shielded, flux-cored wire electrode enables a flat bead shape when welding at high deposition rates in all positions, offering improved operator appeal over existing HD products through lower spatter and lower fumes generation. UltraCore HD Marine meets most shipbuilding standards, including: ABS, DNV, LR, and BV.

www.lincolnelectric.com

CS Unitec's Flexible Shaft Deck Descaler

CS Unitec's Trelawny Trident Neptune Deck Descaler is ideal for the rapid removal of scale, rust, paint on ship decks, leaving a receptive surface for coating applications. Standard equipment includes a heavy-duty leaf scaling head, 6-cutter scaling head, 6" dia. power brush, spanner set and hand guard. CS Unitec's deck descalers include a 110 V electric model, as well as pneumatic units with a swivel base.

www.csunitec.com

Klüber Lubrication's Content Hub

Klüber Lubrication's new content hub provides insights for a variety of markets into how lubricant solutions save energy, protect equipment and enhance processes. The range of topics include product spotlights that describe lubricant properties and areas of likely applications – such as couplings, joints, and gears – as well as the latest developments in lubricant solutions for new applications, government regulations and other timely issues.

www.klubersolutions.com

Seagull Maritime's PSC Enclosed Spaces Campaign

Seagull Maritime has launched a new onboard training course covering Enclosed Space Entry in ships, at a time when the issue is being brought into focus by regulators. The course is made up of practical onboard exercises and three CBT components, including Enclosed Space Entry Awareness (CBT 285), and the two recently introduced modules on Gas measurement, a safe atmosphere and Gas measurement, measuring instruments.

www.seagull.no

Helm Operations Delivers in Spanish, Portuguese

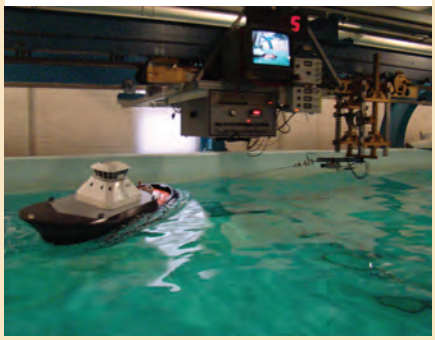
Helm Operations now supports multiple languages within their dispatch and billing software, Helm Dispatch Manager. After a sharp increase in demand from Central and South American nations, the language offering will begin with Latin American Spanish and Brazilian Portuguese with other European languages to follow. Helm Operations will provide the same level of support including a 24 hour help desk in these two additional languages.

www.helmoperations.com

U.S. Patent for JonRie Marine Winch

A US Patent has been issued to Brandon Durar and Gregory Castleman for a Staple Torque Aligning Winch System for Escort Tugs. This Auto Position Escort Winch becomes one with the tug with its ability to align forces to create maximum steering effort to assist in an emergency and aligns forces to safely increase righting forces during an Escort.

www.marinewinch.com



PRODUCTS

SCHOTTEL Hybrid Propulsion for Fairplay Tugs

Hybrid tractor tugs Fairplay IX and Fairplay XI are equipped with Schottel hybrid propulsion systems, including Rudderpropellers SRP 4000 with hybrid gearboxes, two electric motors and an integrated steering control system. Tugs are required to fulfill a variety of daily tasks, from stand by periods to towing operations. The installed hybrid propulsion concept enables the Fairplay tugs to operate always with an optimal power output.

www.schottel.de

Transas iSailor app for Android

Transas has released the Android version of its iSailor app. The popular chart plotter and AIS Viewer has been available to iOS device users since 2010. Now Android users can enjoy top-notch navigation technology with the Transas app. Transas iSailor is an easy-to-use navigational system for seafarers, for use on boats and yachts. It provides clear presentation of navigation information, electronic charts and additional content.

www.isailor.us

J D Neuhaus: 270 Years Strong

September 2015 marks 270 years for hoist and crane manufacturer J D Neuhaus. Load handling equipment supplied by J D Neuhaus is now utilized throughout the world, on the dock and at sea, in heavy, demanding operations, under extreme operating conditions. Their products are backed-up with a service and supply organization established in more than 90 countries together with over 70 branches.

www.jdngroup.com

Destroyer Wheel Makes Turning Easy

For ease of maneuvering, nothing beats a wheel control knob, especially in wet weather or when one hand is needed for the throttle. Schmitt & Ongaro's new 11" Destroyer Wheel comes complete with this must-have feature. Smaller in diameter than a standard wheel, it serves well in tight and restricted locations. Ideal for any boat, it's perfect for center consoles, fly bridges, RIBs, runabouts, crabbers and skiffs.

www.schmittongaromarine.com

Brownell Trailers PRO-E Series Trailers

Brownell Trailers' new line of hydraulic boat trailers, the PRO-E SERIES, is designed for professionals looking to purchase their first hydraulic trailer as well as for those requiring a more cost effective option to assist their expanding business. Brownell hydraulic trailers are fast and safe. Made easy to launch and retrieve boats, they increasing storage capacity by up to 33%.

www.brownelltrailers.com

Penray Fuel Prep Biocide Solves Storage Issues

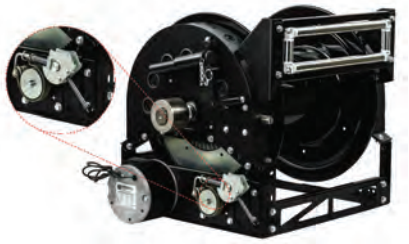
Penray's Fuel Prep Biocide for fuel storage tanks kills off microbial growth in diesel fuel. Penray biocide stops 90% of microbial growth activity in as little as six hours and is so effective you may only have to treat twice a year. This protects components from corrosion that microbial growth can cause, and prevents formation of microbial growth that plugs fuel filters, causing expensive downtime.

www.penray.com/fueldoctor

Coxreels 1600 Series Three-Way Brake

Coxreels 1600 Series features a versatile symmetric reel design with a wide array of components, configurations, and accessories, including the three-way brake. Drag brakes are a standard feature on hose reels to prevent free-spooling when momentum continues to spin the reel after the desired length of hose is extracted. The three-way brake is a lever-actuated brake, offering the operator three positions.

www.coxreels.com



Centek BilgeKleen Filter System

Centek Industries' BilgeKleen filter system automatically removes hydrocarbon pollutants from bilge water before it is discharged overboard. The patented system uses a filtering medium that binds to hydrocarbons and allows water to pass through freely. 99.9% of the hydrocarbon pollutants are captured, with no increase in bilge pump pressure. A variety of systems and sizes are available to fit almost any commercial bilge application.

www.centekindustries.com

STAUFF Ball Valves: Positive, Leak-Free Seal

STAUFF offers a complete range of ball valves and flow control valves in a variety of configurations with carbon steel or stainless steel construction. To provide users in "critical mission" industries where corrosive environments —oil and gas, chemical processing, pharmaceuticals, power plants, pulp & paper, primary metals and others—can cause costly contamination and breakdowns, STAUFF offers its Fast Track Stainless Steel Ball Valve Program.

www.stauffusa.com

Posidyne 30 Clutch for Demanding Dredging Applications

Force Control Industries' Size 30 Posidyne Clutch with "Oil Shear Technology," can be engaged from the cab, making it safer and simpler than manually engaged clutched for dredging. Positioned between the engine and the gearbox and pump, this Posidyne clutch dynamically accelerates or decelerates high inertia loads without wear on friction discs, providing years of maintenance-free, no-downtime operation.

www.forcecontrol.com

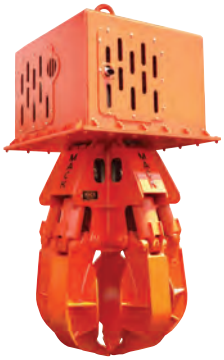
VARD SeaQ Bridge gets Lilaas Touch

'Finger-grip' vessel control offering precise tactile feedback is proving its mettle for those considering SeaQ Bridge, the new bridge concept from VARD. The pad-like 'levers' integrated in the SeaQ Propulsion Control fit perfectly in the hand. Although close to each other, the multi-device azimuth and thruster controllers are distinguishable in terms of both look and feel. Propulsion Control levers are also digitally represented for visual reinforcement.

www.lilaas.no

Mack Crane Attachments

Mack Manufacturing Inc. was in the forefront when diesel-powered crane buckets and grapples with remote controls first appeared in the material handling industry. The latest additions to Mack's line-up are self-contained remotely operated attachments ranging from as little as 3/8 cubic yard up to a 20 yard capacity. The new small-sized grapples and buckets were developed to solve big problems for customers in recycling and shipping industries.



www.mackmfg.com

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- Forecasting sales and distribution
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For a full job description, visit **us.yanmar.com/corporate/careers**. Qualified applicants should send a resume with salary requirements to **careers@yanmar.com**.

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NEW PRODUCTS

Marine Marketplace

NEW PRODUCTS

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www.teufelberger.com

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Photo courtesy of Foss Maritime

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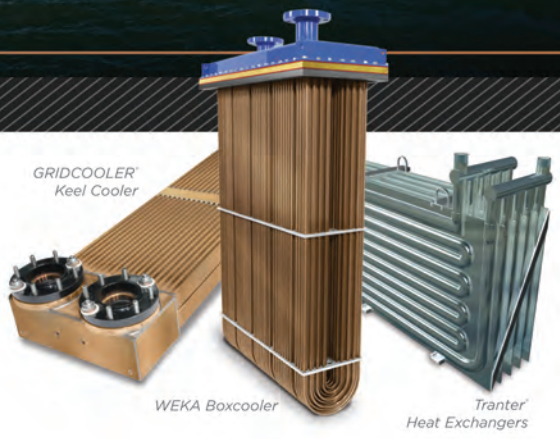

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