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

Volume 28 • Number 2

Marine News

FEBRUARY 2017

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Dredging & Marine Construction

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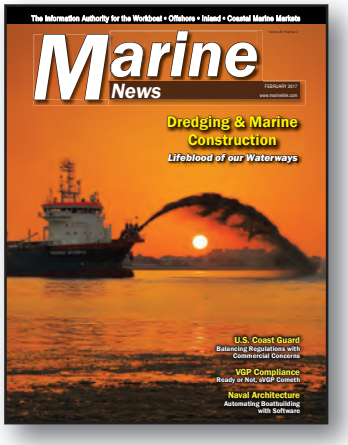
Dredging Features

ON THE COVER

Dredging is essential to the lifeblood of the nation's waterways, ports and intermodal equation. This edition covers the topic from A to Z, and everything in between.

(Photo © Sophie James / Adobe Stock)



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Burt Moorhouse *Gulf Copper Ship Repair Inc.*

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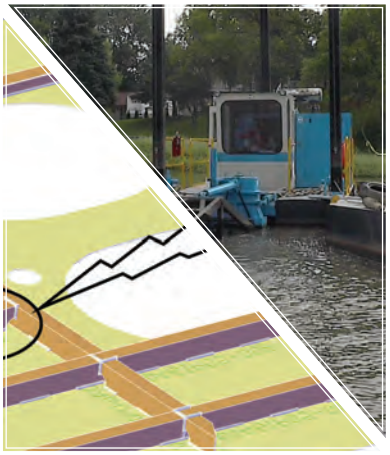
Departments & Analysis



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January 20th brought the peaceful transition of power here in the United States. That's no surprise. In the President's inauguration speech that followed, however, I found myself focusing on just one thing: infrastructure. That's because we can talk about prosperity and a more efficiently run country all we want, but without the transportation system(s) for those worthy goals, it just isn't going to happen. Nowhere is that metric more important for this island nation than it is on the domestic waterfront and inland rivers, deep draft ports and coastal waters that bring virtually everything we consume.

Our annual dredging edition is therefore especially important, as well as timely in its delivery and message. With no less than eight individual articles that highlight dredging, infrastructure and the equipment that gets the job done, there is arguably no reason to go anywhere else for your annual primer on what makes our waterways run. In particular, Jim Romeo's legislative analysis (page 41) and Susan Buchanan's look at what's happening in coastal Louisiana both provide a tightly focused snapshot of what to expect in the coming year, and why you should care.

Underscoring all of that – and I hate to steal his thunder – U.S. Coast Guard Assistant Commandant for Prevention RADM Paul Thomas tells us, "The maritime industry faces the triple challenge over the next several decades of increasing the capacity of the Marine Transportation system (MTS), while reducing the environmental footprint in the face of every increasing complexity." He's talking, of course, about balancing safety, progress and the environment, as well. This and other well reasoned advice from the U.S. Coast Guard's chief advocate for safety begins on page 12.

Admiral Thomas knows too well that the effort to protect the environment starts with safety. Industry, as it turns out, also knows the score. Over the course of the last four decades, the inland marine industry in particular has stepped up its game. The amount of oil spilled in our waterways is almost at its all-time nadir, while the amount of oil being transported via water is near record volumes. Hence, the advent of the long delayed Small Vessel General Permit (sVGP), scheduled to come into force this year, won't intimidate an industry already for the most part in compliance with the subchapter M rules. Nevertheless, and for those who might not be up to speed on what all that means, ***MarineNews*** contributor and environmental expert Steve Candito lays it all out for us, starting on page 28.

All of this brings us full circle back to the reality that regulations, safety and innovation is of little value if the waterways that we depend upon aren't deep enough, the docks used to handle those cargoes aren't strong enough and the infrastructure dollars aren't spent in the right places. If I have one hope for the coming administration, it would be that yesterday's abject bipartisan neglect of the domestic waterfront soon becomes a thing of the past. Is that too much to ask?

Joseph Keefe, Editor, keefe@marinelink.com

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Digging up the Dredging Numbers

Every year, the U.S. Army Corps of Engineers (USACE) and the International Association of Dredging Contractors (IADC) each publish data on dredging issues near-and-dear to all of us on the waterfront. These numbers tend to lag 12 months or so, simply because the analysis and compilation of data takes that long. IADC's "Dredging in Figures" is an annual review of the global dredging markets – those where data is readily available and verifiable. According to IADC, more than six years since the world economy emerged from its deep recession, there is a fluctuating improvement of economies across the globe. Data from the International Monetary Fund (IMF) stated that the global economic growth in 2015 was 3.1%. But, because emerging markets and developing economies as a whole had a fifth consecutive year of declining growth, the economy weighed on global dredging. Nevertheless, the dredging industry's turnover in 2015 (excluding the closed markets) increased to €7.115 billion compared to €6.415 billion in 2014 – mainly as a result of the sizable Suez Canal expansion project (€1.1 billion).

Closer to home, the USACE did its own analysis of domestic markets – one that IADC calls "closed" due to Jones Act restrictions. By any yardstick the USACE does an admirable job; especially considering the paucity of resources and funds allotted to their mission. The dredging statistics, supported by trust fund facts and other fun facts, add up to a daunting responsibility. ***By the numbers***, FY 2015 in the U.S. – according to the USACE – looked something like this:

34: PCT of dredging attributed to Channel Deepening	186: millions of cubic yards (MCY) removed by USACE/Contractors
34.4: Cost (US$) for each cubic yard of new 'dredging'	1,441: millions of dollars needed to remove that dredge material
86: PCT of dredging performed by private contractors	89: PCT of domestic dredging deemed 'maintenance' dredging
72: No. of private dredgers submitting bids to USACE	7: PCT of dredging attributed to Hurricane Sandy related work
1,036: Statute miles on the GIW	5.58: Cost (US$) for each cubic yard of maintenance work dredging
1,831: Inland statute miles of the Mississippi River	52: Number of dredging companies awarded contracts in 2015
239: Number of locks operated by USACE	2,087: Inland miles of the Monongahela and Mississippi Rivers
14: PCT U.S. waterborne cargo that was containerized	81: PCT U.S. flag vessels operating on the Mississippi River or GIW
3,998: Double hull tank barges, up from 3,772 in 2014	46: No. of USACE lock-associated dams producing hydropower

The USACE says that the Cutterhead pipeline dredge was the most widely used type of dredge in FY 2015 receiving 44% of the contracts, removing 59% of the contracted quantity and earning 48% of contract dollars. Hopper dredges removed 27% of the quantity and earned 18% of contract dollars. Mechanical dredges removed 10% of the quantity, earning 23.4% of the contract dollars. The remaining dredging was performed by a combination of more than one type of dredge. Consistent with the amount of Hurricane Sandy work still being performed – the IADC says flooding related damages continue go up noticeably – the New York District was awarded the most contract dollars in FY 2015 with $317.7 million. New Orleans District had contracts dredging the most cubic yards (27.7 MCY).

Waterways are operated by the Corps as multi-purpose, multi-objective projects. They not only serve commercial navigation, but in many cases also provide hydropower, flood protection, municipal water supply, agricultural irrigation, recreation, and regional development. In conjunction with all of that, the Inland Waterways Trust Fund earned $111.13 million in Fiscal Year (FY) 2016. This included $110.9 million paid by the inland marine towing industry and interest of $0.226 million. The Trust Fund disbursed $108.0 million for construction projects leaving an available balance of $57.4 million for new construction obligations. The Harbor Maintenance Trust Fund equity increased by $76.7 million to $8.83 billion in FY 2016. Total receipts and interest equaled $1,371.2 million in FY 2016. This included taxes from domestic commerce of $60.4 million and taxes collected from imports of $1,076.6 million. All transfers totaled $1,294.6 million; the U.S. Army Corps of Engineers received $1,262.9 million, an increase of $58.3 million from $1,204.6 million in FY 2015. In FY2016, the most cargo moved was through the Ohio River Lock number 52 with more than 72 million tons on more than 64 thousand barges. The youngest Corps lock is Montgomery Point on the McClellan-Kerr Arkansas River system. Built in CY2004, during the 12 years it has been operational 20,137 vessels carrying 98,947,955 tons of cargo have passed through the lock. The Willamette Falls locks on the Willamette River are the oldest locks owned and operated by the Corps built in 1873.

It turned out that 2015 – and maybe this isn't a surprise to anyone – wasn't a banner year for many ports and commodities. For example, the U.S. port exporting the largest volume of coal in 2015 was the Port of Virginia, VA with 26.4 million short tons; a drop of 35%

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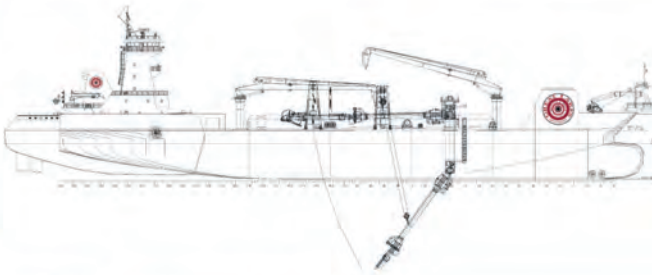

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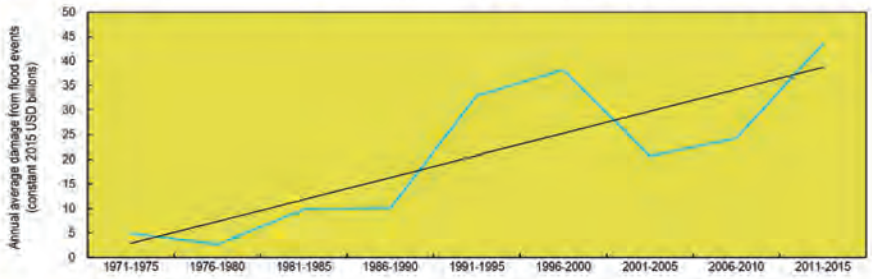
from 2014. Similarly, the St. Lawrence Seaway Management Corporation reported 27.4 million metric tons (30.3 million short tons) moving on the Montreal-Lake Ontario section of the St. Lawrence Seaway for calendar year 2015, also a 9% decrease from 2014. Further south, the Port of South Louisiana was down 3.1% in 2015, still registering the leading total among U.S. ports with 259.1 million tons. And, owing in part to the recovering economy but also the "war on coal," tonnage on the Gulf Intracoastal Waterway (GIWW) was 118.9 million tons in 2015, down from 126.1 million tons in 2014. Despite those realities, the U.S. flag fleet (total commercial vessels) increased by 473 hulls, or a little more than 1%. Despite the lingering downturn in the shipbuilding sector, U.S. operators (primarily brown water) continue to build their fleets and the strain on the nation's waterways only heightens. On the blue water side of the equation, the IADC says that container traffic and world oceanborne commerce as a whole is rising and will only continue to do so. Dredging and infrastructure may therefore be the most important issue on the plate of ANY marine organization at 2017 kicks off into high gear.

ANNUAL AVERAGE DAMAGES FROM FLOOD EVENTS



Annual average damages from flood events have increased over the past four decades – 1971-2015.
(Source: Financial Management of Flood Risk, OECD)

U.S. Flag Vessels as of December 31, 2015

		Age (years)					
Vessel Type	Number	< = 5	6-10	11-15	16-20	21-25	>25
Vessel (Total)	40,555	7,033	5,977	4,455	6,653	3,276	13,011
Self-Propelled	8,985	832	882	657	719	391	5,495
Dry Cargo	788	52	57	103	87	53	431
Tanker	62	11	19	9	6	3	14
Pushboat	3,170	386	285	169	172	75	2,082
Tugboat	2,422	166	249	134	165	65	1,641
Passenger	826	9	41	63	90	108	505
OSV	1,717	198	231	179	199	87	822
Barges (Total)	31,555	6,198	5,094	3,798	5,932	2,885	7,507
Dry Covered	10,665	1,748	1,452	1,714	2,995	1,028	1,727
Dry Open	8,354	789	1,475	920	1,878	1,182	2,095
Deck	7,337	2,209	1,188	597	550	337	2,333
Other Dry Cargo	194	17	16	14	23	13	109
Double hull Tank	3,998	1,083	733	461	437	311	973
Other Tank	1,007	352	230	92	49	14	270

US Army Corps of Engineers

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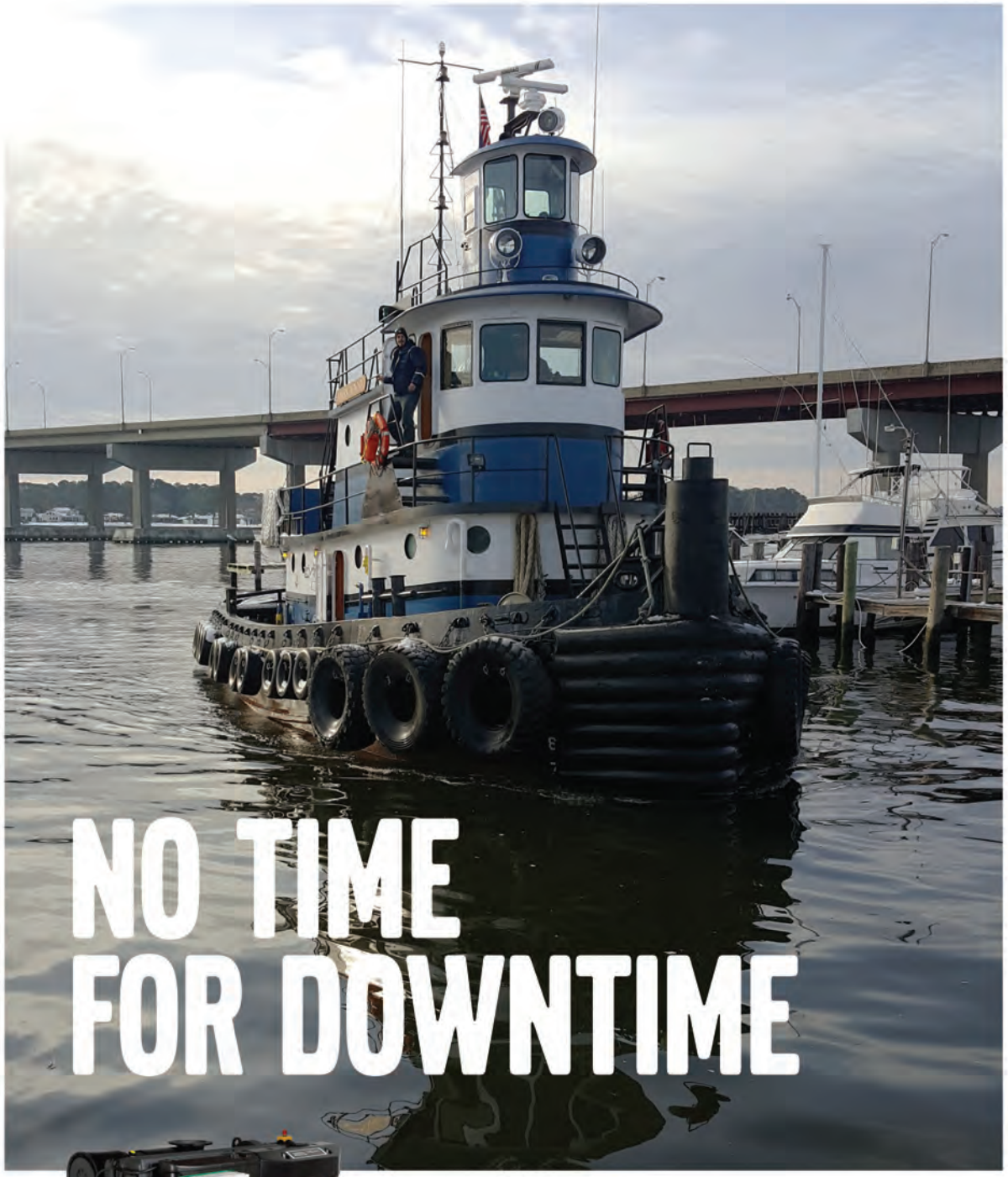

NO TIME FOR DOWNTIME

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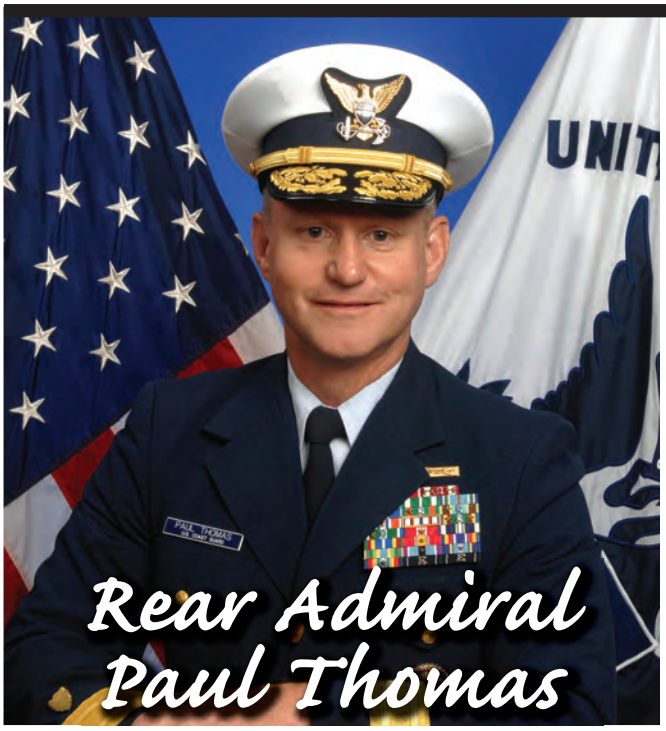


Assistant Commandant for Prevention Policy, United States Coast Guard

Rear Admiral Paul Thomas develops and maintains policy, standards and program alignment for waterways management, navigation safety, boating, commercial vessels, ports and facilities, merchant mariner credentialing, vessel documentation, marine casualty investigation, inspection and port state control activities. He serves as the Assistant Commandant for Prevention Policy overseeing three Coast Guard directorates: Inspections and Compliance, Marine Transportation Systems, and Commercial Regulations and Standards. A specialist in Marine Safety, Security and Environmental Protection, he has served at the Marine Safety Center in Washington, DC and many others before that. His other tours include, among others, service as Commanding Officer of USCGC CAPE ROMAIN. He is a graduate of the US Coast Guard Academy and the Massachusetts Institute of Technology. In 2005 he completed a National Security Fellowship at Harvard University's John F. Kennedy School of Government, and in 2010 he served as a Senior Fellow to the Chief of Naval Operations Strategic Studies Group. This month, he weighs in on the entire spectrum of Coast Guard safety and regulatory issues. It is an exciting time in this regard, and the buck stops at his desk. Listen in as he brings us up to speed:

With the first BWTS approval out of the way, how many more are in the pipeline and is there a sense of how soon you might be acting on additional applications?

We now have three systems with USCG Type Approval. Two are UV and one is EC. To date, we've received 45 letters of intent from manufacturers who plan to conduct testing. We understand that the independent laboratories are currently working with several manufacturers to complete testing and evaluation of additional systems. Based on this ongoing activity, we anticipate that we will receive additional applications for type approval throughout the upcoming year. Vessels owners and operators should study these type approvals carefully and fully understand the technical constraints associated with each. The Coast Guard recognizes that "one size does not fit all" for BWMS. As such, it will take a variety of type approved systems to meet the needs of the global fleet. We'll continue to work toward additional type approvals and to provide guidance to industry on future compliance date extension requests as appropriate.

The Subchapter M towboat rules are 'settled law' at this point, but companies still must decide which route that they will take to compliance. What's your sense on the numbers of firms that will opt for 'the Coast Guard' option?

The Coast Guard recently issued the "Third Party Organization (TPO) Guidebook." This document intends to help organizations who want to provide third party services and vessels operators considering the use of Third Parties as a compliance strategy. We know the industry is studying the options, but we do not know how many TPOs will enter the market, or how many operators will chose the TPO option. There are many advantages to the TPO option over the Coast Guard option. Operators who chose the TPO option will have much greater flexibility with regard to scheduling inspections, clearing deficiencies, making re-

pairs and managing their fleet wide compliance dates. Any operator who desires to certify more than 25% of their fleet in any given year will have to use a TPO. In addition, there are inherent advantages to the implementation of a Towing Vessel Safety Management System (TSMS) as a means of consistently engaging the entire workforce to ensure compliance with the regulations.

The Coast Guard has delegated more and more statutory inspection work to quality third party groups. How much inspection work does the Coast Guard still do, and do you feel the internal knowledge is still there and being grown in-house to support these missions going forward?

Third parties have been and will continue to be an important part of the system we use to ensure the US Fleet is safe, secure and environmentally sound. In fact, we use more than 300 Third Parties for everything from the development of standards, to testing of equipment, type approvals and compliance activities. Subchapter M is the first time we have codified the use of Third Party as a compliance strategy in regulations, but we expect to take that approach more often in the future. All of our Third Party options are designed to improve, rather than remove, Coast Guard oversight while reducing burden and increasing flexibility for the industry. We still do a lot of inspection work "in house," both as part of our Third Party oversight responsibilities and in cases where Third Parties are not an option or are not employed. Third Parties actually increase Coast Guard ability to maintain proficiency where we need to because they can free us from the tyranny of scheduled inspections and allow our inspectors to focus on the most critical fleets, vessels and systems. As this industry continues to grow in terms of complexity and diversity we expect more and different Third Parties to play important roles in the overall safety net. Cyber Risk management is an emerging area with great potential for Third party standards and compliance.

The centralization to WV of the 17 REC's now seems like ancient history. That said; it was not without its teething issues, but today, the general sense is that the National Maritime Center is doing a good job. Give us some real metrics and benchmark numbers to support that point of view.

In 2009, the Coast Guard's set a performance goal for the time it takes to issue a merchant mariner credential from application to issuance at 30 days net processing time. Since that time, the overall net processing time has averaged 28.6 days. While it is clear that the National Maritime Center meets the net processing goal for a majority of mariners, we know that isn't the case 100% of the time. In 2016, the NMC issued 70,023 merchant mariner credentials with 78 percent being issued within our goal of 30 days net processing time. It is currently taking longer than 30 days net processing time due to an increase in applications that are linked to STCW "gap closing" requirements. We usually see fluctuations in our net processing time throughout the year due to increases in applications in the spring when graduates from the maritime academies apply for their credentials, and in the summer when there is an uptick in seasonal work in the domestic maritime industry. In the past, singular events such as the government furlough in 2013 or changes in CG regulations or international standards have contributed to short-term growth in our application inventory. Centralization was completed in late 2008. Following that event, our average processing time peaked at slightly over 60 days in 2009 but has remained consistently lower than that since, giving us some quantitative assurance that the decision to centralize was a good one. For more detailed information on the NMC's performance and customer satisfaction reports, please go to http://www.uscg.mil/nmc/reports/default.asp.

The Coast Guard, in recent years has made a real effort to recruit maritime industry and maritime academy professionals into the marine safety mission set. How has that been going and just as importantly, are you retaining these personnel?

We understand that the Coast Guard is competing for the same talented professionals as is the industry, Class Societies and others. We do lose highly qualified people to the industry, particularly on the up cycles. Right now, our retention of Maritime Prevention Professionals is high. Nevertheless, we are constantly focused on making the Coast Guard the employer of choice for Maritime Safety professionals. Our Commandant recently issued the Coast Guard Human Capital Strategy. This focused the entire Coast Guard on ensuring our Human Capital System meets mission, service and people needs. The implementation plan for the strategy specifically addresses the Marine Safety workforce. We are looking at how we recruit, train, retain, assign and pay our people. We know that the Maritime Prevention professional of the future will need the skills and enabling technology to keep pace with this industry and we've initiated programs to do just that. We will continue to seek out Maritime industry and Maritime Academy professionals as part of our workforce. The Coast Guard provides tremendous opportunity to work in the maritime industry on an outstanding team who makes a positive impact on our nation.

What is the biggest issue on the plate of the marine safety group at this moment? What are you doing to solve it?

The maritime industry faces the triple challenge over the next several decades of increasing the capacity of the Marine Transportation system (MTS), while reducing the environmental footprint in the face of every increasing complexity. This triple challenge drives Coast Guard maritime prevention priorities as well. We are focused on increasing capacity of the MTS through our Future of Navigation initiative even while we increase our internal capacity to provide governance through the workforce and third party initiatives I've already mentioned. Another focus area of the Coast Guard is providing effective and reasonable environmental standards and compliance strategies in order to reduce the environmental footprint of the MTS. You see this today in air emissions, ballast water and other waste streams. We strive to put standards in pace that drive the innovation required to meet this environmental challenge, and to develop compliance processes that provide the level playing field the industry demands and deserves. And finally, with regard to complexity, the two biggest issues on our plate our implementing effective safety management systems and managing operational risk associated with cyber systems. We are working hard to update SMS and ISM requirements in both regulation and NVIC, and to put in place basic cyber risk management requirements for both vessels and port facilities.

In terms of regulatory issues, SubM, the Ballast Water issue and VGP seem to be 'answered policy.' What's looming large in the port-

hole next, when can we expect it, and what will it mean for the commercial sector?

Our next big regulatory initiative is an update to Sub N, which governs Outer Continental Shelf Activity. These regulations have not been update in decades, and they have not kept pace with the types of activities and technologies on the OSC today. Our goal is to provide flexible performance based requirements that level the playing field for US and foreign operators on the OSC. We look forward to robust industry participation in the finalization of these regulations.

In terms of policing the offshore oil & gas sector, where does the Coast Guard and the BSEE intersect in terms of jurisdiction and where do they have strict separation of powers?

The Coast Guard and BSEE understand that the most effective oversight of offshore oil and gas doesn't come about from strict adherence to agency jurisdictional boundaries or separation of powers. Instead, we have focused on leveraging the authorities and capabilities of both agencies to provide seamless oversight in a manner that improves safety and environmental performance and simplifies compliance for the industry. That is why the CG and BSEE meet regularly at both the national and regional levels, we conduct joint training and operations, we coordinate on policy, regulations, investigations and corrective actions, and we meet jointly with the regulated industry. We have established a joint "scorecard" to help us gauge safety and environmental performance on the OCS, and we are working on better procedures to "hand off" issues from one agency to the other when jurisdictional boundaries are encountered. This year the CG and BSEE will issue our first joint report on the State of the US OCS Regulated Activity.

Dynamic Positioning (DP) training and certification is a hot issue. Where does the Coast guard get involved with certification of both the training facilities and then, with Coast Guard credentialing and/or STCW requirements – if at all?

The U.S. Coast Guard does not currently approve courses for dynamic positioning training. However, we note the potential for a loss of position on a MODU or other vessel engaged in Outer Continental Shelf activities that could result in serious consequences for human safety and the environment during certain critical operations. Taking into account these and other factors, including the increasing complexity of these systems, we are developing regulations (see 79 FR 70943) to establish minimum training standards in order to improve the safety level of people and the property involved in such operations and ensure the protection of the environment in which they operate.

In a down maritime economy, one of the first things to "go" tends to be spending on safety. What has the Coast Guard seen in terms of measurable changes in the rate of accidents, oil spills, etc?

Overall, major marine casualty rates have remained consistent over the last 10 years. However, reportable marine casualties have actually been trending downward since 2015. We believe that the publication of the Marine Casualty Navigation and Vessel Inspection Circular had an impact on both the reporting of marine casualties by industry and the investigation of marine casualties by investigating officers.

What is the Coast Guard's marine safety division doing best, in your opinion, at moment? Give us an example of that in play. And, what could you be doing better?

There is no doubt the best part of the Coast Guard Prevention program is our workforce at the Sector, MSU and MSD levels. What we do best, and have always done very well, is provide a geographically distributed workforce in the port who know the industry, the area and the issues. Better than any other Federal regulator we are able to bring local knowledge and common sense to bear on operational decisions that happen at the port level. We will always cherish and nurture our relationship with the maritime community at all levels, but particularly at the port level where the most important work gets done every day. Of course, an empowered, decentralized workforce brings challenges associated with ensuring consistency across the nation. We will always be working on improving our consistency in a way that preserves the advantage of local flexibility. We rely on industry feedback to help us identify areas where additional guidance is needed to ensure the proper degree of consistency.

Looking at the domestic commercial waterfront today, what one thing would you change were it in your immediate power to do so?

If I could change anything it would be to increase the public awareness of and appreciation for the significance of the commercial waterfront in terms of our national security and prosperity. Our nation relays on our ports and waterways and on the maritime industry; but most of us don't realize that. The Coast Guard is committed to ensuring this vital MTS remains safe, secure, environmentally sound, productive and efficient.

New Year, New Opportunity

By Michael Toohey, President/CEO of the Waterways Council, Inc.


Toohey

The start of a new year often brings change, but in the nation's capital, 2017 means a new President and Administration, and a new Congress. Waterways Council, Inc.'s objective remains the same as it has since our start in 2005: to advocate for a modern, efficient and reliable inland waterways transportation system. For WCI, achieving this means working from our "three-legged advocacy stool" approach to educating these new Washingtonians through direct lobbying, stakeholder support and outreach, and media relations.

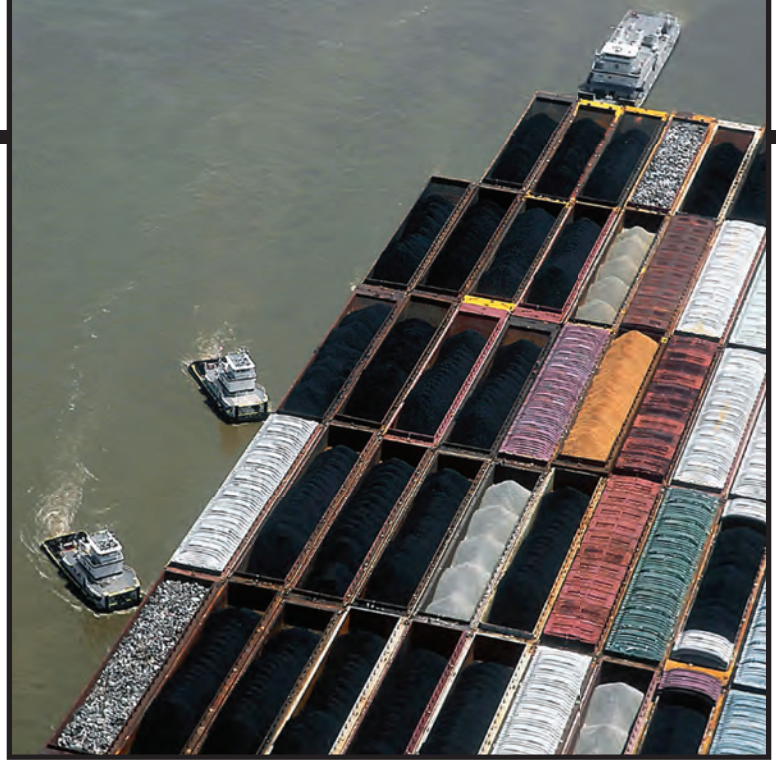
As the 115th Congress works on its immediate issues of healthcare and tax reform, the framework for an infrastructure package is being discussed as well. Ahead, the Trump Administration is expected to announce a plan for infrastructure improvements.

As that moves forward, WCI's goal will be to advocate strongly for infrastructure investment for the inland waterways transportation system armed with key facts. America's inland waterways transportation system is comprised of 12,000 miles of navigable waterways in 38 states. Last year alone, this system moved more than 600 million tons of freight valued at $250 billion over what is, mile-for-mile, the most fuel efficient, safest, and environmentally responsible mode of goods transport.

Rivers represent the silent "R" in a national transportation policy that has, in recent decades, focused on Roads, Rails, and Runways. Historically, however, the U.S. has always recognized the vital contribution that waterborne transportation makes to overall prosperity. Public expenditures to maintain navigation channels and build related infrastructure were among the nation's earliest investments and similar investments are just as critical to an efficient 21st century freight system.

But unfortunately, in recent times, waterways spending has declined and our waterways facilities are deteriorating. Congress has moved to correct this underinvestment, authorizing 25 modernization projects valued at $8.7 billion. These initiatives are to be built by the U.S. Army Corps of Engineers through an existing public-private partnership between the public sector and those who commercially use the locks and dams. While many entities gain from these projects, barge operators are the only direct contributors to the Inland Waterways Trust Fund through their payment of a 29-cent-per-gallon diesel fuel tax. Typically, the trust fund provides 50% of construction funding, while the remaining 50% comes from general treasury funds.

In 2014, the National Waterways Foundation commissioned a study by researchers at the Universities of Kentucky and Tennessee that analyzed the economic impacts of preserving the current inland waterways transportation system and expediting the construction of the Congressionally-authorized lock and dam modernizations so that they would be completed in 10 years rather than the current estimate of more than 20 years. The study results suggest that preserving the current system is critical, helping to sustain nearly 541,000 full-time jobs and $21 billion in annual incomes. Moreover, according to the study, expediting the modernization so that it mirrors President Trump's 10-year timeframe will hasten the addition of another 35,000 jobs to this total, add $14 billion in additional



income over 10 years, and would actually decrease overall system construction costs.

Recognizing President Trump's stated interest in Public-Private Partnerships and priority for formulating a national infrastructure policy, there is a way to create a sustainable advantage to American industries that ship their products on our waterways and, by increasing the reliability and efficiency of the waterways, make American industry more competitive at home and in the world market:

- ***Allocate up to $8.7 billion of infrastructure funds over 10 years for the construction of capital projects already authorized by Congress to modernize the inland waterways transportation system.***
- ***Cost-share this investment with the Inland Waterways Trust Fund at a temporary rate of 25% IWTF and 75% General Funds as part of the Trump Administration's infrastructure initiative.***

This proposal would expedite the completion of up to 25 modernization projects located throughout the United States, particularly throughout the nation's heartland in states like Pennsylvania, Ohio, Kentucky, Missouri, Tennessee and Illinois. These projects are in states that benefit farmers, manufacturers, and the men and women of the construction trades.

Projects that could be built in the next 10 years include the Chickamauga Lock and Dam (Tennessee River/ TN); Kentucky Lock and Dam (Tennessee River/ KY); Lower Monongahela Locks and Dams 2, 3, and 4 (Monongahela River/PA); and Olmsted Locks and Dam (Ohio River/KY).

Projects authorized and awaiting construction include Brazos High Island (Gulf Intracoastal Waterway/TX); Brazos River to Port O'Connor (Gulf Intracoastal Waterway/TX); Calcasieu Lock (Gulf Intracoastal Waterway/LA); Dashields Lock (Ohio River/ PA); Emsworth Lock (Ohio River/PA); Inner Harbor Navigation Canal Lock (Mississippi River/LA); LaGrange Lock (Illinois River/IL); Montgomery Lock (Ohio River/ PA); Peoria Lock (Illinois River/IL); and the Upper Mississippi River Lock and Dam 20, 21, 22, 24 and 25 (Mississippi River).

There are also major rehabilitation projects ready for construction. These include the Brandon Road Lock and Dresden Island (Illinois River/IL); Greenup Lock (Ohio River/ OH & KY); J.T. Myers Lock (Ohio River/IN & KY); Starved Rock (Illinois River/IL); T.J. O'Brien (Little Calumet River/IL); and LaGrange Lock (Illinois River/IL).

It is time to reinvest in infrastructure that keeps our economy moving ... on down the river!

Plan for Safety

Effective Leadership and a Safety Management System are the Keys to Success. Failure to lead has consequences.

By Larry DeMarcay


DeMarcay

Over the last 20 years we have seen a dramatic shift in the way that our industry operates. When I started practicing law, many companies looked at safety planning as a balancing act where you weighed the costs associated with safety against the costs associated with working through employee claims. Unfortunately, our employees often ended up on the losing side of the balancing test. The industry goal seemed to be completing the task at hand, regardless of the risk.

Today, due to changes in the mindset of our industry, we no longer see these types of attitudes. Now, employee safety and the protection of the environment are important, if not the most important, issues that we deal with. Now that the entire industry is focused on safety, it is up to each operator to figure out the best way to accomplish the goal of operating accident free. As Ben Franklin stated, "Failing to plan is planning to fail."

Although you may be interested in maintaining the safest work environment possible, without a plan and effective leadership, the goal is probably unachievable. Simply having a goal of operating safely is not enough to set up the culture of safety and the plan that is needed to successfully implement a safety program. This culture must start at the top and embed itself into the mindset of each and every employee working within the company.

Out in Front

Leadership is critical to safety planning because our vessels and crews operate under a wide variety of conditions, with crews that operate beyond the office's ability to directly manage and working with and around equipment that is capable of causing significant damage to the crew, the vessel and the environment. As such, communicating an effective "culture of safety" is the cornerstone to the implementation of a safety plan. This culture can only be effectively created through leadership.

All companies communicate a message that safety is important. However, the difference between the companies that effectively carry out this message in the field and the ones that do not is leadership. This leadership must begin at the top and work its way down through every level of the organization. This message can be communicated through the usual channels including policies, seminars, safety alerts, and training. However, none of this will work if all employees in the company don't "buy into" the program. This is where leadership setting the example is the key.

Leaders set the tone for the entire organization. When boarding a vessel, I customarily receive a detailed safety briefing from the vessel's officer in charge of safety. This type of safety briefing is necessary and conducted by all vessel owners and operators in the industry. However, several clients that we work with, based upon the vision of its leaders, take it to the next level. When visiting the corporate offices of these companies, I often receive a similar safety briefing where I am told what to do in the case of an emergency, where the emergency exits are and where my muster station was located.

I find it hard to imagine that a crewmember working on a vessel does not believe that management takes safety seriously when the office staff conducts safety briefings for all visitors. This type of culture cannot be generated through the use of "catch phrases" and public-relations campaigns. This type of culture can only be filtered down from the top and understood by all employees. The process can only be done through effective leadership, the first stage in implementing an effective safety plan.

Once management has committed to the implementation of a safety culture, the next step is to design and implement a plan. Because vessel operations can range from the operation of small crewboats to enormous special purpose ships, that operate in local or international waters and with different rules and regulations that apply for each operator no single safety plan will work for all companies. For example, Tidewater's safety management system would not be feasible for a towing operator who owns three small vessels.

Apples & Oranges

You can start formulating your plan by determining the plan components that your operation requires. For larger vessels, the requirement for achieving ISM Safety Management System Certification provides an excellent blueprint for formalizing your safety program. For tow boats and barge operators, the American Waterways Operators' (AWO) Responsible Carrier Program provides an easy to implement safety management plan that has already been tailored for your segment of the industry. If you are not up to speed with the applicable laws, regulations and recommended practices, you may want to start the process by meeting with your attorneys or a safety management consultant to determine where to start.

The requirements for ISM certification and compliance with the AWO's Responsible Carrier Program are similar and require appropriate management, policies, vessel equipment, adequate crew and an audit of the program to determine its effectiveness. According to the ISM Code, each certified Safety Management System must include: a commitment from management, a comprehensive policy manual, a comprehensive procedures manual, audit procedures, a dedicated employee who serves as an ombudsman between the vessel crew and the office staff, a system for identifying problems with implementation and regular management reviews.

Once you have started the process of implementing the safety culture and a workable plan, you are on the road to improving your safety record. At that point, effective implementation will be achieved by continued leadership and the effective management of the plan.

The worst safety mistake that you can make is to have a safety plan and then choose not to implement it or worse, just ignore it. In the event that an accident occurs, the claimant's attorney will request all of the documents related to your safety plan. Having to admit that you didn't have a safety plan is a painful event, but producing a plan that was ignored by either management or the crew may prove to be worse and expose your company to an excessive judgment.

It is important to note that the development of a safety culture and the formulation and implementation of an effective plan takes significant time and resources. This is a project that will absorb significant resources without showing an immediate result. However, if you stick with your program and continue to communicate and manage the plan effectively, it will pay significant dividends for your organization over the long term. These long term benefits include an improved safety record, more satisfied employees, operational savings due to less downtime and an improved bottom line due to reduced insurance and claim expenses.

Mr. DeMarcay is a partner in the law firm of Fowler Rodriguez Valdes-Fauli. His areas of practice include Commercial Litigation, Admiralty, Personal Injury, Transportation, Real Estate, Construction and Corporate Law. Prior to attending law school, Mr. DeMarcay served on the Washington based legislative staff of Congressman Jimmy Hayes. On the WEB: www.frvf-law.com

AIWW Outlook Brightens

Working to Develop an Integrated Maritime Transportation System

By Brad Pickel, Executive Director Atlantic Intracoastal Waterway Association

Pickel

The Atlantic Intracoastal Waterway Association is an advocacy organization for one of the nation's longest water infrastructure projects stretching over 1,100 miles – the Atlantic Intracoastal Waterway (AIWW). Additionally, the AIWW offers a direct connection between three of the nation's Top Ten Ports measured by cargo value that we commonly refer to as 'exit ramps to the world.' In our role as advocates for the maintenance of the AIWW, we are cautiously optimistic about the national discussion revolving around infrastructure investment in the coming year, and the ability for the Administration and Congress to come together to integrate the Nation's maritime system.

In looking to the future, it is important to reflect on the past year and efforts to address waterway maintenance from our federal partners, specifically Congress and the U.S. Army Corps of Engineers (USACE), non-federal sponsors, and the dredging community itself.

In the President's Budget for 2016, the AIWW began the appropriations process with only $7.2 million for the entire waterway. This amount was $6 million less than the final amount appropriated for the waterway in 2015. These funds are not allocated entirely for maintenance dredging as a substantial percentage is spent on the annual operation and maintenance of locks on the waterway.

In response, the AIWA requested that Congress increase funding for USACE to perform Operations & Maintenance (O&M) of Inland Waterways and Small, Remote and Subsistence Navigation, both of which could be used to fund waterway projects. In the final Energy & Water Appropriations bill, Congress increased the amount of federal funding available to these two categories of projects by $45 million and $48 million, respectively, and USACE determined which projects would receive increased funding in their work plan.

In the FY16 USACE work plan, the AIWW received a substantial increase in the amount of funding available for waterway maintenance as the original budgeted amount was increased to over $13.9 million. The additional funding is being used to conduct dredging projects to address substantial shoaling problems in North Carolina and Florida as had been done in 2015 in South Carolina and Florida.

Additionally, we were focused on Section 2008 of the 2014 Water Resources Reform & Development Act (WRRDA 2014). This section required USACE to conduct an Assessment of Operations and Maintenance Needs for the AIWW and the Gulf Intracoastal Waterway and provide a report to Congress. Fortunately, the Congressional delegation along the waterway supported this effort in committee hearings and bi-partisan delegation letters, but no funding was provided and the report was not completed. However, through ongoing coordination with USACE, AIWA was provided the following information:

- ***The anticipated cost to return the project to the***

Credit: AIWA

authorized dimensions because of backlog maintenance

- *The annual cost of O&M of the AIWW assuming the channel has been fully dredged in the past to the authorized length, width and depth*
- *The annual O&M funding requested in the President's FY 2016 Budget by District*
- *The amount of O&M funding received in FY 2016*

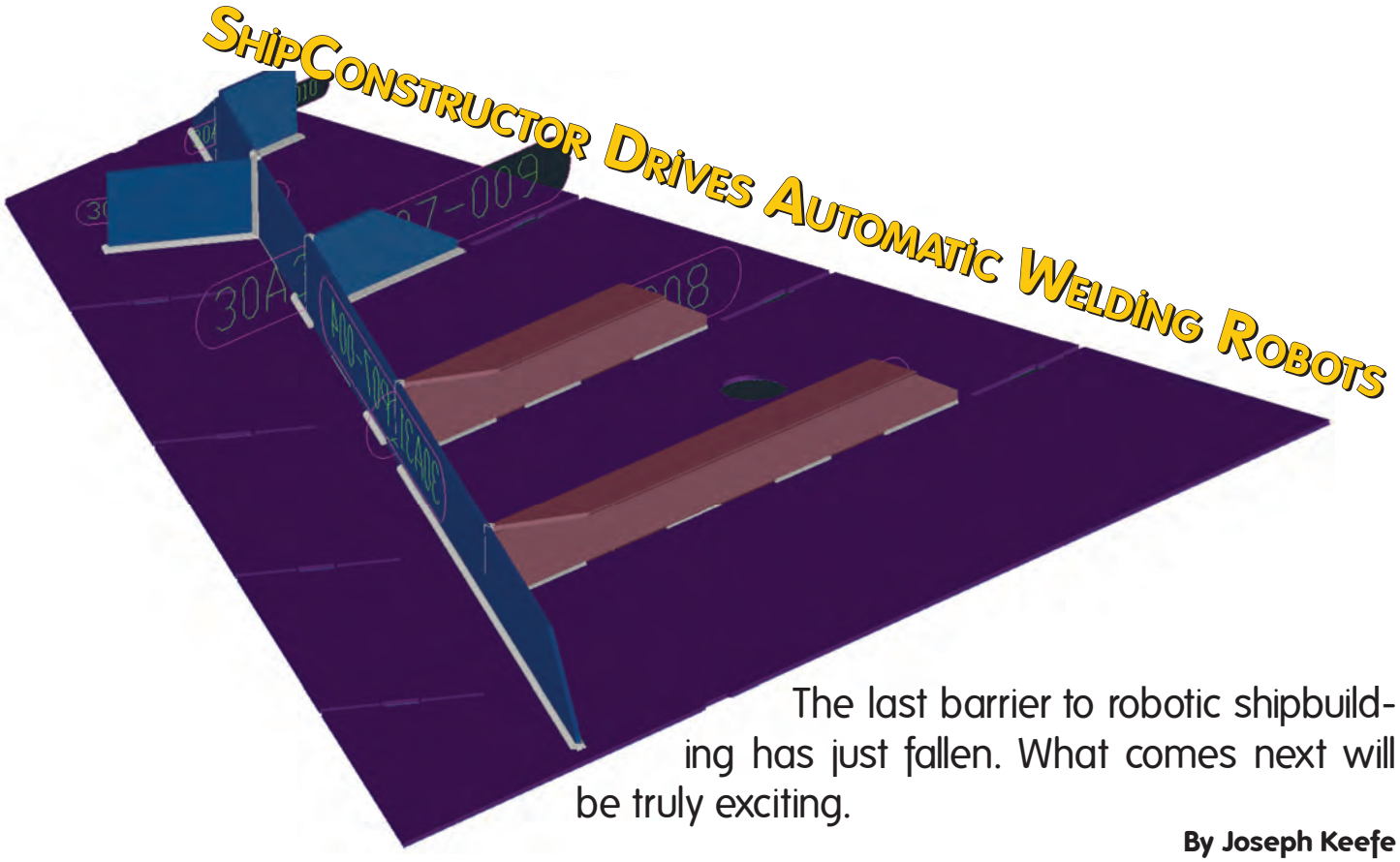
Although a report was not provided, the information showed that the estimated cost to return the project to the authorized dimensions because of backlog maintenance would be about $126 million. Once the waterway is returned to its authorized dimensions, it was estimated to cost less than $50 million in annual maintenance. These estimates do not discriminate between federal and non-federal monies, but are an estimate of overall need for the entire 1,100 miles. We believe that with a concerted federal and non-federal funding effort, the most critical shoaling areas can be addressed and the overall maintenance needs reduced to a number more in-line with the annual maintenance needs.

Why are we cautiously optimistic in 2017? First, we are pleased that President-elect Trump proposed a trillion dollar investment in infrastructure development as part of his platform for election. Water transportation is clearly the most cost-effective and environmentally-sound means of freight movement. If estimates from the U.S. Department of Transportation are correct and freight movement increases by 45% by 2040, it will be incumbent upon us to develop and maintain all possible avenues for moving products in the decades to come. We see the AIWW as an integral piece of the puzzle for the eastern seaboard and the nation.

Secondly, although the amount of AIWW funding included in the President's FY 17 budget is less than the FY16 amounts, Congress provided additional funding for inland waterways and small, remote and subsistence navigation projects in previous years, and both houses of Congress included additional funding in their individual FY17 appropriation bills before the election. These funding categories were included with bi-partisan support and we are looking to increased funding through future USACE work plans as was done in previous years.

Finally, we have a clearer picture of the O&M needs for the AIWW. These estimates provide us a roadmap to pursue additional non-federal partners to supplement federal funding for their section of the waterway while continuing to pursue federal appropriations. This year holds plenty of unknowns regarding federal investments, but we believe we have new opportunities to raise awareness and secure additional funding as we continue to be the Voice of the Waterway.

ShipConstructor Drives Automatic Welding Robots



The last barrier to robotic shipbuilding has just fallen. What comes next will be truly exciting.

By Joseph Keefe

It wasn't too long ago that SSI and Wolf Robotics demonstrated some co-development which automatically drove a fully autonomous welding robot to weld several ship panels. SSI develops Autodesk based solutions for the shipbuilding and offshore industry including ShipConstructor software, an AutoCAD based CAD/CAM product line; and EnterprisePlatform, a tool for sharing product data model information. For its part, Wolf Robotics has been integrating robotic welding and cutting systems since 1978.

The collaboration was part of a National Shipbuilding Research Program (NSRP) Computer Aided Robotics Welding (CAR-W) project with U.S. shipyards. Prominent among those participating shipyards was Bollinger, who today is testing that cutting edge technology, hoping to be up and running by mid-year, as it builds the U.S. Coast Guard's all-important Fast Response Cutters (FRC).

Defining the Objectives, Assembling the Team

According to SSI's R&D Manager Patrick David, the project focused on looking for ways to reduce manpower costs, as well as standardizing and producing better quality welds. He explains, "The big problem for shipbuilding in terms of using robotics is that there is a high degree of product variability. Even though ships of the same class are going to be very similar, the nitty-gritty differences are enough that it wreaks havoc on trying to set up a purely automated manufacturing system/assembly line." And, with those obstacles in mind, SSI, Wolf Robotics and Bollinger Shipyards embarked on the remarkable project. And while this effort, to date, isn't the end of the journey, it likely represents a quantum leap forward in shipbuilding efficiencies on this side of the big pond.

Bollinger Shipyards is a longtime and active participant in the NSRP. This particular project began when Dennis Fanguy, VP of Quality Management Systems at Bollinger Shipyards was contacted by Wolf Robotics in mid-2014 to see if Bollinger would be interested in leading the NSRP CAR-W project. "Bollinger agreed to lead this project and submitted the proposal in September of 2014 and we were then awarded a contract to proceed in June of 2015," explained Fanguy, adding quickly, "The objective of this NSRP project was to close the automation gap between domestic and foreign shipyards by eliminating the core programming bottleneck currently preventing broad industry adoption of robotic welding automation."

The team then set out to develop software algorithms for high impact weld types centered on robot reachabil-

ity, collision avoidance and auto-path generation kinematics that use electronic CAD Model and Welding Process Planning data. A gap analysis of the required changes between Bollinger's current processes and the generic industry CAR-W process map was developed by the team. Today, says Fanguy, "We are developing a roadmap of alignment for other shipyards to follow. Finally, the project will attempt to leverage and help develop an electronic infrastructure that captures critical process knowledge (in electronic data form) related to welding so that it can be electronically leveraged by designers for Design For Robotics (DFR) applications, as well as by process planners and engineers." Unspoken in all of that, it is also true that process data capture and transfer of welder knowledge is a critical risk associated with the aging welding work-force and welder workforce shortage in the shipbuilding industry.

SSI eagerly agreed to participate in the project. That's because, Pat David told ***MarineNews***, "First and foremost, what makes us unique in our own space is that we are an AutoCad based product. There are far more qualified people out there who could utilize this software. Secondly, our costs are much lower overall as a product – more functionality, more capability, delivered to a designer at a lower price point than any of the other options. We're proactive, we have good relationships with the yards and a lot of us used to work in these yards with the people that are still there. We know what they need and why."

Beyond this, says David, SSI tries to be as agnostic as is possible when it comes to data requirements. Dealing with data built in other software would be a small step for the robot to convert that data. He adds, "It's not a huge issue."

But before anyone spent any money, NSRP asked SSI and its collaborative robotic team to clarify a couple of things. One of those things was what kind of return on investment would the shipyard see and how long would that take? David explains, "So, we went to Bollinger to investigate what they were doing with current weld processes so we could understand where we could realize the most savings for them. We asked: what kind of welds to you do, how big, how often, and what kind of manpower does it take to accomplish that? We determined the most common type of weld that would have the most impact against the lowest capital cost to implement for the project. We targeted those types of welds."

Nuts & Bolts: hardly ...

Already up and running and producing real results in Bollinger's, the workflow starts in ShipConstructor by automatically identifying the welds in the ShipConstructor 3D CAD model. The ShipConstructor user then uses an interactive 3D visual drawing to configure the weld properties such as the weld standard and includes weld breaks, weld pitch, etc. The weld information and various other relevant data (e.g. geometry of panel to be welded) is exported to Wolf Robotics via SSI's EnterprisePlatform. The operator on the shop floor reads the files generated in Robot Studio which runs a path planning algorithm that evaluates several collision avoidance scenarios.

The effort was an R&D project for SSI, says David, so the end benefit for his firm is probably a little further down the road than that which Bollinger is now enjoying. But that doesn't mean that SSI isn't happy with what

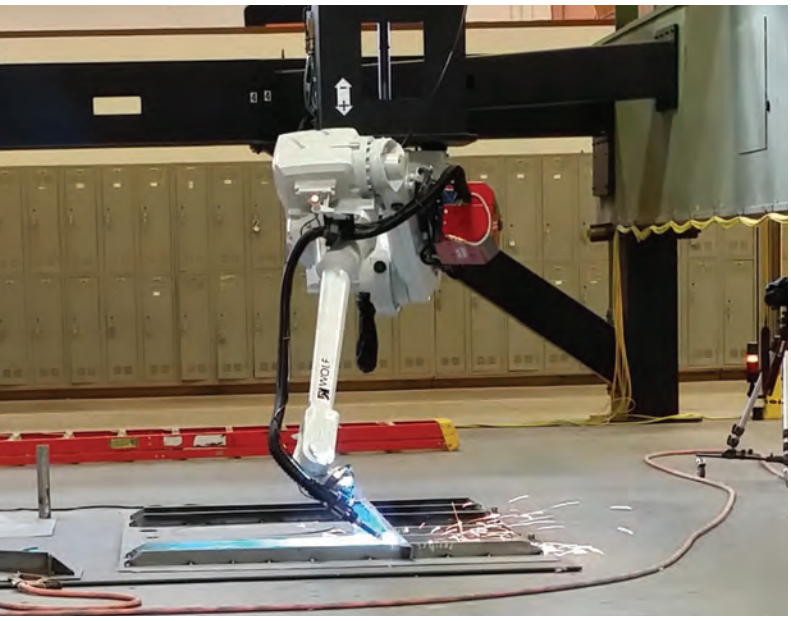
NSRP CAR-W Project ... at a glance

Funding	Project Schedule
Total Amount of the Agreement: $6,242,301	*Three Phases:*
Estimated NSRP ASE Project Funding: $3,498,553	*Phase 0 (April 2015 – Julittle abne 2015)*
Total Estimated Recipient Cost Share: $2,743,748	*Phase I (July 2015 – July 2016)*
Total Funds Obligated (Phase 0, 1, and 2): $3,498,553	*Phase II (August 2016 – August 2017)*

"One of the issues prior to this project when using robots for manufacturing that had high variability was the amount of time that it took to program the robot to do the weld. Our ability to quickly generate that path – that information – is where the savings lie. So those past problems aren't as valid as they once were. A lot of folks are going to reconsider this possibility now. Automated welding is nothing new. But, the barrier to entry has been significantly lowered with and due to this project."

– SSI's R&D Manager Patrick David

they've helped to accomplish. They are. "The accomplishments here are very specific, perhaps not readily apparent to someone who doesn't fully understand the work flow or process of shipbuilding," said David, adding, "It boils down to ShipConstructor outputting the geometric data – the CAD model data that is created with our product, along with the welding information that is also created in our product. You're looking at the assembly that has to be manufactured and you're looking at all the 3D model parts that you've created in your CAD system. Along with just seeing the geometry that is there, we are also able to identify within 'Shipcon' where the welds would have to take place, as well as the type of welds that they should be. That information is brought into the path planner on the wolf side to plan all of the welds that the robot will perform. What's significant here is that any variability on the production side can be repathed very quickly on the robot side and with little manual intervention and in a minimal amount of time. The path planning software is that robust. The information is married into one package, exported into the robot."



Bollinger is the only shipyard testing – and using – this technology today. Bollinger bought the robots, got the overhead gantries into place and rigged all of the equipment. And says SSI's David, the success of the project at Bollinger has raised enough eyebrows at other shipyards that the NSRP project's next phase will involve more than just one robot.

Payback

According to Bollinger's Fanguy, the project team generated ROM (rough order of magnitude) costs of the system concepts and worked with Bollinger to develop ROI and payback estimates using Bollinger's plans for implementation to apply timing to estimated savings and utilizations. An adoption curve was applied to reflect the rate at which CAR-W systems could realistically ramp-up to expected production capacity. This adoption curve was meant to capture the timing for organizational alignment, information flow infrastructure, personnel training, etc. The adoption curve used shows 0% adoption for 2015 during development, 1% in 2016 with prototype systems, 20% in 2017 for CAR-W production applications, and 80% and 100% in 2018 and 2019 respectively.

Fanguy explained the numbers further, telling ***MarineNews***, "From a high-level, a $4.5 million investment in robotic automation per yard ($72 million industry-wide) over a three to seven year period (based on the development pace of Computer Aided Robotics algorithms for high-impact weld types) could elevate the industry to a point where 15% of the welding volume in an average shipyard (estimated at 60 miles) could be completed with robotics. This investment is projected to save the industry in excess of $80 million annually at a return on investment in excess of 100% once the robotic cell or gantry is operating at full capacity by the second year."

To be fair, both return-on-investment and payback period metrics are expected to fluctuate by yard based on the pace at which robotic systems are brought to full production capac-

ity. Additional financial savings not addressed in this business case include benefits derived from reduced welder ergonomic issues. Costs associated with over-welding, including additional man-hours, the increased ship weight, increased hours of material grinding in the case of rejected welds, and other variables were not considered in the calculation.

In the end, says Fanguy, the project team demonstrated core competency with key technologies and the capability to execute a complex, multidisciplinary development roadmap. He added, "Significant progress has been made in Phase 1 toward realization of a flexible, efficient, high-productivity robotic welding solution for the U.S. shipbuilding industry. Opportunities to transfer this technology to additional shipbuilding and, broader defense applications continue to emerge. It is incumbent upon the Navy, shipbuilding industry, and U.S.-based suppliers of these technologies to provide a solution that will continue to place the United States at the forefront of innovation and manufacturing capability."

Looking Back, Forging Ahead

Asked where the technology and robotic welding would provide the most value, Fanguy replied, "We believe that certainly it is better suited for series build, but the intention at Bollinger is to use this technology for part families that may not require a series build contract to exploit the savings from this technology. And, he adds, "Based on the high level of commonality between the part families and weld types among both Bollinger and other Shipyards, it appears that there are significant technology transfer opportunities for technologies outlined in this assessment report."

Pat David also thinks that the robotic approach has legs. In fact, he insists, "One of the issues prior to this project when using robots for manufacturing that had high variability was the amount of time that it took to program the robot to do the weld. Our ability to quickly generate that path – that information – is where the savings lie. So those past problems aren't as valid as they once were. A lot of folks are going to reconsider this possibility now. Automated welding is nothing new. But, the barrier to entry has been significantly lowered with and due to this project."

David continues, "The biggest obstacle, hands down, is the upfront capital investment." And he agrees with Fanguy, saying, "This isn't just limited to series-build hulls – one-off projects can significantly benefit as well. What used to take many hours for the programmer or the robot to generate a path for the welding now is exponentially faster than it used to be." That's good news for boatbuilders. As NSRP continues to lead, and shipyards and other stakeholders collaborate, everyone wins. That reality has never been clearer.

**All images courtesy of SSI*

The Looming sVGP Deadline

The sVGP and recent ballast water treatment system approvals create another headache for small vessel owners. Steve Candito provides a primer.

By Steve Candito

The long delayed Small Vessel General Permit (sVGP) legislation is scheduled to come into force on December 18, 2017. Despite some confusion and inconsistencies on this issue generally, there is currently no serious effort to delay the sVGP requirement. Thus, vessel owners should be preparing now for compliance. Although the deadline is still months away, the complacency that permeates the Vessel General Permit (VGP) issue, the related ballast water management requirements and the proposed Vessel Incidental Discharge Act (VIDA) can easily distract vessel owners from taking timely action.

Those owners that remain vigilant will be able to comply with non-ballast water sVGP requirements without significant difficulty, but those owners that do not act judiciously and rely on the passage of VIDA to alleviate this "headache" may find themselves scrambling to avoid vessel delays and potentially fines and other penalties.

The Long Reach of EPA

The Environmental Protection Agency (EPA) first issued the VGP requirement back in 2008 and subsequently reissued it in 2013. The VGP provides for National Pollutant Discharge Elimination System (NPDES) permit coverage for incidental discharges into waters of the US from commercial (non-military and non-recreational) vessels greater than 79 feet in length and for ballast wa-

Credit: Alexander Maksimenko

ter from commercial vessels of all sizes. The EPA estimates that approximately 61,000 domestically flagged commercial vessels and approximately 8,000 foreign flagged vessels require VGP coverage for such incidental discharges.

For commercial vessels of 79 feet or less, the EPA's sVGP program applies. The EPA issued the sVGP regulations on September 10, 2014. The initial sVGP program was to be effective for five years between December 19, 2014 and December 18, 2019. Similar to VGP, the sVGP program authorizes discharges incidental to the normal operation of commercial vessels less than 79 feet, including commercial fishing vessels. However, the Howard Coble Coast Guard and Maritime Transportation Act of 2014 (Senate bill S.2444, P.L. 113-281), which was enacted after issuance of the 2014 sVGP requirement, included an exemption for all incidental discharges from these "small" vessels, with the exception of ballast water, from having to obtain a Clean Water Act (CWA) sVGP until December 18, 2017.

The 2014 Maritime Transportation Act also exempted commercial fishing vessels of all sizes from having to obtain NPDES permits for those incidental discharges, except ballast water, until December 18, 2017. As a result, until December 18, 2017, sVGP requirements only apply to discharges of ballast water from commercial vessels less than 79 feet, including all commercial fishing vessels. Given this long delay, and similar delays with the additional Ballast Water Treatment (BWT) requirements, many vessel owners deferred taking action on sVGP compliance. Now, with US Coast Guard (USCG) approval of three different BWT systems and uncertainty with the proposed VIDA solution, delaying compliance with the sVGP's December 18, 2017 deadline is no longer an option.

Apples & Oranges

It is important to note that the VGP and sVGP requirements are very different. The EPA recognizes that small commercial vessels are substantially different in how they operate than their larger counterparts, and as such, the sVGP is much shorter and simpler than the VGP. The sVGP specifies best management practices for several broad discharge management categories including fuel management, engine and oil control, solid and liquid waste maintenance, graywater management, fish hold effluent management, and ballast water management.

Vessel discharges eligible for coverage under the sVGP are

sVGP Regulated Discharge Streams

Bilgewater / Oily Water Separator Effluent	Cathodic Protection	Washdown and Runoff
Propeller, Rudder, stern tube Oil-to-Sea Interfaces	Chain Locker Effluent	Anti-fouling hull coatings
Motor Gasoline and Compensating Discharge	Elevator Pit Effluent	Boiler/Economizer Blowdown
Refrigeration and Air Condensate Discharge	Firemain Systems	Gas Turbine Wash Water
Exhaust Gas Scrubber Washwater Discharge	Freshwater Layup	Non-Oily Machinery Wastewater
Seawater Cooling Overboard Discharge	Welldeck Discharges	Underwater Ship Husbandry
Seawater Piping Biofouling Prevention	Ballast Water	Small Boat Engine Wet Exhaust
Aqueous Film Forming Foams (AFFF)	Graywater	Sonar Dome Discharge
Distillation or Reverse Osmosis Brine	Fish Hold Effluent	Graywater Mixed with Sewage

not subject to specific numeric limits, but still must be minimized or eliminated to the extent achievable using control measures including Best Management Practices (BMP) that are technologically available and economically practical and achievable in light of best marine practice. Generally, constituents must not be added to any discharge that is not incidental to the normal operations of a vessel. The term "minimize" is defined by EPA to mean reduce and/or eliminate to the extent achievable using control measures including best management practices that are technologically available and economically practicable and achievable in light of best marine practice. Thus, unlike the ballast water regulations, where until recently there were no technologically approved systems, the sVGP does not require owners to use technology that is not readily available or economically practical.

Unlike the VGP, and of significant benefit to small vessel owners, the sVGP does not contain Notice of Intent (NOI) or Annual Report requirements, but quarterly inspections are required to be conducted and recorded on the Permit Authorization and Record of Inspection (PARI) Form. More specifically, there is no exemption for inland workboats and the new SubChapter M regulations do not directly impact the VGP or sVGP requirements. Accordingly, if inland work boats, towing vessels, ferries, etc. are over 79', they should be complying with VGP now and if they are under 79' will have to comply with sVGP requirements as of December 18, 2017.

BWT and VGP Collide

Although SubChapter M does not have direct bearing on the sVGP requirements, the Coast Guard's recent approval of three different BWT systems does have a significant impact since all vessels must comply with the BWT regulations. These BWT approvals now make compliance with the VGP / sVGP possible for ballast discharges. Up until now, the EPA has not enforced the BWT aspects of the VGP/sVGP because there were no approved systems. Interestingly, this anomaly in the regulations has not been challenged legally, even though the BWT standard itself was the focus of a US Second Circuit legal challenge that was decided in 2015. As a result of that legal decision, the EPA was required to reconsider their use of the USCG standard, which some environmental groups alleged was insufficient.

That 'reconsideration' process is still ongoing at the EPA, but most stakeholders don't expect the Coast Guard standard to be changed. Rather, it is likely the EPA will simply explain their decision to use the USCG standard including that a more stringent standard is not practical given current technology. Further, this tactic will also allow the EPA to align their ongoing review so it dovetails with the revisit of the Coast Guard standards in 2018.

VIDA in the Wings?

In the meantime, and because of the phase in of the BWT regulations, there will be several years where vessels must comply with all aspects of VGP/sVGP other than BWT and the EPA will likely overlook this BWT non-compliance, something which is not a very comfortable situation for vessel owners. A potential solution has been in the works for a long time, but has still not been passed. The proposed VIDA legislation attempts to unify and simplify both the regulatory and compliance aspects of vessel discharges by creating one federal standard for both the Coast Guard and EPA, while also preempting any similar State regulations. Currently, those regulatory duties are divided among many jurisdictions including the States, the Coast Guard and of course, the EPA.

Predictably, VIDA has wide support among vessel owners, labor unions, ports and terminals. Unfortunately, even with this support, it has not made it through Congress yet. Beyond the operational aspects of VIDA, legal uniformity is one of the basic tenets of the law generally and specifically admiralty law so VIDA certainly makes good sense from both a legal and operational perspective. Moreover, the 2015 Second Circuit decision mentioned above heightens the need for Congressional action on VIDA. Although many expect the EPA to simply look to the USCG standard during their reconsideration process, there is a chance that the EPA will go in a different direction increasing the likelihood that new regulations will further exacerbate the misalignment of federal standards and worsen an already untenable situation.

In light of all the above, small vessel owners can't rely on VIDA alleviating this "headache" before the December 18, 2017 sVGA deadline. Thus, they should be taking action now to at least comply with the sVGP's non-ballast water requirements. Although there may be some risk of not complying with the sVGP's ballast water requirements as of December 18, 2017, this risk seems reasonable, given the USCG's formal BWT waiver process.

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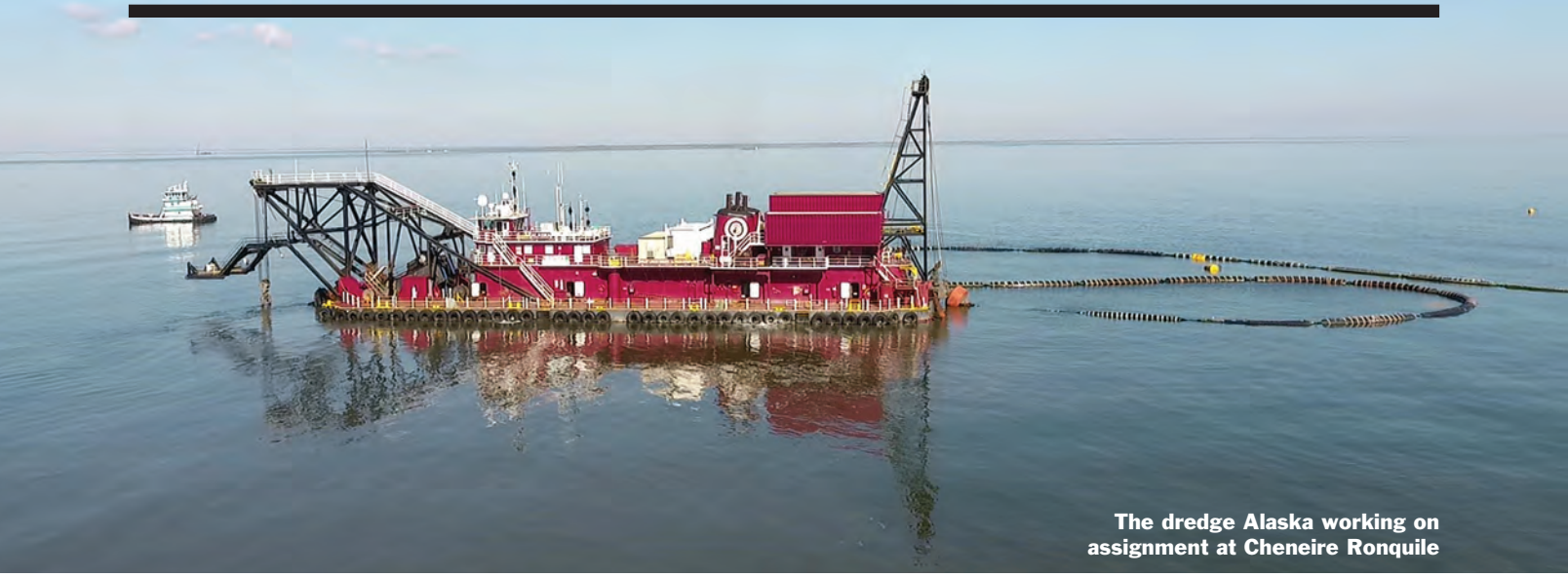
Louisiana relies on dredging for navigation and land restoration

By Susan Buchanan

Credit: Magnolia Dredge



The dredge Alaska working on assignment at Cheneire Ronquile

Credit: GLDD

When maritime stakeholders think about dredging, they typically first conjure up visions of harbor deepening projects to accommodate those giant, post-Panamax boxships. Conversely, inland players hope for maintenance dredging in the heartland to keep the nation's 31,000 cargo barges afloat as they head for the coast. But, there is much more to it than that.

In Louisiana, dredging, of course, keeps Louisiana's waterways open for navigation, provides material for coastal restoration and helps industrial plants with drainage. The biggest projects are sponsored by the U.S. Army Corps of Engineers (USACE) in New Orleans and the state's Coastal Protection and Restoration Authority (CPRA). The state's newest and largest restoration projects will span several decades and could cost $1 billion or more each. In this case, they are badly needed as the shoreline shrinks.

In the last 50 years, Louisiana lost about 34 square miles of marsh and other land annually to the sea. The state has relinquished 2,000 square miles since 1932. Louisiana's dredging industry welcomes, albeit with some reservations, the Water Infrastructure Improvements for the Nation Act, or WIIN, approved by Congress in December, along with a U.S. Army Corps of Engineers' plan, announced in December, to deepen waterways.

WIIN, (Win?)

WIIN, signed into law by President Obama on December 16, facilitates harbor and channel deepening, and expands the fed-state, cost-sharing for navigation-construction projects from 45 to 50 feet deep. That means waterways will be able to accommodate larger vessels. WIIN allows the Army Corps to make improvements to ports, waterways, dams and flood protection. It authorizes 30 new infrastructure projects across the nation. Congress will still have to appropriate funding for most of these projects, however. WIIN also establishes a pilot program for activities that use dredged material. It calls for Harbor Maintenance Tax funding targets to grow by 3 percent annually over each previous year, with a goal of providing all collected HMT revenues for use by the nation's ports and harbors by fiscal 2025.

Sean Duffy, executive director of the Big River Coalition in Metairie, La., said WIIN's navigation and construction provisions will increase opportunities for Louisiana's dredging industry. The Coalition's 100 maritime members rely on the Mississippi River. Separately, a plan released by the Army Corps in December would deepen portions of the Mississippi River navigation channel, including stretches between New Orleans and Baton Rouge, to 50 feet. The channel measures 45 to 47 feet deep now. More dredging would allow Mississippi River ports like New Orleans, Plaquemines and South Louisiana to handle large post-panamax vessels traveling through the expanded Panama Canal.

Coastal Master Plan Projects

Released in January, Louisiana's $50 billion, 50-year 2017 draft Coastal Master Plan includes large-scale marsh creation projects that depend on dredging. The plan is an update of earlier versions in 2012 and 2007.

"These marsh creation projects will be implemented over several decades and in multiple phases," Rudy Simoneaux, manager of CPRA's engineering division, said last month. The projects include $1.8 billion for Belle Pass to Golden Meadow Marsh Creation on 24,800 acres; $680 million for Large Scale Barataria Marsh Creation on over 12,400 acres; and $1 billion for New Orleans East Landbridge Restoration on 21,400 acres.

Sediment being delivered to create marsh near Bayou Dupont, just south of Belle Chasse and Jean Lafitte. All of these Louisiana marsh creation projects have been created with sediment dredged either from the river or from offshore.

Credit: LA Coastal Protection and Restoration Authority

CPRA has awarded all of its recent dredging work on a low-bid basis, consistent with the state's bid laws. "To date, Illinois-based Great Lakes Dredge & Dock and New Jersey-headquartered Weeks Marine have received the most dredging contracts let by CPRA," Simoneaux said. Mississippi River sediment diversions in the master plan are crucial to building and maintaining land, along with protecting levee investments. The agency wants to see sediment diversions constructed as soon as possible.

The state hopes to build the Mid-Barataria Sediment Diversion at mile marker 60.7 on the west side of the Mississippi River, near Myrtle Grove in Plaquemines Parish. The diversion would restore Barataria Basin habitat, including fresh, intermediate and brackish marshes, by re-introducing sediment and nutrients that maintained the area in the past. The project would include dredging of sediment mined from the Mississippi River. "As coastal conditions decline, the state must expand ways to leverage the sediment and land-building power of the river on an even greater scale in future master plans," CPRA said in January.

Regarding the new WIIN legislation, "CPRA views its passage as a very positive thing for ports, the Army Corps and other entities involved in navigation dredging," Simoneaux said. "But how ecosystem restoration fits or applies under this legislation hasn't been determined yet."

As for the Army Corps' plan to deepen parts of the lower Mississippi River channel, including stretches between New Orleans and Baton Rouge, "CPRA is always in favor of innovative dredging opportunities," Simoneaux said. "But given the location of the reaches included in this deepening proposal, along with the locations of dredging projects in our 2017 master plan, it may not be cost-feasible to use dredged material from this deepening for ecosystem restoration." CPRA will continue to examine the possible use of that dredged material.

Army Corps sees that channels are dredged

Keeping the lower Mississippi open for navigation is the Corps' biggest dredging cost in south Louisiana. Over the last five years, dredging from Mile 10 AHP (above Head of Passes) to 22 BHP (below Head of Passes) cost an average $56 million, Army Corps spokesman Rene Poche in New Orleans said last month. "That includes Southwest Pass, which runs from Mile 0 to 22 BHP. A combination of cutterhead dredges and hopper dredges is used there."

Annually, an average 64 percent of the material dredged from Mile 10 AHP to 22 BHP is used beneficially, Poche said. This includes marsh creation, wetlands nourishment, and restoring ridges and barrier islands. The Corps tries to use dredged material beneficially whenever it's cost-effective and meets federal laws, and utilizes it along the banks of South and Southwest Pass, in the Delta National Wildlife Refuge, the Atchafalaya Delta Wildlife Management Area and in the Sabine National Wildlife Refuge.

Besides the Mississippi River, the Corps' other big dredging projects are along the Calcasieu River and Pass in southwest Louisiana, and the Atchafalaya Basin in the south central part of the state. "The Calcasieu Project allows deep-draft, 40-foot access to the Port of Lake Charles and terminals along the Calcasieu River," Poche said. Dredging is done at a number of spots in the Atchafalaya Basin to maintain 12-foot channels for commercial navigation, he said. These include "Three Rivers," where the Red, Atchafalaya and Old Rivers meet in east-central Louisiana; the Old River Lock Forebay, northwest of Baton Rouge; below Bayou Sorrel lock to the south of Baton

"With President Trump encouraging investment in infrastructure, the navigation industry must make it clear that channel maintenance is as important as modernizing highways, bridges and railroads. The economic benefits of Mississippi River projects are strong and will continue to grow as the world population expands."

– Sean Duffy, Executive Director of the Big River Coalition

Rouge in Iberville Parish; and Berwick Bay Harbor on the Lower Atchafalaya River near Morgan City.

The Corps' Calcasieu dredging typically costs between $12 million and $20 million a year, while the Atchafalaya Basin dredge work runs from $3 million to $4 million yearly. As for the WIIN legislation, "it had nothing to do with why we're pursuing deepening of the river, nor with the depth being proposed," Poche said. "Our effort was initiated more than two-and-a-half years ago, whereas WIIN was signed weeks ago," he said in January.

GLDD: Keeping busy with NOAA, CPRA Contracts

At one of the big dredging companies, "we're working on two large, coastal restoration projects in Louisiana now – one for the National Oceanic and Atmospheric Administration, called Cheneire Ronquille, and the other for CPRA called Whiskey Island," said Bill Hanson, vice president at Great Lakes Dredge & Dock. "We've been active in Louisiana since the current generation of coastal projects, including Pelican Island, Bayou Dupont, Scofield Island, Shell East and Shell West. These unique projects showcase the abilities of the nation's coastal engineering community and will serve Louisiana and the Gulf well in battling land loss. These projects have been challenging to implement and very satisfying to see to completion."

GLDD was pleased to see WIIN signed into law. "In addition to many new projects, WIIN covers policy issues that will affect our marketplace for years to come," Hanson said. "Among them are the cost-sharing provisions for maintenance dredging, continued HMTF reform, emphasis on regional sediment management and beneficial use of dredged material."

Magnolia Dredge Replenishes Marshland

In a project completed early last year, Magnolia Dredge & Dock – working as a subcontractor – pumped material from the bottom of Lake Borgne at Alligator Point to assist in recreating nearly 500 acres of marsh, where land had eroded, Magnolia sales manager Michael Johnson in Mandeville, La. said. Healthy marsh absorbs storm surge and floodwater, protecting the coast. The project was under the auspices of a mitigation bank managed by Ecosystem Investment Partners, a private equity firm in Baltimore, Maryland.

Since the early 1980s, the nation's mitigation banks have helped manage natural resources longer term. In south Louisiana, mitigation banking sets standards for land restoration in compliance with a "no net-loss of wetlands" provision in the Clean Water Act. Credits for restoration are sold to developers with projects that might impact ecosystems adversely.

Separately, "other recent work by Magnolia includes industrial-environmental dredging to remove contaminants from waterways, and to restore and clean process ponds for South Louisiana's petrochemical plants and paper mills," Johnson said.

Credit: LA Coastal Protection and Restoration Authority

Potential big WIIN for the Mississippi

WIIN, which includes the Water Resources Development Act of 2016 or WRDA 2016, increases opportunities for the dredging industry. "The most important WRDA 2016 project for our Big River Coalition membership is deepening the Mississippi River ship channel from Baton Rouge to the Gulf to 50 feet," Sean Duffy said. "WRDA 2016 reduces the non-federal, cost-share of channel deepening up to a threshold of 50 feet, from 50-percent federal and 50-percent non-federal to 75-percent federal and 25-percent non-federal. It expedites feasibility studies for three navigation-related projects and makes incremental improvements in Army Corps processes and data transparency, in harbor-maintenance spending targets, and in non-federal options for maintaining navigation channels."

"If Congress provides the authorized funding, and the Corps completes these projects, WRDA 2016 will increase supply-chain transportation and port options and efficiencies," Duffy predicted. Late last year, the Big River Coalition was glad to see the Army Corps' draft report and its Supplemental Environmental Impact Statement on deepening the Mississippi River ship channel, or MRSC, to 50 feet, Duffy said. The Coalition has been engaged with the Corps and its non-federal sponsor--the Louisiana Department of Transportation and Development--on this effort and believes that bringing the MRSC into the neopanamax future is critical. The Coalition will continue to assist the Corps and LDOTD to ensure the channel is deepened.

Equipment Availability Depends on Government Decisions

Nationally, "there weren't always enough hopper dredges in recent years to respond to needs," Duffy said. "But by the end of this year, two new large hoppers will be available. Great Lakes Dredge & Dock will have their new ELLIS ISLAND, the largest hopper dredge in the nation, ready to begin work towards the second quarter of 2017. And Weeks Marine is constructing a large hopper dredge that should be on line by the end of the year."

The navigation and dredging industries depend on federal appropriations, and if increased funding were annually consistent, industry would respond by building new equipment, Duffy said. Navigation would benefit from having better-maintained channels. Meanwhile, the average, per-cubic-yard cost of using cutterhead dredges declined in the last few years because of a perceived abundance of cutterheads, he said.

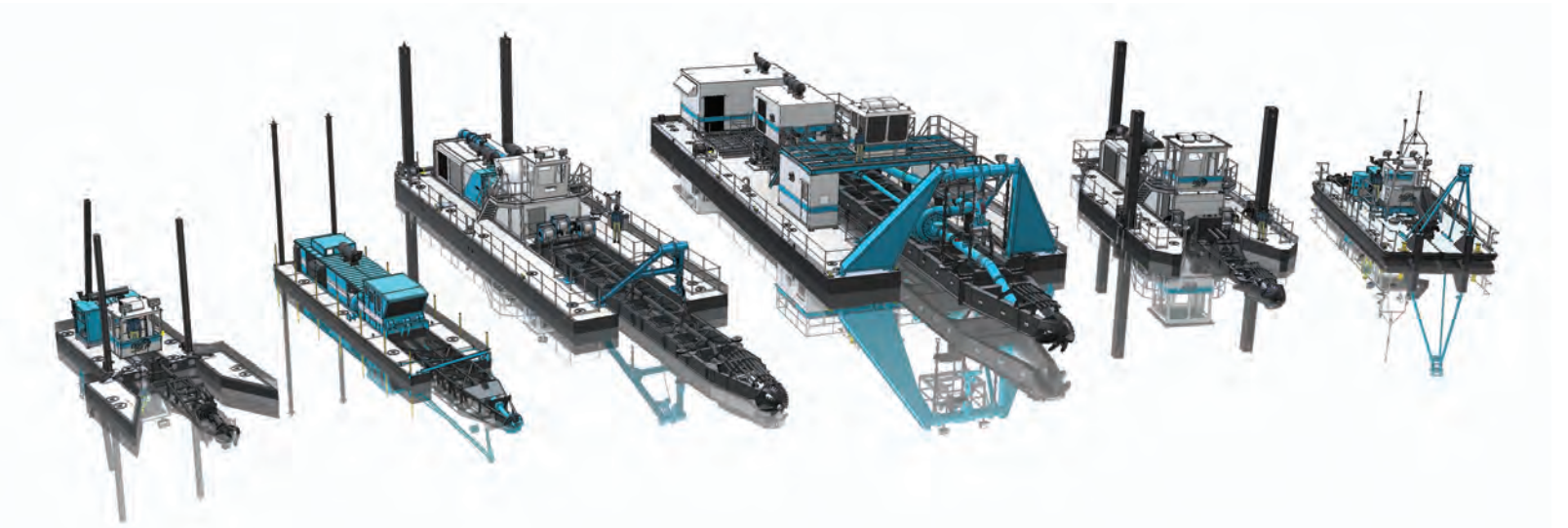
No Time to Lose in Louisiana

Following Hurricanes Katrina and Rita in 2005, "Louisiana has made significant progress in rebuilding barrier islands, creating hundreds of acres of marsh and strengthening levees," CPRA said in January. "We need to do more quickly to protect these investments, billions of dollars in infrastructure, and millions of people who live along our coast."

Sean Duffy was even clearer, "With President Trump encouraging investment in infrastructure, the navigation industry must make it clear that channel maintenance is as important as modernizing highways, bridges and railroads. The economic benefits of Mississippi River projects are strong and will continue to grow as the world population expands."

Dredge Grand Chenier working in Lake Borgne near Alligator Point

Credit: Magnolia Dredge



DSC Dredge **Digs In**

The world of dredging is defined by the vast diversity of each assignment that contractors perform on any given day. Fortunately, DSC's standard line-up of dredge equipment can be modified and customized to meet just about any job that needs doing.

By Joseph Keefe

It wasn't too long ago that (retired) U.S. Coast Guard ADM Jim Loy told me, "If you've seen one port, well, you've seen one port." That now-famous declaration was made in reference to port security in a post-9/11 world, but the quip is as valid now as it was when he said it during his tenure as Commandant of the U.S. Coast Guard. Similarly, it can also be said that if you've seen one dredging operation, well, then you've seen one dredging operation. Port-to-port, coast-to-coast, on inland rivers, Great Lakes, for environmental remediation, during storm restoration operations and everything in between, no two dredging assignments are exactly alike.

From the Bottom Up

No one knows that metric better than DSC Dredge President/CEO Bob Wetta, who weighed in with *MarineNews* in January. In the beginning, it was Thomas J. Wetta, III (father of Bob & Bill Wetta) who was principal in a now dissolved entity named Kenner Marine & Machinery (KMM), incorporated in the early 1970s. In the late 1980s, the company went through a liquidation bankruptcy. Prior to the liquidation, a friend/investor (Bob Dagley) of Thomas Wetta opened a company named Dredging Supply Company. The function of this company was to take over the business model of KMM through hiring a majority of the workforce and by obtaining knowledge of dredge manufacturing through the employees. The verbal agreement was that once the company was up and running, the Wetta family would purchase the company back. An entire article could be written on how all that came about, and how Bob Wetta ended up where he is today.

Dredging Supply would one day end up back under Wetta ownership, a corporation with the name of Dredging Specialties, Inc. Dredging Specialties had minor operations/sales under it from 1992 to 1994, but the majority of revenues came from Dredging Supply Company. Fast forward to 1994, and Dredging Specialties dropped its name and took over the name Dredging Supply Co., Inc. Through merger of several related companies together over those years, DSC Dredge, LLC was officially formed as

the holding company in 2010. Today, DSC Dredge, LLC operates from three major manufacturing facilities located in Reserve, Louisiana; Poplarville, Mississippi; and Greenbush, Michigan.

The DSC Way

Since DSC's inception, the company has delivered more than 500 dredges. Bob Wetta explains further, "Up until about 2005, the majority was domestic sales primarily in the aggregate industry. Shortly after 2005, DSC expanded into many export markets, now totaling over 45 countries. Annual export sales soared as high as 70% in the years since 2010. The export markets vary from environmental dredging to mining with dredges."

Last year alone, DSC had 21 major projects either in production or delivered. But each is as unique as the hundreds that preceded them, and the hundreds that are likely to follow. Wetta says that's no accident. DSC prides itself on providing a 'customized' service for its customers. "DSC has manufactured the deepest sand mining dredge in the western hemisphere, with a dredging depth capability of 200 feet. DSC is just completing an aggregate dredge that will dredge to 155 feet deep. DSC has built the newest dustpan dredge. The list goes on and on, and we typically add 2 to 3 builds like this per year," said Wetta.

Those unique one-of-a-kind newbuildings are important, but Wetta values his repeat business just as much, saying, "DSC prides itself on repeat sales. We also weigh heavily on our existing clients as references and to provide success stories to prospective clients to help us attract new business. One challenge is that our dredges are designed to last +25 years, so sometimes it takes a while for the repeat dredge to come back around. Fortunately, a lot of our clients have also grown their businesses, so we are afforded the opportunity to sell new dredges to them for different projects and or applications."

DSC doesn't just sell equipment. Training is always provided with a dredge sale, and at the same time, field services for additional training, new operator training and for maintenance training. DSC offers classroom-style training at a minimum of twice per year. That classroom-style technical training is offered to anyone in the dredging industry; whether you own a DSC dredge or not.

Repeat Business: Standard Quality

One repeat customer underscores the value of a satisfied customer that also had new challenges. The winter of 2016 was an unusually harsh one for the Santa Cruz Small Craft Harbor in Santa Cruz, CA. The DSC-built dredge

Bob Wetta,
President/CEO
DSC Dredge

A DSC Dredge in Santa Cruz Harbor

Seabright that had served the harbor for 30 years labored to keep up, and frequent breakdowns only compounded the problem. Fortunately for the harbor members and visitors, a new dredge from DSC Dredge, LLC – the Twin Lakes – was scheduled for delivery in June.

The Seabright was at the end of its useful life. Enter the Twin Lakes, commissioned from DSC in April 2015, a custom-built, 16" x 16" dredge with a hull-mounted pump. It features a PLC operating system with color touch-screen controls, Global Positioning System (GPS), electro-proportional hydraulic circuits, high-capacity service water system and an inline direct marine-style transmission for dredge pump gear ratio reduction. A planetary winch provides the swing operation. A magnetic flow meter shows the operator the velocity of the material being moved, providing information on the dredge's efficiency. With two engines – a Caterpillar C32 dredge pump marine diesel engine and a Caterpillar C18 marine diesel-powered electric generator – the dredge complies with EPA and California CARB environmental standards.

Meanwhile, the Seabright is now for sale. That's an impressive run for the DSC dredge; one which is probably not yet over.

Custom Deliveries a Specialty

DSC has always produced 'spec' units out of its Greenbush, MI, facility. Wetta adds, "We have also recently added some 'spec' builds in our business model out of our other two facilities. The spec build dredges range from 8" through 18" discharge sizes." That said; the real strength of DSC has always resided in the ability to give the customer what they want, where they want it and delivering that product on time. For example, the DSC Barracuda Class is really two dredges in one.

The Barracuda dredge features a swinging-ladder design and is easily transportable, making it ideal for navigational, recreational or restorative projects, such as waterway maintenance and lake revitalization. Offering the option

of two front-swing winches, the Barracuda Class is a two-in-one dredge that easily converts from a swing ladder dredge to a conventional dredge without sacrificing portability. Available in either diesel or electric power, discharge sizes range from 10 to 18 inches (250 mm to 450 mm).

Separately, and in another twist to the ever-expanding DSC portfolio, the North Carolina Department of Transportation recently took delivery of a new, fully customized cutter suction dredge, which it christened the Dredge Manteo. The 154-foot state-of-the-art pipeline dredge, designed and built by DSC Dredge will work to keep North Carolina's state-maintained intercoastal ferry channels clear. Because the state of North Carolina anticipated that its ferry routes will see more and more use, it was imperative that the DOT had a more modern dredge capable of dredging more material more quickly than its predecessor.

The Manteo fit the bill nicely. Built to house two eight-person crews, with a full galley, four bunk rooms and two full bathrooms, the dredge also features a 78-foot deckhouse that contains the machinery area, crew quarters and galley. Far more efficient than its predecessor, the 16" x 14" Manteo is capable of dredging a channel to a depth of 30 feet. Spud carriages, which the original dredge did not have, easily move the vessel as it works. From the outset, DSC's designers made several recommendations to improve performance that NCDOT agreed upon. These included increased horsepower of the engine and the diameter of the impeller. This allows it to effectively move more material over a 1.5-mile distance to the discharge point. And, the dredge includes a myriad of other high-tech features, including a GPD dredging system.

Standard Solutions for Specific Situations

Customization is the key for the DSC, but DSC's diversified standard portfolio of dredging solutions can fit just about any need that you might have. For example, the Marlin Class underwater pump mining dredge is designed to meet the needs of deep mining and aggregate deposits by providing a more efficient tool for material excavation. Every Marlin Class dredge is specifically designed to handle a particular deposit—from sand and gravel to industrial minerals—to ensure maximum efficiency. Beyond this, DSC Marlin Class dredges are available in either a diesel- or electric-powered model to meet the customer's specific needs.

Still another DSC Dredge class, the Shark, features modular design for portability. Also offered in diesel or electric power, the DSC Shark Class cutter suction dredge features a conventional dredge-operating configuration with a modular design for ease of transportation. The reliability of the Shark Class cutter suction dredge design typically results in a higher percentage of operational time, and it often exceeds the typical lifespan of other dredges within the same class.

The DSC Badger Class is ideal for smaller dredging jobs where more compact equipment is required due to work area limitations. With a working width of just under 10 feet and an overall length of 54 feet, including the ladder, the Badger can be maneuvered into harder-to-reach waterways, yet still dig to a depth of 20 feet at

a 60-degree down angle on the ladder. The lateral cut achieved at maximum depth is approximately 50 feet. The Badger can be transported on a single truckload. Meeting Tier 3 diesel emissions requirements, a Caterpillar C7 ACERT engine provides 250 horsepower at 2,200 rpm, supported by a 150-gallon fuel tank. Sourced from Metso Minerals, the Thomas Simplicity Dredge Pump is rated for 160 feet Total Dynamic Head (TDH) at 2,500 gallons per minute. The five Rotzler winches are rated at 4,500-pound line pull capacity and are used for swinging the ladder, lifting the spuds and lifting the ladder.

DSC's portable Moray Class dredge is ideal for the current dredging industry trend of pumping low flow rates with higher-percent solids. Well suited for applications where flow rates need to be minimized, such as for pumping into geotubes or retention areas that do not accommodate large water volumes, the Moray is also well suited for shallow waterway maintenance, lake revitalization, aquaculture, environmental clean-up, erosion control and irrigation projects. This dredge was designed to be both highly productive and transportable. With discharge sizes of either 8 inches (203 mm) or 12 inches (305 mm), this model meets most single-truck hauling requirements.

Last but certainly not least, the Wolverine Class dredge is a compact dredge ideal for sand and gravel producers and construction contractors. Functional with just one operator, the Wolverine can dig up to 25 feet below the surface and allows for maximum particle clearance of 6 inches. This tough yet portable design measures 68 feet long and is offered in a 10-inch discharge configuration. The Wolverine also offers single-truck portability.

Bottom Line

Domestic or foreign – DSC is always thinking. "We believe we have been successful because we are known for our high quality and high utilization time for our equipment," Wetta told MarineNews, adding quickly, "We also believe we have been successful because we offer our clients aftermarket services and components from DSC or they can go directly to the open market to buy parts, because we don't privatize other OEM equipment labels. We don't manufacture every component on the dredge so we let our clients know they have options to maintain their equipment and we won't handcuff them into coming back to DSC."

In the end, the only pricing issues DSC faces is the Euro to Dollar exchange rate. Wetta counters that by insisting, "We are not so focused on being the lowest price because we regard quality and a safe product as our primary focus, and that's not always the cheapest option."

Looking Ahead

The dredging business will only be as successful as what the supply chain – bolstered by public-private partnerships – will support. Wetta advises, "We can only hope that major infrastructure projects will be funded to accommodate post-Panamax ships in our US port systems. I believe we are moving in the right direction and I think 2017 will be a critical point to see what the future holds. While the larger dredging contractors will reap many of the benefits for the deep-water port expansions, DSC is in the position to provide equipment for the inland waterways, as well as dredges for coastal restoration projects."

www.dscdredge.com

The DSC Dredge Manteo now working for NCDOT

The Water Resources Development Act of 2016:

Reclaiming Our Transportation Infrastructure

By Jim Romeo

In the United States, transportation infrastructure is the bedrock of our supply chains. Ports and waterways in the United States moved over 2.3 billion tons of goods in 2014. A robust maritime infrastructure to support such ports and waterways helps goods to move freely and aid in more flow of trade and ultimately greater economic stimulus. Port authorities and waterways commissions are always seeking better ways to increase cargo volume and subsequently aid their surrounding states and regions - which all benefit the overall commerce of our nation.

In response to this omnipresent demand, The Water Infrastructure Improvements for the Nation Act (WIIN), comprehensive legislation that includes the Water Resources Development Act of 2016 (WRDA 2016) has made its way through Congress and attends to the need for strong and capable waterways – from channel depths to widths and other needed parameters to accommodate more cargo volume.

Recently enacted by the 114th Congress and signed by President Obama, it authorizes the Army Corps of Engineers to improve navigation and flood management, construct projects to mitigate storm damage and assist local and state governments as well as many other provisions outlined in the text of the legislation.

Strengthening Supply Chains

Strengthening and enhancing supply chains is an expected benefit from WRDA. "Clearly, freight transportation is a major component of supply chain processes and therefore a primary focus of supply chain management," explains Dr. Bruce G. Ferrin, Associate Professor, Haworth College of Business, Western Michigan University, Kalamazoo, Michigan.

"Supply chain designs and strategies follow transportation processes and costs as government funding improves

infrastructure supply chain management strategies will react to the improved infrastructure if that improved infrastructure increases supply chain responsiveness – reduces lead times, and efficiency – reduces costs," says Ferrin. "Since the WRDA 2016 deals directly with funding and procedures for 'water resources development' its provisions should have a direct impact on marine transport."

Ferrin posits that some parts of the act serve to give the Army Corps of Engineers more flexibility in obtaining funding or materials to support water resource development. "Such flexibility likely would reduce the time it takes the Army Corps to begin work on, and finish, approved projects."

Ferrin also notes that other sections of the legislation make it easier for smaller or newer ports and harbors to get access to federal funding. "This could mean more ports will have access to federal funding for development or maintenance," he says. "Such improvements likely would attract better service – more vessel calls, more frequent vessel calls – from marine carriers."

The legislation and the funding formulas it allows, should also aid next-generation Panamax vessels. These vessels may now transit the Panama Canal due to its recent widening. They require a depth of between 45 and 50 feet. Enabling waterways to accommodate such vessels is expected to catalyze trade volume.

New Panamax ships can carry 120,000 DWT and 13,000 twenty-foot equivalent units (TEU), about twice their previous capacity. Such large vessels mean significantly more trade volume to ports who can accommodate them. Accommodating them means suitable capital equipment such as cranes and siding, but also waterway depth.

"In the era of a widening Panama Canal with the rise in post-Panamax ships, the state of our ports is a concern because the shipping industry will expand whether we are ready for it or not," said Representative Mark Sanford, a Congressman whose district includes Charleston, SC and voted in favor of the Act. "This bill will help us accommodate these larger shipping vessels by upgrading our ports, through which 99% of US overseas cargo moves."

Wide Reaching Benefit

WRDA and WIIN are wide reaching. They will benefit a multitude of ports throughout the United States – which will include ones that require a deep draft port as well as others who need other studies and capital projects to commence.

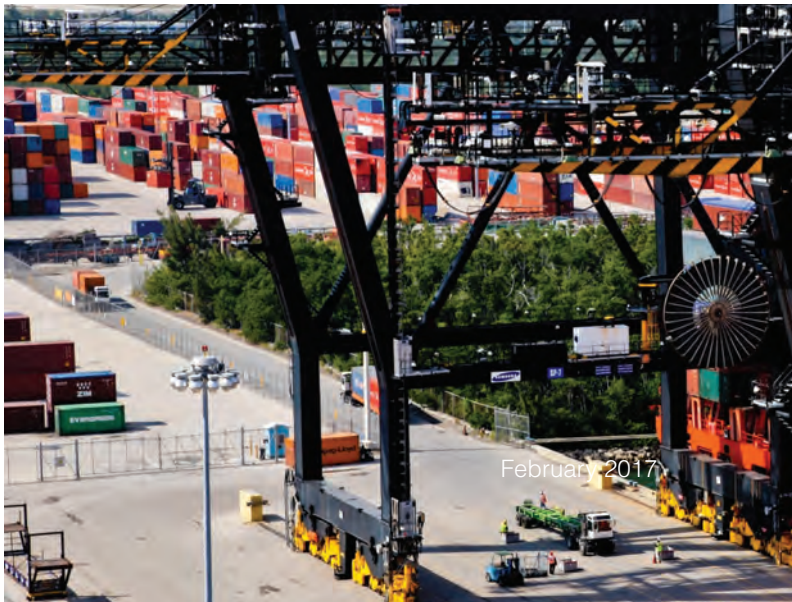
Carl Uchytil, P.E. is the Port Director of Ports and Harbor for Juneau, Alaska. He is quick to point out that Alaska can use the benefit that this legislation is expected to provide. "Alaska is a maritime state with over 33,000 miles of coastline," says Uchytil, adding, "The ability to link communities is crucial to building economically diverse and resilience harbor communities. Recapitalization of aging and inefficient public infrastructure must be prioritize by elected officials and embraced by the business community." More specifically, the role of economic development through infrastructure improvement is greatly needed in Juneau, Alaska, but in many ports throughout the country.

"WIIN will authorize the Army Corps of Engineers to improve navigation and flood management, construct projects to mitigate storm damage and assist local and state governments," he says. "For Alaska, WIIN will require the Corps of Engineers to carry out feasibility study of an Arctic Deep Water port. The US is an Arctic nation because of Alaska, a strategic Arctic port in this state is necessary to remain active & influential in the polar regions. The bill also advances the port and arbor infrastructure needs at St George, Craig, Little Diomede, Elfin Cove and Valdez. Progressing harbor expansion and development plan at these locations will provide economic opportunities in rural Alaska." Many other ports also expect to benefit from WIIN.

Brazos Island Harbor, in Brownsville, Texas also has had plans to expand their waterways. One of their projects would increase the depth of the federal channel to 52 feet for portions of the inner channel and 54 feet for the entrance channel. The total initial project cost is $207.5 million. The federal share will be $117.7 million, and the non-federal share will be $89.8 million. This share allocation, however, could change with the WRDA of 2016 and be more favorable to Brownsville.

For South Carolina's Charleston Harbor, plans are to deepen the entrance channel to 54 feet across the 800-foot width, while reducing the existing stepped 1,000-foot top channel width to 944-feet. Part of the the inner harbor will be deepened from 45 feet to about 52 feet deep.

At Port Everglades in Broward County, Florida, a project would increase the depth of the navigation channel to 48



feet, widen the outer entrance channel to 800 feet, and widen some access channels and turning basins. Initial project costs were estimated at $329 million: $224.5 federal share and $104.5 million, non-federal share. This allocation of cost share could also improve under the WRDA of 2016.

Dredging Promotes Competitive Maritime Capability

Accomplishing the needed maintenance and modernization at ports and harbors is essential to creating a competitive maritime capability. Funding these improvements has relied on a cost-sharing formula for deepening projects, widening projects, extension of funding authorization for donor and energy-transfer ports, and new language to improve the approach of appropriating annual Harbor Maintenance Trust Fund (HMTF) (in 1986 Congress established a user fee known as the HMTF for coastal ports and harbors) revenues until full use of the funds is achieved in 2025.

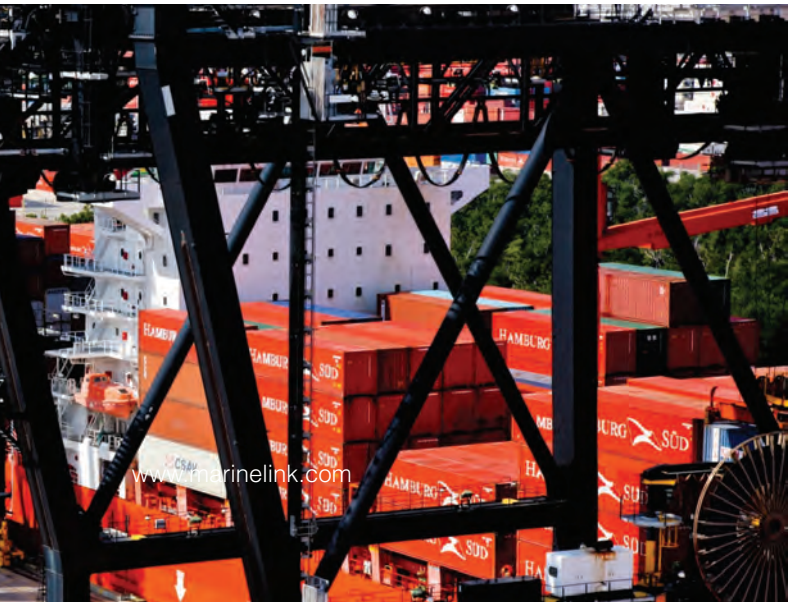
The cost-sharing formulas outlined in the WRRDA would establish 50-feet as the depth where the federal government would cover 75 percent of the dredging cost and local sponsors would pay the balance for deepening projects. For the past thirty years, those projects requiring depths beyond 45 feet were split 50-50. The Water Resources Development Act (WRDA) of 2014 changed this slightly: the cost-share depth expanded to 50 feet from 45 feet – for maintenance dredging. The WRDA of 2016 expands both new construction and maintenance dredging policies to be cost-shared to 50 feet, as many of the next-generation cargo vessels need such depths to transit and operate.

Sean M. Duffy, Sr. as the Executive Director of the Big River Coalition, located in the New Orleans area but the Coalition's membership stretches across the Mississippi River and Tributaries. "WRDA 2016 builds on WRRDA 2014 by authorizing eight new navigation projects and a modification of another navigation project, authorizing six feasibility studies for new navigation projects and feasibility studies for modifications of three other navigation projects," says Duffy. "The most important project for the membership of the Big River Coalition is undoubtedly the one related to deepening the Mississippi River Ship Channel - Baton Rouge to the Gulf of Mexico, to 50 feet."

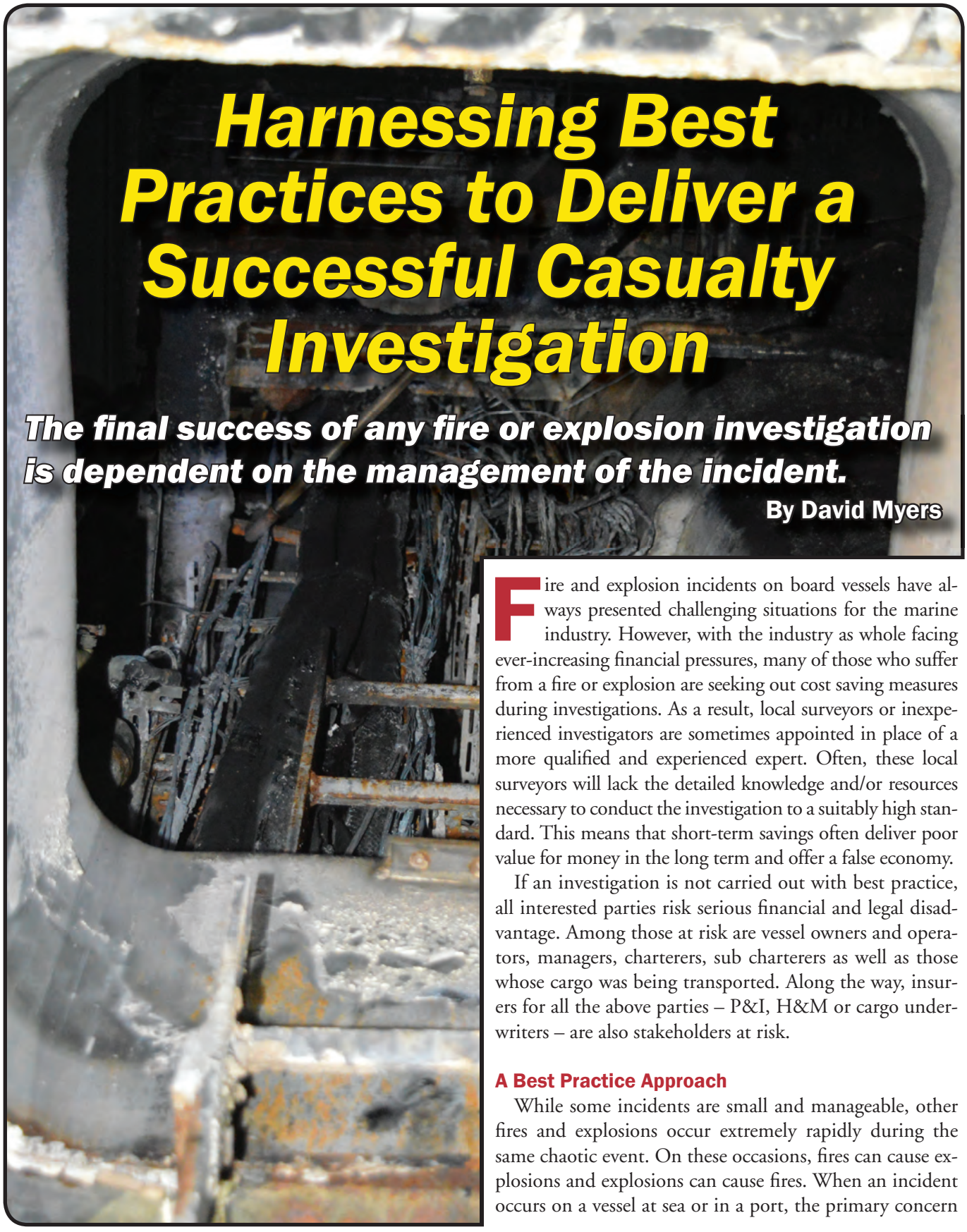
Duffy also notes that cost sharing expedites capital improvements as it provides for more generous government aid. "WRDA 2016 also reduces the non-Federal cost share of the deepening of navigation channels up to a threshold of 50 feet from 50% Federal and 50% non-Federal to 75% Federal and 25% non-Federal," he adds. Dredging at many ports is expected to be the stimulus behind economic expansion that will result when a port is deepened by strengthened. "Inadequate harbor depths restrict the size and loading capacity of vessels that can enter U.S. ports for imports, exports, and domestic trade, including containerized and bulk shipments," says Sean Duffy. "This adds inefficiencies and drives up supply chain costs. At a time when U.S. productivity gains have been shrinking, deepening harbors and maintaining harbors at their constructed depth would improve transportation productivity and U.S. competitiveness. The U.S. Army Corps of Engineers did the last nationwide study on how often our 59 busiest harbors had their fully authorized width and depth in 2009. That study documented that our most important navigation channels had fully-authorized dimensions just 35% of the time. Since the time of that study the HMTF surplus has grown by more than $3 billion."

Duffy caveats this by stating that the needed fiscal resources must follow the act. And, he says, Federal appropriations for navigation projects remain inadequate and tenuous. "We are ready to work with the new Administration and the Congress to build greater funding stability into this system," he says. "The multi-billion-dollar capital improvements to both the Suez and Panama canals leave the U.S. Navigation channels as the controlling factor in water transportation efficiencies through the new norm of global ship sizes. The Federal investments in navigation channel improvements and maintenance are essential in order that the $155 billion in port capital investments over the next 5 years can be realized to keep US goods competitive in the global marketplace."

"Clearly, the time to prepare for the future is upon us," says Duffy, "and the world awaits the United States reinventing, reclaiming and refinancing its transportation infrastructure."



By dredging and deepening waterways, a new generation of Panamax vessels may visit ports, carrying huge volumes of cargo made possible by larger vessels and the widening of the Panama Canal.



Harnessing Best Practices to Deliver a Successful Casualty Investigation

The final success of any fire or explosion investigation is dependent on the management of the incident.

By David Myers

Fire and explosion incidents on board vessels have always presented challenging situations for the marine industry. However, with the industry as whole facing ever-increasing financial pressures, many of those who suffer from a fire or explosion are seeking out cost saving measures during investigations. As a result, local surveyors or inexperienced investigators are sometimes appointed in place of a more qualified and experienced expert. Often, these local surveyors will lack the detailed knowledge and/or resources necessary to conduct the investigation to a suitably high standard. This means that short-term savings often deliver poor value for money in the long term and offer a false economy.

If an investigation is not carried out with best practice, all interested parties risk serious financial and legal disadvantage. Among those at risk are vessel owners and operators, managers, charterers, sub charterers as well as those whose cargo was being transported. Along the way, insurers for all the above parties – P&I, H&M or cargo underwriters – are also stakeholders at risk.

A Best Practice Approach

While some incidents are small and manageable, other fires and explosions occur extremely rapidly during the same chaotic event. On these occasions, fires can cause explosions and explosions can cause fires. When an incident occurs on a vessel at sea or in a port, the primary concern

A void within a stow of containers in a hold as the result of structural failure of a unit lower in the stack.

must be to ensure the safety of the crew and others on board, extinguish the fire and minimize the damage to the vessel and the cargo. However, steps that are taken after safety is assured are also vital, and often mishandled.

A crucial decision to be made as soon as the incident has been stabilized is to decide which experts will be needed on the ground. The correct selection is essential in order to determine the chronology of events at the earliest possible stage in the investigation. If this is established correctly, then the investigation will set off on the right path. During this initial response, a properly equipped, trained and experienced investigator or team of investigators with a keen eye for detail should be mobilized. They should correctly identify, evaluate, collect, process and analyze evidence in a timely manner, as well as managing the scene and all individuals in attendance.

Fires and explosions are not simple matters; they can occur within very complex systems on board a vessel. Investigators working to determine the cause of an incident can benefit significantly from the support of a highly skilled and qualified multi-disciplinary team. Ship fires and explosions may require the expertise of, for example, marine engineers, metallurgists, fuel chemists, naval architects and cargo scientists,

as well as, of course, fire and explosion investigation expertise.

In addition to this multi-disciplinary team of experts, there may also be other experts, surveyors and personnel representing various interested parties and authorities attending the scene. This all needs to be managed effectively to ensure the scene is not compromised and only appropriate and accurate information is provided to other attending interested parties.

Complex Fire and Explosion Scenarios

Many fires and explosions on board ships occur within the cargo spaces during carriage of bulk or containerised cargoes, either as a result of the hazardous nature of the cargo itself (e.g. bulk DRI, bulk coal or containerized calcium hypochlorite) or because of operations and equipment associated with cargo carriage (e.g. fumigant explosions/fire or fires caused by buried cargo lights). In this instance, a fire expert with a working knowledge of cargo matters should draw on the expertise of a cargo scientist who can ensure the investigation reaches a timely and successful conclusion.

In another scenario, if a fire occurs in an engine room, a fire investigator can examine the scene and determine the seat of the fire, source of the fuel, ignition source and map the fire development, growth and spread. However, most engine room fires are a consequence of some machinery or operation failure so to understand how the affected systems operate, and why a machinery malfunction or human error may have occurred to cause the fire or explosion, the fire expert will need the support of a marine engineer in the first place. Hence, the forensic investigation into the root cause of many engine room fires often evolves solely into an engineering exercise. Other resources may also need to be brought to bear, such as metallurgy, fuel chemistry, etc.

Often the actions of the crew in fire-fighting operations need to be investigated. This requires the fire investigator to have both interviewing skills and the ability to gain a rapid and full understanding of the ship's fire and safety equipment, aided by the input of a marine engineer.

Fire damage to the floor of a container as seen during discharge.

The Cost of Poor Evidence

In addition to assembling the right investigation team, meticulous and painstaking collection, examination, preservation and assessment of evidence provides the highest likelihood of ultimately explaining the cause of a fire or explosion incident. This best practice approach will help prevent the change or loss of invaluable evidence, something that can be difficult, or even impossible, to rectify at a later date. This, in turn, can have a significant impact on the outcome of the investigation. For example, if an investigator does not identify critical evidence, or fails to collect evidence appropriately, their investigation may not add probative value if a case proceeds to litigation.

As legal proceedings are likely to begin months, or even years after the event, the opportunity to collect additional evidence has often passed before errors in an investigation are discovered. In addition to this, the collection of inaccurate or inconclusive evidence may necessitate a new expert to review the investigation. These costs will be in addition to the costs associated with appointing the surveyor or inexperienced investigator who was not ultimately able to provide the service required by the client or during legal proceedings.

Reducing Long-Term Costs

Although some owners and operators may be reluctant to commit to a perceived higher initial cost, appointing a qualified, recognized and experienced fire investigator or investigation team from the outset is likely to offer significantly better value for money in the long term. The collection, preservation, and analysis of all necessary evidence, managing all parties in attendance at an incident, and presenting evidence clearly and accurately in court is essential to streamline the investigation process and therefore minimise long term costs. A qualified, experienced and multi-disciplinary team is likely to be the quickest route to a successful result.

***David Myers** is part of Brookes Bell's fire and investigation team, and has attended and managed and investigated fire scenes in a wide variety of environments, including those occurring within and outside the marine industry.*

Harken's TR31 Tight Radius rail and trolley system

Being safe on board any workboat has never been easier. That's because when the Sabine Pilots in Port Arthur, Texas took delivery of their all new all-aluminum pilot boat, the Port Arthur, in May of last year, the vessel came with all the bells and whistles that operators have come to expect from tonnage produced by Gladding-Hearn Shipbuilding in Somerset, MA. For its part, the Gladding-Hearn name has over time become synonymous with cutting edge pilot boats, and the Port Arthur was no different. In this case, though – and with the blessing of Gladding-Hearn President Peter Duclos – it also came with a Harken TR31 Tight Radius rail and trolley system.

The deep-V hull vessel designed by C. Raymond Hunt Associates is a Chesapeake class pilot boat, measuring 53.6 feet overall, with a 17.8-foot beam and a 4.8-foot draft. It is also the first U.S.-based commercial vessel to have the innovative safety device from Harken on board. The Sabine Pilots couldn't be happier.

Captain Andrew Guidry, a 12-year veteran of the Sabine Pilots, told ***MarineNews***, that the TR31 system, running port to starboard on the boat, "gives us a sense of confidence when on deck." With just one boat with the system installed, Guidry said in January, "We're look at doing more of this and certainly, we won't build another boat without it." Beyond that, he added, "We'll also consider it for retrofit on our other boat during next yards period."

Tethered: Never Bound

The Tight Radius rail and trolley system is designed to work as an adjustable anchorage point for fall restraint on marine vessels. At the same time, Harken Industrial's TR31 Tight Radius rail and trolley system prevents the binding that bothers deck crew most about safety tethers. Inside the compact aluminum trolley, four anti-friction rollers engage both sides of the rail, smoothly and securely following elevation changes and rail radius contours as tight as 200 mm. Crew never have to unhook, but always remain safely tethered.

The Harken TR31 continuous rail and trolley system allows a crew member, fully-harnessed and securely tethered to the trolley, to move freely along the rail with fall restraint security during inspection and maintenance, or when assisting in pilot transfer. Both rail and trolley are fabricated of high-strength, marine-grade 6061-T6 aluminum, a material proven to withstand the harshest environments on the planet. An optional brake trolley with manual screwpin keeps the tether trolley immobile when not in use.

The compact trolley fits neatly into narrow decks and small work spaces. It features Delrin rollers for smooth, uninterrupted movement for the rail's full length. The TR31 has been tested to 1200 kg (2645 lb) -- 2 x MCA requirements. The Harken Tight Radius Rail and Trolley system can be either surface or stanchion mounted and is easy to install at initial build or as a retrofit. Trolleys require no lubrication. Rails are composed of straight and curved sections that change direction. 200 mm radiused sections are standard. Straight track can be bent to 350 mm or greater. The result is uninterrupted, secure travel around the deck. If a fall load is applied, the trolley will stop free rolling to provide fall restraint protection. Sabine's Guidry says simply, "We couldn't ask for a better system."

The TR31 at a Glance ...

Trolley design	Rail design	Delrin rollers
Strong: tested to 2645 LB	Vertical & horizontal operating planes	No lubrication required
Compact: minimum intrusion	1.3 m unsupported span	Low friction
Multidirectional load bearing	High-strength, marine grade aluminum	Smooth movement
Anodized: corrosion resistant	Countersunk M10 fasteners/flush fitting	Roller fully supported on both ends

EDITORIAL CALENDAR 2017

JANUARY

Ad Close: Dec 15

Passenger Vessels & Ferries

Market: Training & Education
Technical: Thrusters & Inland Propulsion
Product: Interior Design & HVAC
SPECIAL REPORT: Ballast Water Treatment
REGIONAL FOCUS: US WEST COAST

PVA Maritrends,
Jan. 29-Feb. 1, Seattle, WA
ASNE DAY, Feb 14-16, Crystal City, VA

FEBRUARY

Ad Close: Jan 17

Dredging & Marine Construction

Market: U.S. Coast Guard
Technical: Naval Architecture
Product: Fire & Safety Equipment
SPECIAL REPORT: VGP Compliance

Inland Waterways Conference,
March 7-8, Cincinnati

MARCH

Ad Close: Feb 16

Pushboats, Tugs & Assist Vessels

Market: Management & Navigation Software
Technical: Marine **Coatings/Corrosion Control**
Product: Workboat Engines
SPECIAL REPORT: Hybrid Workboat Propulsion

CMA Shipping 2017 ,
Mar 20-22, Stamford, CT
NACE Corrosion,
Mar 26-30, New Orleans, LA
Commercial Marine Expo,
Apr 26-27, New Bedford, MA

APRIL

Ad Close: Mar 16

Boatbuilding: Construction & Repair

Market: Cranes & Deck Machinery
Technical: Workboat Communications
Product: Electronics & Navigation Equipment
SPECIAL REPORT: Inland Port Development

Inland Marine Expo, May 22-24, St. Louis, MO
Tugnology, May 23-24, Rotterdam
OTC, May 2-5, Houston, TX
Electric & Hybrid Marine World Expo
June 6-8, Amsterdam, NL

MAY

Ad Close: Apr 14

Inland Waterways

Market: Barge Building & Outfitting
Technical: OSV & Offshore Trends
Product: Cordage, Wire ropes & Rigging
SPECIAL REPORT: Subchapter M Towboat Rules

SeaWork,
June 13-15, Southampton, UK
MegaRust, June

JUNE

Ad Close: May 18

Combat & Patrol Craft Annual

Market: Shortsea Shipping
Technical: Lubricants, Fuels & Additives
Product: Pollution Prevention & Response
SPECIAL REPORT: Shipyard Exports

JULY

Ad Close: Jun 16

Propulsion Technology

Market: ATB's
Technical: Safety & Fire Prevention
Product: Shafts, Seals & Bearings
SPECIAL REPORT: Workboat Repair

AUGUST

Ad Close: Jul 14

MN 100 Market Leaders

Market: Boatbuilders
Technical: Marine Operators
Product: Water Treatment & Technology

SEPTEMBER

Ad Close: Aug 17

Offshore Annual

Market: Cargo Handling Equipment
Technical: Push Boats & Barges
Product: Deck Machinery & Cranes
SPECIAL REPORT: Regulatory Outlook

SNAME Convention
Oct 23-28, Houston, TX
Clean Gulf
Nov, Houston, TX

OCTOBER

Ad Close: Sep 15

Salvage & Spill Response

Market: Multi-Mission Workboats
Technical: Arctic Operations
Product: CADCAM Software
SPECIAL REPORT: Simulation Tech & Trends

NOVEMBER

Ad Close: Oct 16

Workboat Annual

Market: Outfitting Today's Workboat
Technical: Pumps, Pipes & Valves
Product: Deck Machinery
SPECIAL REPORT: The Marine Fuel Debate

Workboat Show
Nov, New Orleans, LA

DECEMBER

Ad Close: Nov 17

Innovative Products & Boats – 2017

Market: Fire, Patrol & Escort Craft
Technical: Emissions Compliance
Product: Pumps, Pipes & Valves
SPECIAL REPORT: Top 10 Stories for 2017

The publisher reserves the right to update this editorial calendar. All planned features are subject to change in light of industry developments.

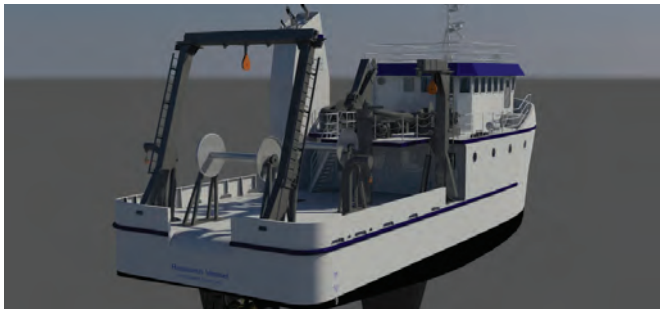
Dragflow Wins Four Custom Dredger Contracts

The last quarter of the 2016 has been a busy time for DRAGFLOW technical and manufacturing teams.

A contract for five (5) dredgers – model DRH300E23 – was received for sand and gravel extraction in Middle East. The dredgers are equipped with a DRAGFLOW Hydraulic pump model HY300 and a CAT C13 engine. They will operate at minus 40m depth for sand extraction. The material is delivered at 1 km distance, with a 350mm hose. A second contract has been signed with a large company, who selected a DRAGFLOW Remote Controlled Dredge model DRP120, equipped with a DRAGFLOW electric pump EL1204, with 2 electric excavators EXEL20, to dredge a settlement pond, fed by the aggregates washing plant. The dredge is also equipped with a high-pressure water jet-ring system to dredge the mud also when the water level is at a minimum. Separately, one of the world's largest mining companies ordered a DRAGFLOW Dredge DRH85/160E22 for an iron mine in Brazil. The iron ore, mixed with water, is pumped from the mine to the shore for more than 500 km through a "Mineral Duct" (mineral duct pipeline). That dredge can be controlled by one operator inside the control cabin or directly from the shore through a wireless joystick. Finally, DRAGFLOW just delivered two Remote Controlled Dredgers model DRP60 to a phosphate mining company in Morocco. The dredgers have a capacity of 400m3/hour as well as a water jet system to help break the settled material and increase the overall efficiency of the project.

JMS Designed Research Vessel for VIMS

Virginia Institute of Marine Science of Gloucester Point, VA (www.VIMS.edu) awarded a contract to Meridien Maritime Reparation of Matane, Quebec (www.Meridien.cc) to construct a 93-foot research vessel. JMS Naval Architects of Mystic, CT (JMSnet.com) designed the research vessel to replace VIMS's current vessel, the R/V Bay Eagle. The primary mission of the Institute's fleet is to provide inshore and offshore work platforms for the support of fisheries related oceanographic research projects. The new vessel will be capable of conducting fisheries assessments of greater capacity, in deeper waters and with a larger science complement than the Bay Eagle. In addition, the new vessel will greatly expand VIMS's capability to perform general oceanographic research in the Chesapeake Bay and the mid-Atlantic near coastal waters. The state-of-the-art research vessel offers enormous capability in a small package that is also economic to build and operate. JMS designed the vessel to operate as an uninspected research vessel with an ABS Loadline.



Gladding-Hearn Delivers Fourth Circle Line Sightseeing Vessel

Gladding-Hearn Shipbuilding, Duclos Corporation, has delivered the first of three new sightseeing vessels for Circle Line Sightseeing Cruises, Inc., in New York City. This follows the shipyard's delivery of three sister ships to the company in 2009. The new vessels will offer guests an enhanced sightseeing experience on every level. Notably, visitors will enjoy upgrades in classes of service and the introduction of a variety of new and innovative experiences, including improvements in content and entertainment options, viewing sight lines, as well as enhanced food and beverage selections.

Like the earlier vessels, the new 600-passenger all-steel vessel, designed by DeJong and Lebet, N.A., in Jacksonville, Fla., measures 165 feet in length and features a 34-foot beam.

Metal Shark Expands International Reach with Latin American, Caribbean Deliveries

Louisiana-based boatbuilder Metal Shark announced several new contracts with Latin American and Caribbean operators, further expanding the company's presence in the region. At a recent ceremony in San Juan, the Puerto Rico Police Department (PRPD) officially commissioned its first three Metal Shark 36-foot Fearless-class center console patrol boats. The welded-aluminum offshore center console vessels have been designed to operate at speed in the large ocean swells prevalent off the Puerto Rican coastline. Featuring high performance ventilated stepped-bottom running surfaces and powered by triple 300-horsepower Mercury Verado engines, the PRPD's new patrol boats achieve speeds up to 55 knots. Additional vessels for the PRPD are currently in production at Metal Shark's Jeanerette, Louisiana production facility. Metal Shark has also announced the Colombian National Police (CNP) as a new customer. After working closely with the agency through an extensive standardization process earlier this year, Metal Shark recently delivered the CNP its first new 33-foot Relentless-class patrol boat. Special features of this welded aluminum center console vessel include a urethane-sheathed closed-cell foam Wing collar, Shockwave S2-Corbin high-backed shock-mitigating seating for five, and additional fold-away crew seating in the bow. The highly maneuverable patrol craft is powered by twin 300-horsepower Evinrude E-TEC G2 engines, which propel it to speeds in excess of 50 knots. In addition, Metal Shark announced that it has been awarded a contract to produce twelve 38-foot Defiant-class pilothouse patrol boats for the Dutch Caribbean Coast Guard. The production of these vessels will begin in early 2017, with deliveries commencing later in the year.

Gulf Island Shipyard Launches Hornbeck MPSV

Gulf Island Shipyards recently launched the M/V HOS Warhorse at their Jennings, LA facility.

The HOS Warhorse is 365 feet long and will be outfitted with two (2) large, heave-compensated cranes, 2 x ROV's, large moonpool, accommodations for 102 individuals, and includes various ABS Class notations. The vessel will be certified for worldwide operations. The HOS Warhorse has been relocated to Gulf Island Shipyard's Houma location for final outfitting, testing, commissioning and delivery, and is scheduled for delivery during the first quarter of 2018. This is the first of a two vessel contract for Hornbeck.

Last Marquette Z-drive towboat from Master Marine

In December, Marquette Transportation Co. took delivery of a new 2,000-hp Z-drive towboat from Master Marine of Bayou La Batre, Alabama. The St. Matthias was designed by Entech Designs, La. for Marquette's river division, based in Paducah, KY. The delivery caps a highly successful 11 towboat order for this client. This vessel will also have the increased crew capacity of 9 personnel in 5 staterooms with 3 ½ bathrooms. A celebration was held in Bayou LaBatre on December 15, to acknowledge the completion of this contract with Marquette.

The steel-hulled St. Matthias at a glance:

Engines: (2) Caterpillar C32 Tier 3	Total HP: 2,000	Running Speed: 10 knots
Z-Drives: ZF AT 5111WM-FP	Depth: 11 feet	Deck Winches: Patterson 40-ton
Propellers: (65") 4-bladed in nozzles	Loaded Draft: 8 Feet	Fuel Oil: 24,000 gallons
Generators: John Deere 045AFM85 Tier 3	LOA: 78 feet	Potable Water: 6,550 gallons
Rubber Bumpers: Schuyler Companies	Beam: 34 feet	Ballast Capacity: 17,560 gallons

DAMEN'S ALL NEW MARINE AGGREGATE DREDGER

Damen Shipyards Group recently unveiled a new line of Trailing Suction Hopper Dredgers (TSHD). The new product range, comprising of the Marine Aggregate Dredger (MAD) 4000 and 5600 vessels, was introduced in response to extensive market research and customer consultation. The MAD vessels are potentially important to an aggregate industry that, today, faces rising demand and an aging fleet. Designed in collaboration with Maritime Design and Engineering Services (MD&ES), the MAD 4000 and 5600 are welcome additions to Damen's Trailing Suction Hopper Dredging portfolio. For offshore aggregate operations, the new vessels will be able to work in North Sea conditions up to depths of -60 meters. These capabilities allow operators to mine sand and gravel in deeper waters, farther from shore than preceding models.

Damen invested considerably in research and development for the new MAD vessels, having observed an increase in demand for civil construction supplies deriving from an overall improving economy. The development aims at offering industry advanced technology, well suited to existing ports and delivering more uptime at sea. Specifically, Damen tailored the technical specifications of the designs in line with the port infrastructure in the region in which the dredgers will operate. Beyond this, close attention was paid to seakeeping behavior in order to ensure the vessels can operate comfortably and safely, even in harsh weather conditions.

Notably, and unlike traditional dredgers, the bow shape of the MAD vessels allows them to operate in adverse weather conditions. The shape – like many other efforts from this builder – is based on a proven Damen design applied to renowned vessels such as the Damen Offshore Carrier (DOC) and Platform Supply Vessel (PSV). In addition to improved seakeeping behavior, the bow shape also protects the sand and gravel cargo from green water ingress.

The MAD vessels have been developed with tomorrow in mind, featuring Tier III engines and, requiring no ballast water, fully compliant with the latest IMO regulations. That the design also takes into account the possible future requirement for advanced automation. Close attention has also been paid to incorporating the most robust equipment for operations in harsh environments. A submerged, wear-resistant Damen dredge pump facilitates the loading of sand and gravel aboard the vessel. Once onboard, the aggregate then passes through the heavy-duty dredgers' screening towers, where giant sieves allow for a better assessment and classification of the mined material. Following this, it is stored and de-watered in the vessel's hopper – with a capacity of either 4,000 or 5,600 m3 – hence the categorization of the two types of MAD. The operation is supported by state-of-the-art, optimized instrumentation, offering feedback throughout the entire process.

Upon arrival to port, the vessels' fully automated clamshell system unloads the material onto a conveyer belt. The system conceived of by the design is a flexible one, suitable for use in varying locations. According to Damen, the vessel design allows users to do almost everything within the broad dredging mission. Operators can go out, get the material, classify it, dry it and deliver it to location. Damen bills the vessel as the first standardized design in the world with such a scope.

Like all Damen 'stock' hulls, the standardized design is also versatile and takes into account the need for customization and multi-role functionality. Myriad options exist in order to cater to differing client needs. The vessel can be supplied with bottom doors if required – which will offer additional versatility in case it is required to perform differing operations. It can also receive spud poles, for example. And, should the client wish to scale up at any point, the MAD 4,000 can easily be converted into a MAD 5,600 with a simple section addition. **www.damen.com**


Wyatt


Berger


Uhler


Duffield


Moyer


Paul


Verhoeven

Portland Executive Director Wyatt to Retire

Port of Portland Executive Director **Bill Wyatt** will retire on June 30, 2017. Wyatt was selected to lead the Port in 2001 and he began work just weeks after the September 11 attacks. In addition to the many changes at the airport those events generated, Wyatt's Port career has included some major milestones in the organization's history.

Great Lakes Announces Management, Board Transitions

Great Lakes Dredge & Dock Corporation (GLDD) announced that the Board of Directors accelerated the date of retirement of CEO, **Jonathan W. Berger**, to January 3, 2017. The Board has also accepted his resignation from the Board of Directors. Berger's retirement follows the December 27, 2016 announcement of the appointment of **Lasse Petterson** as CEO. **Robert B. Uhler**, P.E., Chairman, commented, "During the more than six years that Jon led Great Lakes, the Company successfully executed a large number of complicated domestic and international dredging contracts. "

OSVDPA Announces 2017 TAC Representatives

The Offshore Service Vessel Dynamic Positioning Authority (OSVDPA) announced the election of Individual and Corporate Membership Representatives to its Technical Advisory Council (TAC). Captain **Robert Moyer** (Individual) and London Offshore Consultants (LOC) (Corporate), represented by **Stuart Duffield**, were elected to represent their respective Membership communities on the TAC for the 2017 calendar year. Moyer has been a dynamic positioning operator (DPO) since 2004 and currently holds an OSVDPA Class A DPO Certificate, Nautical Institute Unlimited DPO Certificate, and is also an OSVDPA Qualified on Board Assessor (QOBA). Duffield has been operating out of LOC's Houston office since 2009 and serving in the capacity of Vice President, Marine Assurance since 2013. He has extensive experience working with the international DP industry. Executive Director of the OSVDPA, Aaron Smith, said, "The OSVDPA couldn't be happier to have Capt. Moyer and LOC join the TAC for the upcoming year. We are honored to have their experience and expertise on the TAC, and we're looking forward to working with them throughout the year."

Christina Paul Appointed to ABYC BoD

Christina Paul, a partner in the Miami office of the global firm K&L Gates LLP, was recently appointed to the American Boating & Yacht Council (ABYC) Board of Directors. She will serve a three-year term. Paul represents manufacturers and retailers in the recreational marine industry and has served as K&L Gates' representative to the ABYC since 2012.

IADC Names Verhoeven BoD President

The International Association of Dredging Companies (IADC) announced the appointment of **Frank Verhoeven** as the new President of the IADC Board of Directors. Verhoeven was part of the Royal Boskalis Westminster group of companies for 40 years. After graduating with a degree in civil engineering from the Technical University of Delft (TU Delft) in 1976, he joined Royal Boskalis as a research specialist. Mr. Verhoeven is currently a member of various supervisory boards including that of Deltares, an independent institute for applied research in the field of water and soil.

Marine Exhaust Systems Names CFO

Marine Exhaust Systems of Alabama has appointed **Karen C. Simmons**, CPA, PFS as Chief Financial Officer effective January 1st, 2017.

Miller, Wallace Named to Key YANMAR Positions

YANMAR America announced that **Tim Miller** has been named the Senior Manager for the company's new Training and Customer Experience Center. Separately, **Terry Wallace** has been promoted from his current role as Regional Sales Manager for the Industrial Engine Division to Sales Manager for the Commercial Marine Division. Miller has more than 24 years of experience in learning development, training and equipment in the agri-

NMEA Adds Four to BoD


Boughton


Hatherley


Kane


Spyros

National Marine Electronics Association

The National Marine Electronics Association (NMEA) has appointed of four to the Board of Directors. During their three-year terms they will be responsible for helping to create and drive NMEA strategies, programs and efforts in all areas. **Mike Spyros** of Electronics Unlimited took the reins as NMEA Chairman on Jan. 1, 2017. He succeeds **Johnny Lindstrom** of Westport Yachts, whose term ended at the end of 2016. Also named and approved by the NMEA membership to the board during the annual meeting in Naples, FL were **Brian Kane**, **Sean Hatherley**, **Jason Young** and **Kevin Boughton**.


Simmons


Miller


Wallace


Kane


Johnson

culture, mining and construction industries. Wallace has served in the role of Regional Sales Manager for the Industrial Engine Division of YANMAR America for the past four years.

GOST Promotes Kane to CTO

GOST has announced the promotion of **Brian Kane** to Chief Technology Officer. Kane is responsible for overseeing all technical aspects of the company. Kane was also recently appointed to the Board of Directors of the National Marine Electronics Association (NMEA).

Page International Promotes Johnson to Director of Sales

Page International recently promoted **Jackie Johnson** to director of sales. She will be responsible for procuring new sales leads and all new business Previously, Johnson served as Page's director of exports, where she oversaw and directed all U.S. export shipments, both ocean and air freight as well as export compliance.

Siren Marine Adds Two to C-suite

Siren Marine announced that **Carlton Schumacher** has been retained to fill the director of sales position and **Aaron Pape** was selected to be business operations manager. Schumacher is a sales executive with a career that spans over 19 years in outdoor industry sales, business development and category strategies. Most recently, Schumacher was the national sales manager for Victorinox Swiss Army. Pape will manage the day-to-day operations of the company. Pape spent the bulk of his career with Navionics. Previously, he was an accounting supervisor for Elcom Industries and has also worked for ADP and Great-West Financial.

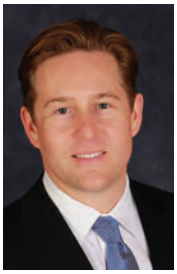
Webb Institute Awards Thomas B. Crowley Sr. Memorial Scholarship

Webb Institute announced that **Hannah Wistort** is the 2016-2017 recipient of Crowley Maritime Corporation's Thomas B. Crowley Sr. Memorial Scholarship. Wistort, chosen for her academic excellence and leadership skills, is a member of the Webb Leadership Committee, which organizes community service and outreach projects for students. Her interests include workboat design, liquefied natural gas (LNG) fueling, and the energy sector. Since 1984, Jacksonville-based Crowley has provided more than $3 million dollars in scholarship funding for more than 1,000 students.

NMRA Offers Scholarship Maritime Trades Student

The National Marine Representatives Association (NMRA) has announced that it is offering a $3,000 scholarship to an outstanding individual pursuing education and a career in the maritime trades. High school seniors, and college and vocational students are encouraged to apply. "Bringing energetic, talented young people into the marine trades is vital to the collective health of our industry," said **Keith LaMarr,** NMRA president. The NMRA began


Pape


Schumacher


Wistort


LaMarr


Ellis


Bernard

the program in 2008. The application can be downloaded at *bit.ly/2i3tIlE* and is due April 1, 2017. The winner will be announced this summer.

Sea-Fire President Addresses Marine Insurance Seminar

Ernie Ellis, president of Sea-Fire Marine, recently addressed 650 attendees of the 27th Marine Insurance Seminar held at the Fort Lauderdale Mariners Club. The event gathers marine insurance agents, brokers, underwriters, surveyors, admiralty attorneys and other professionals from around the globe to learn about critical issues facing owners of private and commercial vessels. Ellis co-presented the session, FIRE: Hot Topic, but not the Same Old Story. Ellis has over 25 years of experience in developing and manufacturing advanced marine safety equipment.

U.S. Coast Guard Gives Sabine Surveyors TPO / SubM Nod

The United States Coast Guard Towing Vessel National Center of Expertise has granted to Sabine Surveyors, Ltd. the authority to conduct all audit and survey services required by 46 CFR Subchapter M. These regulations are intended to have owners and operators of previously uninspected towing vessels come into compliance with new, stronger safety requirements. Sabine has unrestricted approval to conduct TSMS Audits, issue TSMS Certificates, conduct surveys of towing vessels, and issue survey re-

New Management Appointments at GAC


Wallgren


Bowie


Lichtenecker


Hardeland


Shorokhova

GAC has announced new management appointments at both the Group and individual company level. **Martin Wallgren** has been appointed the Group's Chief Information Officer (CIO). Before joining GAC at its Dubai head office, Wallgren was the CIO for the Stena Group in Sweden. GAC Dubai's Managing Director **Stuart Bowie** will take over as the Group Vice President – Commercial. He will replace **Christer Sjödoff**, who retires at the end of January. **Ronald Lichtenecker**, formerly Managing Director of GAC Hub Services (GHS) will take the reins as Company Manager for GAC Dubai. His role with GHS Managing Director will be assumed by **Lars Hardeland**, currently the company's Strategic Sourcing Manager. **Tatyana Shorokhova** has been appointed General Manager for GAC Russia. She brings to her new role more than 25 years of experience in the development, execution and management of forwarding projects in Russia and worldwide.


Aucoin


Parrott


Christian


LaGrange

ports required prior to the issuance of Certificates of Inspection (COI).

Aucoin Named GM at Schottel

Gary Aucoin is the new General Manager of SCHOTTEL. Most recently, from 2010, he held the role of account manager at Finnish Wartsila with responsibility for both new business development and after sales service in the offshore market. Aucoin earned a master degree in business administration before embarking on a 15-year career in the maritime sector from which he acquired the in-depth sales and marketing knowledge of the North American market.

Foss Maritime CEO Transition Complete

John Parrott assumed the role of President and CEO of Foss Maritime on January 1, 2017. Parrott joined Foss in January 2016 as Chief Operating Officer; in August 2016 he assumed the role of President from retiring President and CEO Paul Stevens. "It's a great honor to lead Foss and work with the talented and dedicated maritime professionals that make it such an amazing company," said Parrott. "We have an exciting road ahead of us."

GLDD Appoints Levenson to BoD, Announces Privet Group Deal

Great Lakes Dredge & Dock Corporation (GLDD) announced that **Ryan Levenson** has been appointed to the Board of Directors, effective December 27, 2016. Levenson has also been appointed to the Nominating and Corporate Governance Committee. Levenson's appointment is part of a settlement and standstill agreement that Great Lakes entered into on December 27, 2016 with Privet Fund Management LLC and Privet Fund LP, the beneficial owner of 5.2% of Great Lakes' outstanding shares.

Port of New Orleans Announces Christian as President & CEO

Brandy D. Christian has begun service as the Port of New Orleans' president and chief executive officer following her two-year tenure as its chief operating officer. Prior to her service as COO with the Port of New Orleans, she held leadership positions with the Port of San Diego for 14 years. During her tenure with California's fourth-largest cargo port, Christian was the driving force behind securing major accounts for the cruise and cargo business lines at the Port. Christian is the first woman President and CEO in Port NOLA's 120-year history and one of the few women port directors in the country. She succeeds **Gary LaGrange**, who served as president and chief executive officer for the past 15 years.

Trojan Battery Adds Getty to C-suite

John Getty will lead manufacturing operations for Trojan Battery as the company's new senior vice president of operations. Getty is responsible for manufacturing operations, en-


Getty


Hescock


Grandelli

vironmental health and services, as well as lean manufacturing initiatives for Trojan's U.S.-based production facilities. Prior to joining Trojan, Getty served as vice president of operations at Eaton Corp. managing its $1.6 billion Truck North America business. Getty earned an MBA from Pepperdine University and a bachelor of science degree in industrial engineering from University of Wisconsin-Madison.

Greensea Appoints New Robotics Engineer

Greensea recently announced the appointment of **Heath Hescock** as Robotics Engineer. Prior to joining Greensea, Heath automated software functions through programming at Globalfoundaries. He earned a BS in Electrical Engineering from the University of Vermont. Hescock also leads design and development for Greensea's proprietary printed circuit boards (PCBs) used in workboat vessel control systems.

PCCI Welcomes Grandelli

Patrick Grandelli, P.E. has joined PCCI's Alexandria office as a Chief Engineer. He will be responsible for providing engineering, design, installation and program/project management services to U.S. Government and commercial clients in the ocean facility and renewable energy industries. Mr. Grandelli is a registered Professional Engineer (PE) and naval energy/operations staff officer who also served on three U.S. navy warships.

Silvagrip's Long Lasting Nonskid Application

Long Lasting Non Skid is a Peel and Stick Aluminum/Ceramic Surface for any marine vessel space where safety is critical. With a 10+ year life expectancy and proven durability on government hulls, it is also Corrosion Proof, Water Proof, Resistant to Wear (ceramic Rc60+), Oil and Chemical Resistant and light weight – almost half of resin based coatings. It is available in sheets or rolls.

www.silvanonskidsolutions.com

Moody Offers New Hardened Seat Valve

Consider Using a Quarter Turn Valve in Lieu of a Gate Valve. The VANESSA 30000 now has ABS approval and features zero leakage, reduced space and lower maintenance costs. The Vanessa metal & torque seated rotary valve also offers the advantages of both butterfly and gate valves. It is suitable for use in fireman isolation and chilled water isolation where tight shut-offs are required.

www.jamoody.com

The Delta T Slimline Fire Damper

Made completely from 316 Stainless Steel, Slimline Fire Dampers Are Only 4.25 Inches (108 mm) deep. USCG and MED approved, they are made in the USA. Slimline Fire Dampers have been developed using unrivaled experience in marine damper design and manufacturing and have proven themselves in rigorous furnace testing. The A-60 Slimline Fire Damper has been designed to meet the needs of today's boat builders.

www.deltatsystems.com

Dynasty 400 and Maxstar 400 TIG Welding Solutions

Miller Electric's new Dynasty 400 and Maxstar 400 welders deliver 400 amps of output power and exceptional TIG and stick welding performance for applications such as pipe and tube fabrication and precision fabrication. The Dynasty 400 power source is AC/DC TIG-stick-capable and welds up to 5/8-inch-thick aluminum and steel in a single pass. The Maxstar 400 welds up to 5/8-inch-thick steel in a single pass.

www.MillerWelds.com

Emerald Marine's Man-Overboard Transmitter

Emerald Marine Products' ALERT418 Man-Overboard Transmitter is made in the USA, and is based on the company's proven ALERT2 Transmitter, and is compatible with its MOB alarm system receiver and portable direction finder. Designed for working mariners, the ALERT418 Man-Overboard Transmitter is smaller and lighter than its predecessor. For normal working conditions, it's worn attached to a PFD. A Spray Tight Pouch is available for wet environments.

www.emeraldmarineproducts.com

Seagull Training App v2.0

Seagull Maritime has upgraded the Seagull Training App, the mobile software solution that has revolutionized the way seafarers track their training records and receive critical safety alerts. Available in both Android and iOS formats, the newly enhanced app can be used across a range of mobile devices, with dynamic screen layouts for all sizes, including tablets.

www.seagull.no/

OceanTUFF CPVC Marine Drainage System

Spears Manufacturing's OceanTUFF is a CPVC Marine Drainage System. Recently awarded US Coast Guard and ABS approvals, OceanTUFF provides a durable, lightweight and cost effective alternative to traditional drainage materials used in marine applications. OceanTUFF meets the low flame, smoke and toxicity requirements of the 2010 FTP Code and may be installed in concealed spaces in accommodation, service and control spaces.

www.spearsmfg.com

Rope and Sling Receives DNV Type Approval Certificate

Rope and Sling Specialists (RSS) has recently been presented with a DNV GL Type Approval Certificate for wire rope offshore lifting sets. The certificate covers wire rope slings assembled by RSS according to DNV 2.7-1 Offshore Containers and complies with EN 12079-2 Offshore containers and associated lifting sets – Part 2: Lifting sets Design, manufacture and marking; EN 13414-1 Wire rope slings; and IMO/MSC Circular 860.

www.rssgroup.co.uk

MTNW Rebrands as Rugged Controls

Rugged Controls, LLC is a new company evolving from Measurement Technology NW Line Control Instruments (LCI) group. Since 2001, LCI has been a trusted source for line control, tension monitoring, and winch monitoring equipment. Rugged Controls will continue to manufacture MTNW's previous product portfolio including running line tensiometers, smart deck machinery and LCI flagship displays, which are used in extreme, marine & outdoor environments where rugged, high visibility electronics are required for operation.

www.rugged-controls.com

Harbor Offshore Barriers for Robust Port Security

Harbor Offshore Barriers has worked with the US Navy to develop a fence-like floating net system strong enough to repel fast boat terrorist attacks. It is the first company licensed by the US Navy to manufacture its barrier systems for commercial and military use worldwide. A patented Fixed Security Barrier (FSB) system employs netting reaching up to a depth of 80 ft (2.44 m) to deter underwater terrorist access in intertidal waters.

www.harboroffshorebarriers.com

Harrington Hoists Celebrates 150 Years

Harrington Hoists is proud of their long history and is excited to be celebrating 150 years in the hoist business. The company was established in 1867 and in the years that followed, continued to focus on the research and development of top quality products to create solutions to their changing customer needs. The company became a wholly owned subsidiary of KITO CORPORATION in 1990 which allowed them to become the sole source for Harrington/Kito hoist and crane products in the USA.

www.harringtonhoists.com

Cortec's EcoSonic ESD Corrosion Inhibiting Paper

Cortec Corporation has developed a static dissipative corrosion inhibiting paper that serves as a complete packaging paper for valuable electrical and electronic items. Simply wrap your sensitive electronic metal items in EcoSonic ESD Paper powered by Nano VpCI and rest assured that your valuable items will be protected from damaging static electricity buildup and corrosion. EcoSonic ESD Paper eliminates static electricity buildup through the use of an environmentally friendly coating made from soybean oil and coated on the surface of the paper.

www.cortecpackaging.com

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Email: jbakke@clatsopcc.edu
Work Phone : 503.338.2406
1651 Lexington Ave Astoria, OR, 97103 USA
Required Education
• Bachelor's degree in Education, or a related field. (Three (3) years service as a deck officer in charge of a navigation watch may be substituted for the Bachelor's degree) or equivalent military experience (Deck Watch Officer).
• A 40-hour approved "Train the Trainer" course which meets STCW requirements OR complete an approved course within 60 days of hire (as a condition of continued employment).
• STCW Basic Safety Training.

Required Experience
• Seven years of maritime industry experience of which one-year is shipboard experience as the officer in charge of navigation watch or equivalent military experience (Deck Watch Officer).

Required Certification

• "Unlimited" Radar Observer endorsement.
• U.S. Coast Guard 100 ton Near Coastal Master's Credential
• Able-Bodied Seaman Credential (or, as a condition of continued employment, pursue and earn the credential within 1 year)

PREFERRED QUALIFICATIONS:
• Previous teaching experience at the post-secondary level.
• U.S. Coast Guard Master's License, 500 Gross Tons or more with Oceans endorsement.

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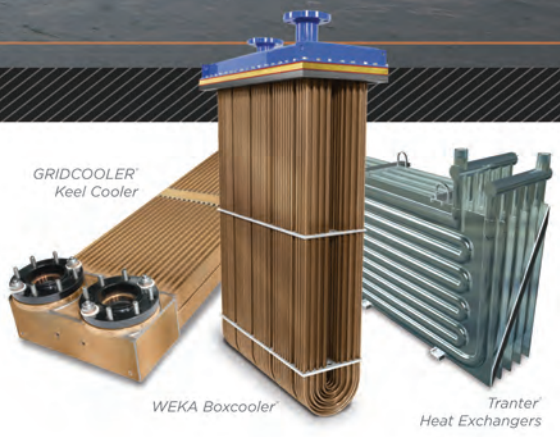

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