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Marine News

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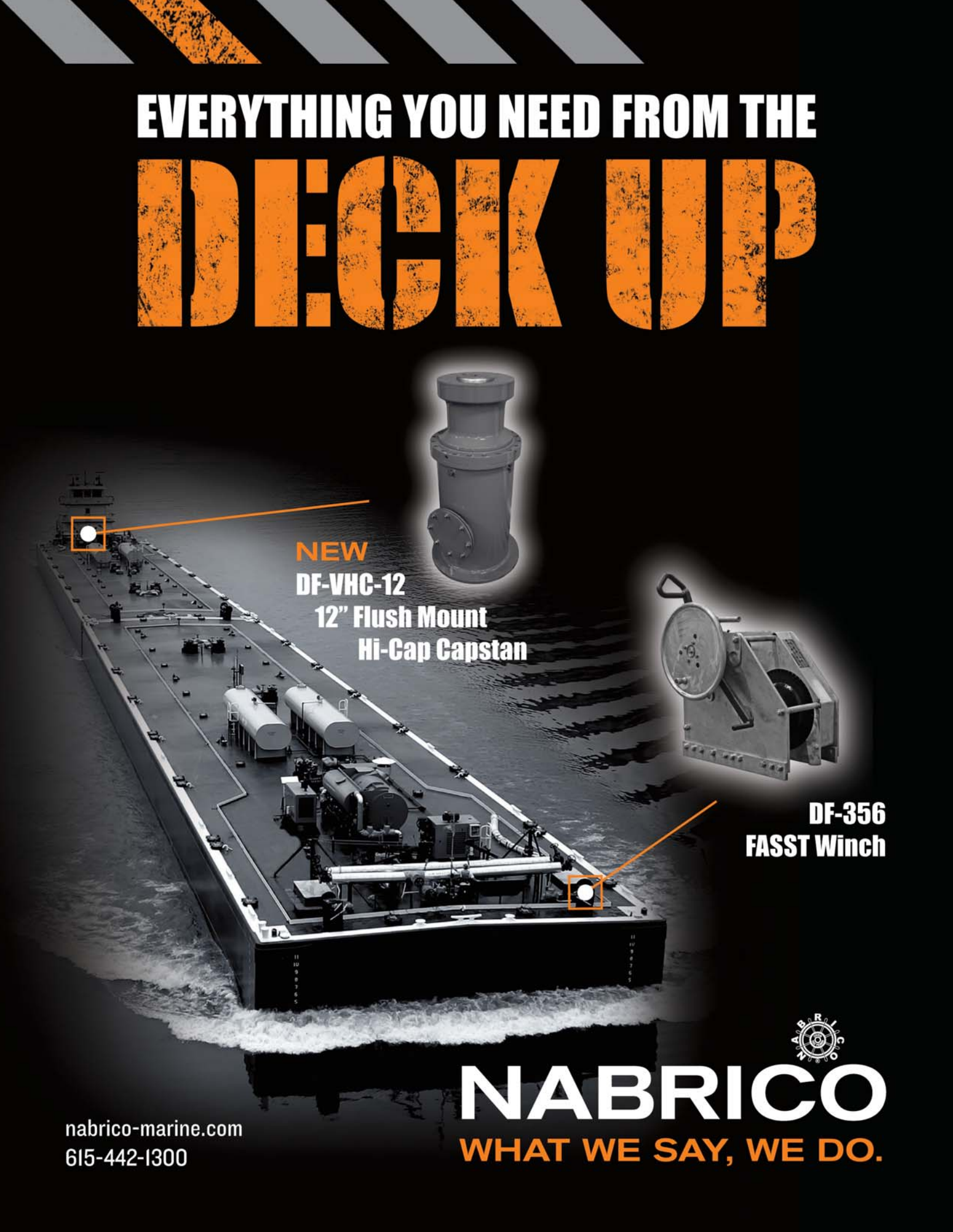

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Kirby now operates 1,066 inland tank barges out of 3,817 on U.S. inland waters, equating to a market share of 28%. The next largest competitors trail far behind. Far from growing just to get bigger, there is a disciplined plan at work. The story begins on page 40.

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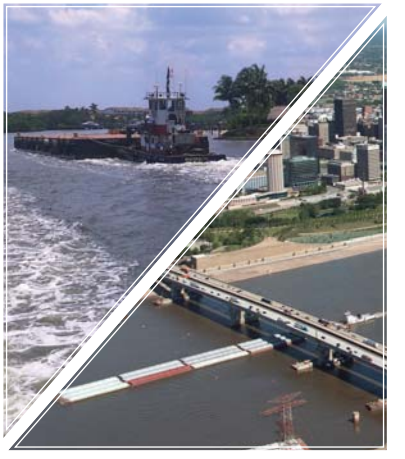
Departments & Analysis



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As we fast approach midyear 2019, it is time for our annual Inland Waterways edition. Indeed, much of the emerging news foretell better times ahead for inland operators and their customers. That reality is balanced by the fact that there is plenty left to accomplish, and still more in the way of obstacles that could run even the best laid plans aground. Inland waterway stakeholders can be happy with what has transpired over the past 12 months. At the same time, it wouldn't take much to alter that benchmark.

First, the good news: As we went to press, the U.S. Maritime Administration announced $6.7 million in grants for Marine Highway Projects throughout the United States. Projects receiving funding include shortsea shipping guru Bob Kunkel's Harbor Harvest Long Island Sound Service, the nascent Baton Rouge-New Orleans 'Container on Barge' Service, and the James River Expansion Project. All three projects promote the development of shortsea shipping, leverage U.S. flag assets, clean up the environment and finally, promise to remove thousands of trucks from our congested highways. What's not to like? This is what Marad ***SHOULD*** be doing.

The Marad grants are critical for the effort to jumpstart these important efforts, but none of that is possible without infrastructure, especially in way of locks, dams and inland waterways dredging. We hit a home run, of course, with last year's completion of the Olmsted project, and that milestone achievement is already yielding fruit. Inside this edition, however, the challenges of channeling the necessary help to get – and keep – waterways and infrastructure in good condition are addressed by ***MarineNews*** contributor and IRPT board member Jim Kearns and AIWA Executive Director Brad Pickel. Both highlight the need to change the way we allocate funding for waterway improvements.

I am preaching the choir when I talk about the importance of inland waterways to the nation's wellbeing, or at least I should be. But, if that concept is a difficult one to grasp, then the adage of *'a picture is worth a thousands words'* is the perfect descriptor for Tom Ewing's summation of a WCI presentation given by Canal Barge Company's Mike Little in the autumn of 2018. Little asked, *"What's moving on your waterways?"* You might be surprised. Turn to page 36 to find out.

I could talk about a dozen other features buried in this edition, but I will finish instead with a word of caution for inland stakeholders who still think that the seemingly 'far away' discussions about Jones Act waivers and relief are just a blue water issue. Today, two points of attack are in play; the tired refrain from Puerto Rico advocates, and now, an all-out assault from energy interests who hope to broaden Jones Act waivers for tanker shipments between U.S. ports. There's just no such thing as being 'a little bit pregnant.' If you need further convincing, then just imagine those project cargoes shown on page 38 coming up river with an unvetted foreign mariner at the helm.

Joseph Keefe, Editor, keefe@marinelink.com

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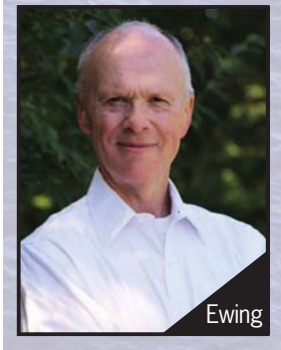
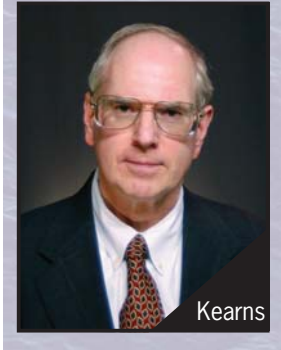

Ewing


O'Neill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Pickel


Miller


Sebastian

Tom Ewing is a freelance writer specializing in energy and environmental issues.

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Greg Miller is an award-winning journalist and editor. Most recently, he served as the managing editor of Fairplay magazine. Prior to his 14 years at Fairplay, he was the senior editor of Cruise Industry News and the editor in chief of the Virgin Islands Business Journal. He is a graduate of Cornell University. His work currently appears in a number of prominent shipping and energy publications.

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

Brad Pickel is the Executive Director for the Atlantic Intracoastal Waterway Association. Additionally, Brad is a board member and Executive Committee member for the National Waterways Conference, Inc. The AIWA is a national non-profit organization celebrating its 20th year in 2019 as the Voice of the Atlantic Intracoastal Waterway. On the web: www.atlanticintracoastal.net

Joshua Slade Sebastian, P.E., is Engineering Manager at The Shearer Group, Inc. (TSGI). TSGI would like to thank the Marine Division at ABB for assistance with the electrical design of the concept diesel electric towboat and providing some of the technical information for this article.

Tugboat and Towboat Manufacturing in the United States

A recent report from Amadee+Company provides a unique, first-time market and competitive analysis of the size, segmentation, competition, trends and outlook in the manufacture and supply of Tugboats and Towboats in the United States. Products analyzed include Harbor/Escort, Ocean, ATB, Inland and Multipurpose Tugboats and Towboats. The report, *"Tugboat and Towboat Manufacturing in the United States from 2017-2023,"* provides a detailed look at a segment of one of the oldest industries in the United States: ***shipbuilding***.

U.S. Shipbuilding Industry

According to the report, currently there are approximately 125 shipyards operating in the United States, spread across 26 states, which are classified as active shipbuilders, and capable of building Tugboats and Towboats. Of these, only 39 manufacture Tugboats and Towboats, and of these, only 8 made Tugboats exclusively, in the most recent year analyzed. The report identifies Eastern Shipbuilding Group, Diversified Marine and Conrad Shipyard/Conrad Orange as the biggest players in terms of shipment value.

U.S. shipbuilding production is estimated at $27.6 billion in 2019, with more than 80% going to government customers, mainly the U.S. Navy. The other 20% will be commercial vessels, including barges, ferries, fishing boats, offshore service vessels and Tugboats and Towboats.

Tugboats and Towboats

According to the report, U.S. Tugboat and Towboat production has ranged between 105 and 122 units annually, worth $600-$900 million. Although small compared to U.S. government shipbuilding, Tugboat and Towboat production is absolutely necessary for U.S. Waterborne transportation, which is estimated at $16.9 billion in 2019, is of strategic importance, and is protected by the Jones Act.

Towboats represented more than two-thirds of the market in terms of volume but less than 40% in terms of value for the last year that was analyzed. That is because the average selling price for a Tugboat was more than $13 million, compared to a Towboat ASP of almost $4 million. After Towboats, Harbor/Escort Tugs are the second largest market segment in both volume and value, followed by ATBs, Ocean Tugs and Multipurpose Tugs.

The report identifies C&C Marine as the largest Towboat builder in terms of production value, followed by John Bludworth, Eymard Marine, Metal Shark (Alabama), and Progressive Industrial. Together, these five firms accounted for only 36% of Towboat production value. This low cumulative share indicates how fragmented the market for Towboats is. By comparison, the Harbor/Escort market is dominated by two companies, Diversified Marine and Washburn & Doughty, who together accounted for more than 50% of production, both in terms of units and value.

The outlook for Tugboats and Towboats is good. In terms of volume, Tugboats production is forecast to grow almost 3% annually to 2023 and Towboats more than 6%. Towboat production will grow faster because 2018 production was far below its historical average. The major demand drivers for Tugboats and Towboats over the next five years will be black oil and refined petroleum products, petrochemicals and agricultural chemicals. For example, since 2010, 333 chemical industry projects cumulatively valued at more than $200 billion have been announced, with 53% of the investment completed or under construction and 41% in the planning phase. Fully 68% of the total is foreign direct investment or includes a foreign partner. Project types include new facilities and capacity expansions.

Further, 71% of chemical investment from shale gas is bulk petrochemicals and plastic resins. Of that, 52% of total investment (around $105 billion) is petrochemicals and 19% of total investment (around $37.5 billion) is plastic resins. U.S. petrochemical investment has largely focused on agricultural chemicals, methanol, ethylene and ethylene derivatives, especially polyethylene.

Nearly 20 facilities, or crackers, are being built or expanded in the U.S. to convert NGLs (natural gas liquids) such as ethane and propane into ethylene. Ethylene is the most used petrochemical globally currently and the main ingredient in polyethylene plastic. Nine of these crackers are expected to come online in the U.S. by 2020, representing 10.7 million tonnes/year of new ethylene capacity. As much as 9.2 million tonnes of that will be online by the end of 2019 in the U.S. Gulf alone.

Many of the natural resources used as inputs for these plants, as well as the petrochemicals and refinery prod-

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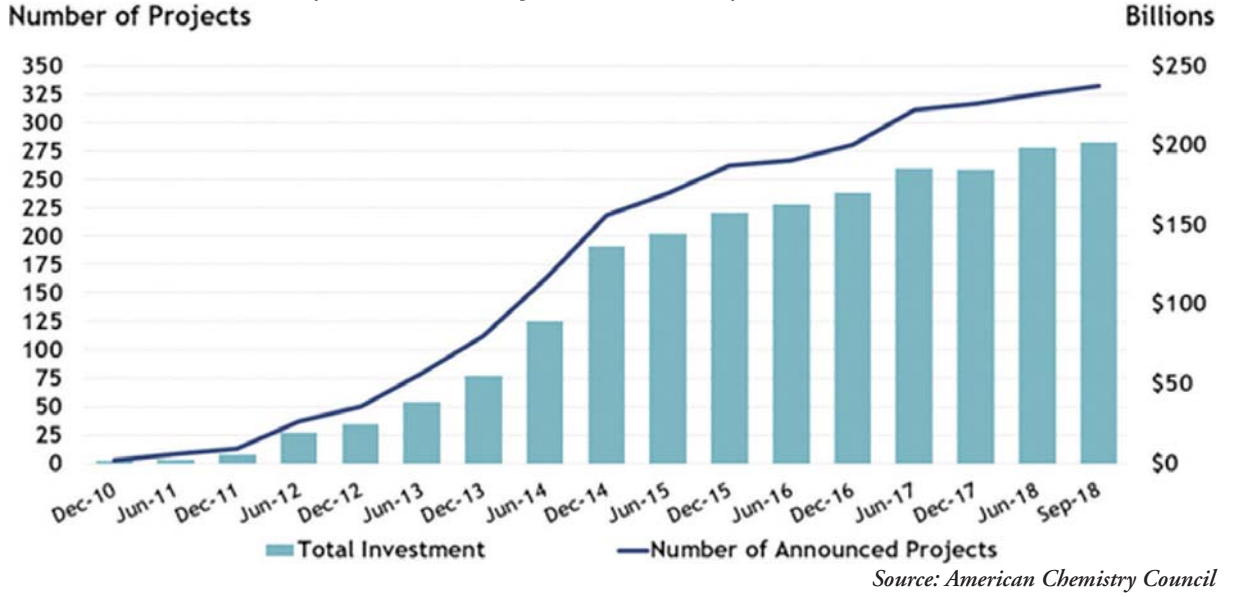
ucts produced, will be shipped by water for domestic consumption and exports. Without Towboats and Tugboats these products could not be moved.

Tariffs Weigh

A negative for the industry is tariffs. Steel represent approximately 25% of a typical Tug's production costs. The Trump administration's imposition of a 25% tariff on imported steel and aluminum in 2018 is expected to drive up production costs by 2%-3% annually. This in turn will have a negative effect on Tug producers net operating margins, which typically are less than 5%. Tariffs also will increase the cost of imported products such as deck gear.

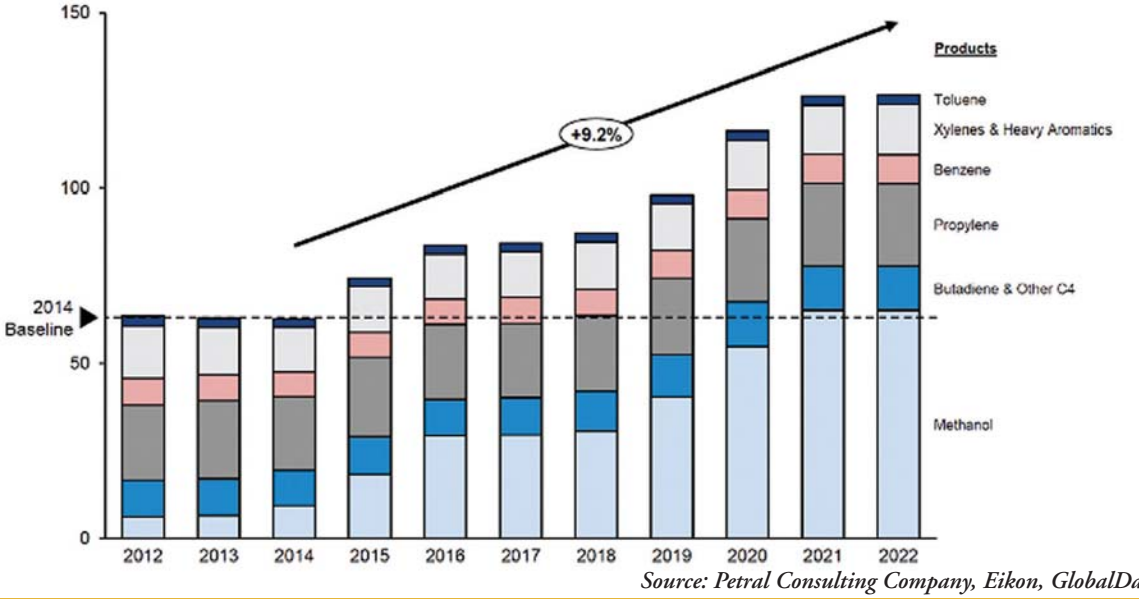
The report contains much more detail about production by vessel type, prices, producer market shares, competitor profiles, prices and forecasts. In addition, to data and analysis about the industry, the report contains 19 figures and 21 tables.

U.S. Cumulative Announced Chemical Industry Investments from Shale Gas (Number of Projects, $ Billions): 2010-2018



Source: American Chemistry Council

U.S. Petrochemicals Production by Product Category (Million lbs./Day, CAGR): 2012-2022



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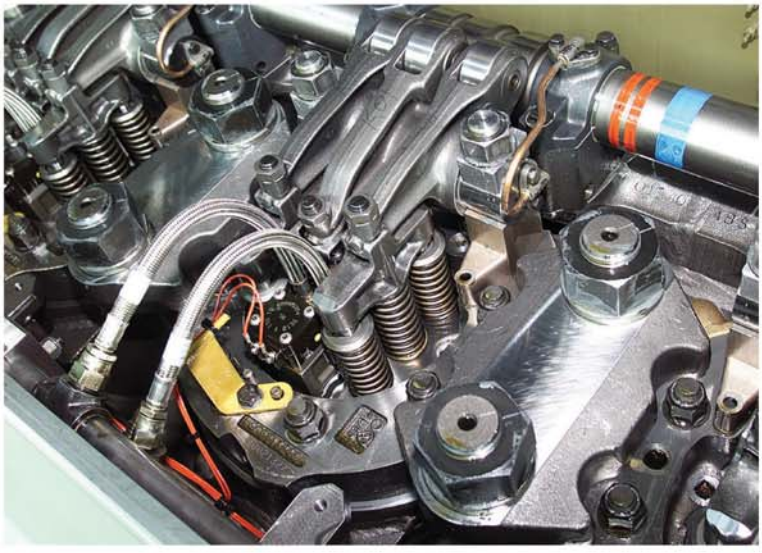

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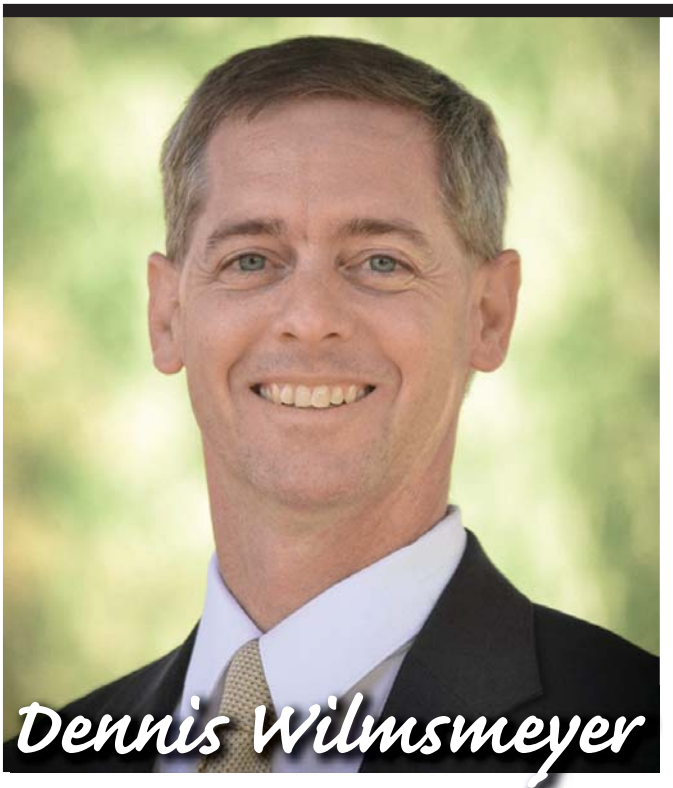

Executive Director, America's Central Port

AMERICA'S CENTRAL PORT

Dennis Wilmsmeyer was appointed Executive Director at America's Central Port on July 1, 2010, prior to which he served 11 years with the Port District, six as General Manager. With over 30 years of experience, Dennis brings a wealth of knowledge and expertise to the table in the areas of transportation, planning, and economic development. His responsibilities include developing the Port's 1,200-acre industrial park and business campus, redeveloping a former military logistics center, marketing the many benefits of river, rail, and road transportation, the Port and its numerous tenants, attracting new tenants to the property, and managing day-to-day operations.

Wilmsmeyer unselfishly credits the enormous success of the Port's growth and development to a dedicated team of 40 employees and 7 board members all working toward a common goal of bringing business to Southwestern Illinois. That said; his prior experiences serving as an Aviation Planner at East-West Gateway Council of Governments and for the Kansas City (MO) Aviation Department, as well as time spent as Project Manager for Ramsey-Schilling Consulting Group has also served ACP well.

Active in the ports community, he is Past President & Chairman of Inland Rivers Ports & Terminals Association (IRPT), a Member of the USDOT Marine Transportation, a former board member of the National Waterways Conference and a current member of IRPT and many other industry affiliations too numerous to list here.

Today, Wilmsmeyer and his ACP sit at the heart of the U.S. inland waterways equation, celebrating enormous growth, but also anticipating even more. Today, America's Central Port sees $1.1 billion in freight annually across its docks and waterways. The gateway known as the 8.4 mile man-made Chain of Rocks Canal, connecting Minneapolis to New Orleans and the Gulf of Mexico, was developed by the U.S. Army Corps of Engineers (USACE). Without it, the Mississippi River would not be the strategic asset it is today, nor would America's Central Port be celebrating its 60th anniversary.

From the acquisition of a U.S. Army service and logistics center, to the construction of a $50 million intermodal harbor and almost 30 miles of rail, to re-branding as America's Central Port, a lot has changed over the last 60 years. The mission however has remained the same. Since its inception, the Port has continued to play its role as a key economic driver, promoting advanced manufacturing, job growth, and enhanced transportation for the region. Dennis Wilmsmeyer aims to keep it that way. Listen in this month as he weighs in on the state of America's inland waterways, and all that awaits its many stakeholders, just around the next bend in the river.

The Maritime Administration predicts the U.S. will need to move an additional 14 billion tons of cargo by 2050 to accommodate population growth. Is the federal government – specifically Marad and the USACE – doing enough to promote, improve and maintain inland river infrastructure today?

Yes. I think Marad has done a great job in helping encourage the development of Port infrastructure due to an increase in global freight traffic and a need to push port development. The unfortunate thing is the Locks and Dam system was built all at once, thus things tend to break all at once too. Sequentially and over time, fixes are what's needed, but it is definitely a challenge that can be overcome.

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America's Central Port is involved in the intermodal movement of goods. Tell us about today's activities and cargo volumes, and what's planned for the future?

The port and its operators handles about 3 million tons of product each year, valued at $1.1 Billion. Keep in mind, though, "intermodal" normally pertains to containers, something we are capable of at the Madison Harbor, but are not currently doing or is included in the above stats. You can instead say "multimodal." Growth into the future would include investments in additional rail and barge connections to grow that volume.

The St. Louis Regional Freightway, Port of Plaquemines and St. Louis Regional Ports have all signed an agreement to Foster Economic Growth on the Mississippi River. The pact is intended to help support the development of a new transportation link for cargo to move along the Mississippi River. What does that MOU entail?

The MOU is intended to allow the St. Louis region to work closely with the Port of Plaquemines to foster container movement on the river. This will lead to a series of meetings to determining cargoes, and where the Ports may be currently deficient in any container handling capacity.

With so many individual ports involved in this MOU, how difficult is it to keep such a diverse coalition together and focused on a common goal?

With a shared economic development vision for the region, one that puts an emphasis on enhancing transportation infrastructure and bringing jobs to the region, the Ports in the St. Louis region are all working towards container growth on the river.

The MOU hopes to grow an alliance to generate new business by promoting international and inland trade routes at strategic locations along the Mississippi River. The agreement also calls for the exchange of data to further those goals. What sort of useful data has been generated and shared, to date?

A study was recently completed that looked at the potential for containerizing agricultural products for export. Click: *www.soytransportation.org/newsroom/ContainerizedShippingOnInlandWaterways_FullReport.pdf* to read the report.

It is a fact that any transport mode is only as efficient as the one that immediately precedes or follows it. Knowing that, what's happening at America's Central Port – and beyond – that will make our inland rivers more efficient? Talk about class I rail, barge transfer and road access development.

The Port has invested an average of $1 million a year in rail enhancement (spurs and additional track for capacity). Looking ahead, other projects include renovations to a 6,500 square foot former steam plant, a 42,000 square foot former U.S. Army locomotive maintenance bay, and the addition of a rail spur and dump pit for a harbor bulk storage building. These improvements come at a total project cost of $3,270,000 with an estimated start date of Summer 2019 (Granting agency: EDA). Separately, Granite City Harbor Dock Surface Improvements will make last mile transloading more efficient at this particular harbor. This project comes at total project cost of $1,367,130 with an estimated start date of Summer 2019 (Granting agency: IDOT). Additionally, a new Right-in/Right-out Highway entrance to the Port will be built. Costing about $2,000,000, that project kicks off in the Summer of 2020 (Granting agency: IDOT).

In terms of inland – and indeed intermodal cargo / freight volumes and tonnage – where does America's Central Port rank today in terms of its closest peers? What are your ultimate goals?

We have the capacity to do intermodal, but currently do not. Moving 3 million tons of goods annually, America's Central Port is listed with all other St. Louis area ports as the Port of Metropolitan St. Louis, and is ranked as the most efficient Port in the country, and third largest in terms of tonnage alone.

Is there any sort of estimate of just how many trucks can [potentially] be removed from Interstate highways – along with the associated reduction in NOx, SOx and particulate matter – if the Mississippi container on vessel effort proves sustainable?

We do not have a study to reference, nor do we have specifics to the NOx, or SOx, but we do have data on fuel efficiency. Water transportation is the most energy-efficient and cost-effective method for moving freight.

Mode	Capacity (22.5 ton / 787K bushels / 6. Million gallons	Fuel Comparison (for every ton of cargo, 1 gallon of fuel moves):	A Full 22,500 ton transport Load (gpm)
Barge	*1 Full Barge Tow (¼ mi long)*	*514 miles*	*44 gallons per mile*
Rail	*216 Rail Cars (2.75 mi long)*	*202 miles*	*112 gallons per mile*
Truck	*1,050 Trucks (11.5 mi long)*	*59 miles*	*381 gallons per mile*

More than $200 million has been invested in your region's agricultural product barge transfer infrastructure facilities since 2005. How much of that occurred at America's Central Port? What does that spend entail?

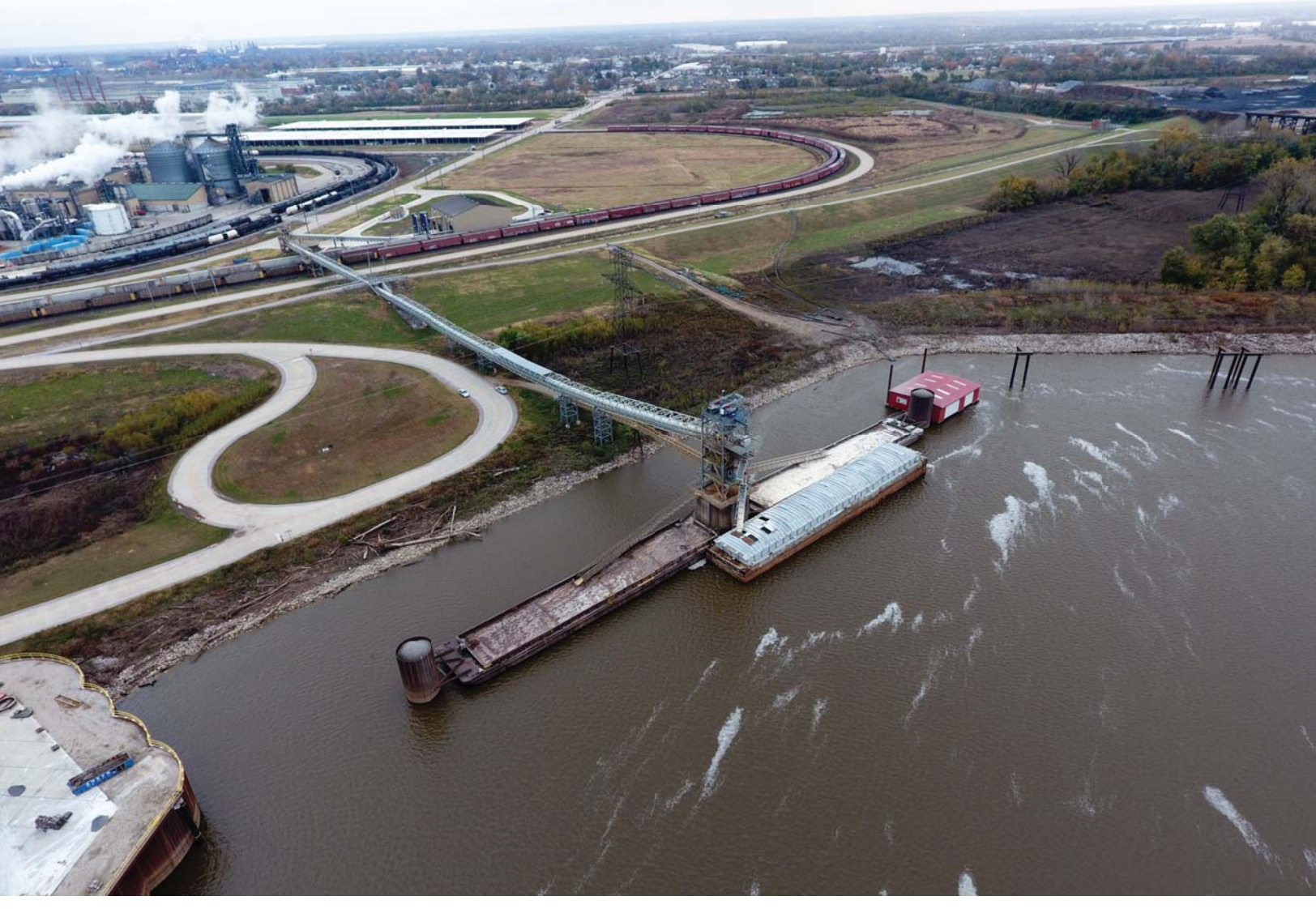
About a quarter ($50 million) was spent here on a new intermodal Madison Harbor and 3 rail loop tracks totaling about 5 miles of rail to support efficient harbor loading and unloading.

China over time became a large buyer of soybeans with 35 percent of soybeans grown in the United States being exported to China. The tariffs have taken a bite out of that volume. But, farmers have also found other venues, yes? What's the status of all of that today? How much has the trade war impacted the region?

There has been a decrease in the amount of soybeans we've seen, and there's no telling where the trade talks will go with China, but we think 2019 will be a good year for trade overall.

You've been quoted as saying, "Those of us trying to get a piece of the projected growth in freight volumes need to get creative. Freight needs to find the lowest cost alternative, and the containerization of various products, ranging from tires and scrap metal to agriculture products, such as specialized soybeans, is part of the solution." Tell me a little about your port's creativity to garner more freight share.

Our focus has been in enhancing the region's transportation infrastructure, pursuing opportunities that improve river, rail, and road capabilities. This includes the $50 Million Madison Harbor, five miles of Rail installed to serve it and access for tenants across the Port property. In terms



of rail, we continue to add to serve warehouses and sites on our 1,200 acre property, such as the 1,500 foot spur constructed in 2018 to enhance the value of a 60 acre-development ready site.

Mary Lamie, Executive Director of the St. Louis Regional Freightway, has said, "The key to success is going to be the integration of all modes of transportation and building partnerships to jointly create the volume needed to support this new option to transport freight." But, it is also true that domestic train operators and trucking haven't always been receptive to intermodal sharing and indeed, each have powerful lobbies on the Hill to make sure they don't lose their footprint. Would you say that locally, this relationship is developing the necessary symbiotic chemistry?

Yes. In order to make the region a central hub for transportation and logistics, all modes of freight have to work together. With rising global populations, trends suggesting denser cities, and an overall growing demand for food, fiber, and energy, the need for smart integrated transportation networks will continue to move forward. Add to this the current workforce shortage trends and stricter restrictions in the trucking industry, as well as the opportunity to attract manufacturers and the companies that support their supply chains to the region, helping increase freight traffic as a whole, there are multiple economic forces encouraging collaboration.

The opening of the Olmsted Locks was heralded as one the most important infrastructure accomplishments of all time on U.S. inland rivers. From your position at America's Central Port, has its opening impacted your operations (yet) in any way?

Not substantially. Since it's on the Ohio River, it doesn't impact much on the Mississippi, north of the confluence.

Project cargoes, specifically related to Midwest refinery building and expansion, are increasing the use of inland waterways for project cargoes. Is America's Central Port involved with this in any way?

We have handled project cargo, but are not currently. Although we are not currently working on any now, we have in the past worked with a coke plant that serves the US Steel Mill.

Is Short Sea shipping on the horizon along the Atlantic Intracoastal Waterway?

By Brad Pickel

Pickel

Are paradigms shifting on the increased role of inland waterways with respect to short sea shipping and the Nation's marine transportation system? Investigation and implementation of new commerce shipping avenues are becoming more common along the Eastern seaboard of the United States with each new announcement of a Port Authority supporting the development of shipping routes for container on barge services.

In the past few weeks, the South Carolina Ports Authority (SCPA) furthered their quest to develop a marine highway to support the Port of Charleston in South Carolina. According to SCPA Chief Operating Officer Barbara Melvin, "To be a responsible neighbor here in the Charleston area as we grow, we wanted to find a way to see if we could move containers in off-hours or utilize what we call the marine highway rather than the interstate."

At the Atlantic Intracoastal Waterway Association, we couldn't agree more and we believe in the need to find alternate transportation routes in addition to roadways and railways. Additionally, the Port of Georgetown, South Carolina could be utilized as a handling facility for some of this barge traffic since it is depth-limited and is becoming land locked from the Atlantic Ocean. We welcome these creative strategies from the SPCA.

Yet, these increased transportation options are not new to us. The Virginia Port Authority (VPA) has been utilizing Marine Highway 64 for years to connect to the Richmond Marine Terminal (RMT) in Virginia and expanded their capability in 2017 to include refrigerated cargo. A prepared VPA press release said, "we have several current and potential users of RMT that are in the food and beverage, and refrigerated and discount grocery industry that are expressing interest in using the barge to move reefer (refrigerated) cargo," said John. F. Reinhart, CEO and executive director of the VPA. He continued, "The power unit enables us to provide a more comprehensive level of barge service to current and potential customers and continue to serve as a catalyst for commerce in the Richmond metro area and beyond."

The strong desire to alleviate traffic congestion along our interstate system is another reason to invest and develop our Marine Transportation System as demand continues to grow. Based on estimates from the American Trucking Association – the largest national trade association for the trucking industry – the United States is currently facing a shortage of around 50,000 long haul and over-the-road drivers and that number is expected to increase to 175,000 by 2026. And, ATA Economist Bob Costello says that filling positions for the Trucking industry is not easy. "Carriers repeatedly say it isn't that they don't have enough applicants for their open positions – they do. What they do not have, is enough applicants who meet the demanding qualifications to be hired. In some cases, carriers must reject 90% of applicants out of hand because they fail to meet at least one of

"If we collectively invest in the maintenance of the AIWW, we could unlock new and expand existing economic opportunities along the coast. From our perspective, the comprehensive transportation system needs to include an 'all the above' approach to better utilize coastal and inland waterways, inland roads and interstate systems along with rail."

Credit: AIWA

the prerequisites to drive in interstate commerce." The trucking industry adds immense value to America's interstate commerce and, yet we must begin to see the writing on the wall that vehicular congestion will continue to be a factor in the nation's growth patterns.

An expanded U.S. railway system is another approach to increase modes of shipping, but the 137,000-mile railroad network doesn't reach everywhere and the political capital in the U.S. is nonexistent compared to Europe's multi-modal connectivity. In some of our coastal counties, there isn't even one mile of continuous rail and there are numerous gaps between our nation's ports. These constraints highlight the urgency to turn to Marine Highway 95.

If we collectively invest in the maintenance of the AIWW, we could unlock new and expand existing economic opportunities along the coast. From our perspective, the comprehensive transportation system needs to include an 'all the above' approach to better utilize coastal and inland waterways, inland roads and interstate systems along with rail. We support investment in transportation alternatives. In fact, the Maritime Administration of the U.S. Department of Transportation Beyond Traffic 2045 reports an estimated increase in freight volume by 45% between 2015 and 2040 with an associated increase of just 10% on our nation's waterways and a 43% and 37% increase on roadways and railways, respectively.

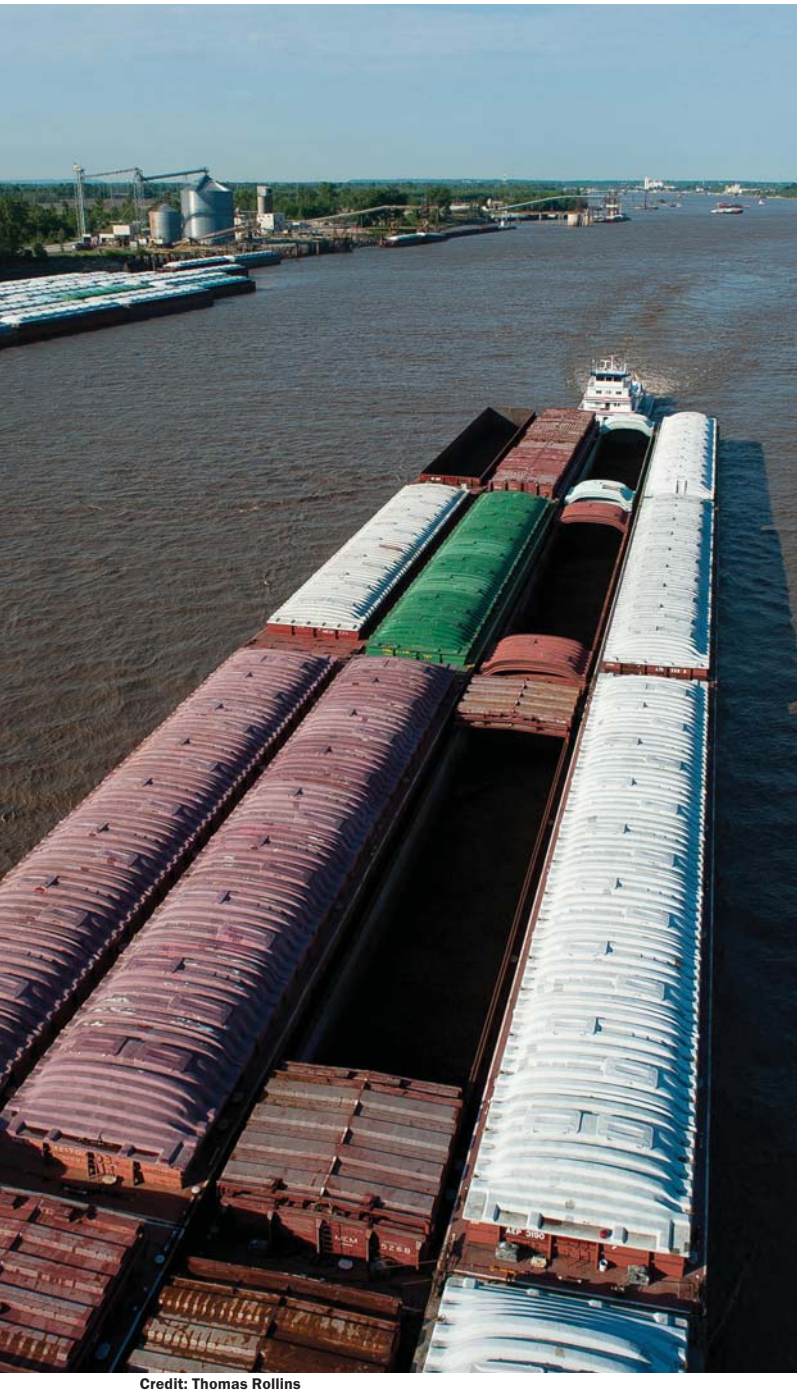
If we can identify those products which are better suited for waterway transportation and move products from the other modes of transportation, it will free up additional capacity. This shift is more environmentally sound and cost effective and will also accommodate cargo that is too large to ship by other means. The alternative we face is to witness continued and increased burden on existing modes and create unsustainable congestion leading to further detrimental impacts to the entire U.S. transportation network and the overall economy. Exploring short sea shipping is a critically important avenue to cost share in America's shipping future.

Brad Pickel *is the Executive Director for the Atlantic Intracoastal Waterway Association. Additionally, Brad is a board member and Executive Committee member for the National Waterways Conference, Inc. The AIWA is a national non-profit organization celebrating its 20th year in 2019 as the Voice of the Atlantic Intracoastal Waterway. On the web: www.atlanticintracoastal.net*

Risk Management on the Inland Waterways Evolves

The subchapter M towboat rules, safety management systems, and an emerging culture shift on the inland waterways brings with it a fresh look at how to manage risk. Is it time for P&I clubs to return to brown water? And should inland operators welcome them home?

By Joseph Keefe



Credit: Thomas Rollins

A mass exodus from the inland marine sector by P&I clubs in the mid-1990's was precipitated by many things. Today, these very same vessels have been put under the subchapter M regime, and most are adapting SMS as a culture in the process. Moreover, and without a doubt, the environmental record of this sector has improved 99% since the 1970's. As all of that unfolds, the P&I clubs have begun to look at this sector more closely and, at the same time, the shift to a 'P&I' style risk management scheme may make for sense for the operators themselves.

According to Joe Hughes, Chairman & Chief Executive Officer of The American Club, "The engagement of International Group P&I clubs in the US inland marine sector began in earnest during the early 1980's. Although only a few clubs were first involved, business grew over time, albeit against significant Jones Act risk. A later retreat was a function more of a failure to match premium with exposure than of poor safety and environmental standards. It was also attended by significant non-forecasted supplementary calls on the part of many of the clubs involved, together with large rises in general increases from year to year."

In response, some disenchantment took hold on both sides of the divide between clubs and their inland marine members. Nevertheless, some clubs have maintained their interest in the sector, albeit at a more modest level than was previously the case. That interest is picking up, and, gaining momentum.

Today, a majority of the inland markets utilize the fixed premium formulae. And, it is also true that commercial providers of fixed premium liability insurance to the inland marine sector have experienced their own periods of stress over the years. Still, at present, most liability cover in this field is provided by such carriers. That trend also reflects the fact that many inland marine operators are engaged in the transportation of relatively low-value, dry cargoes which do not generate the perceived need for the very high limits of cover (especially for pollution) typically available from the P&I clubs. Beyond this, some operators are simply disinclined to expose themselves to the obligations of mutuality.

In addition, it is not uncommon in this sector to "pack-

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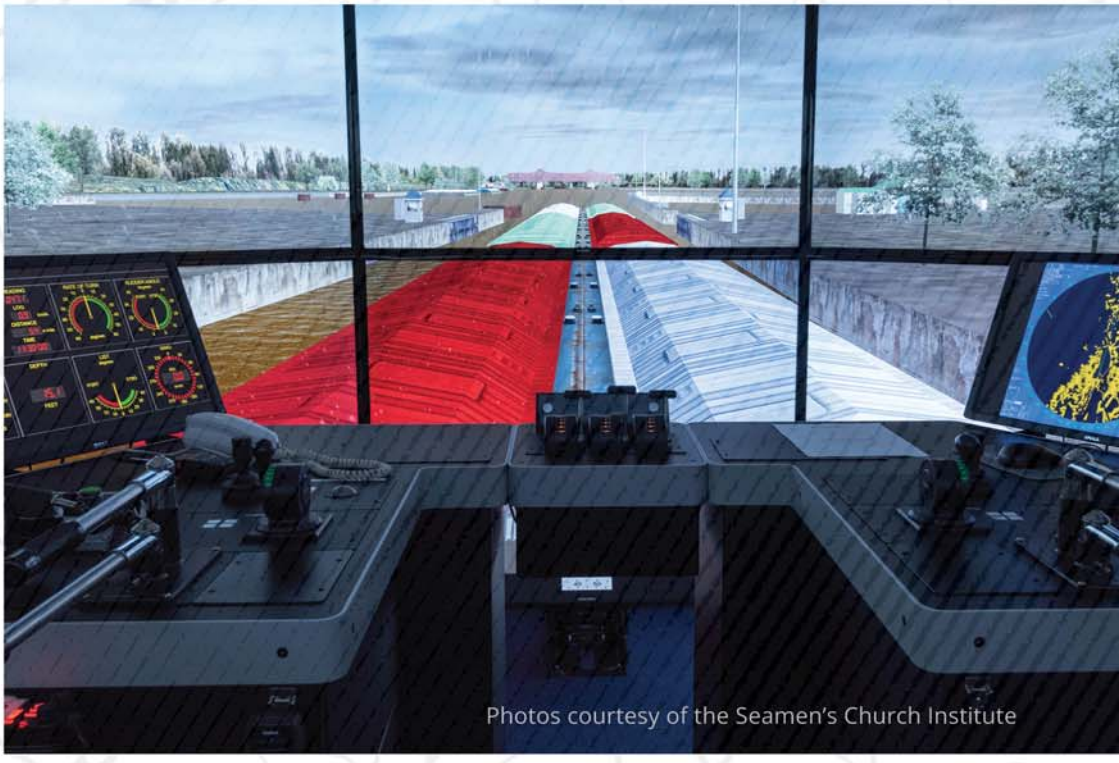

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"While much of this development has been aimed at blue water operators, some of it is inland marine-specific. The American Club has a significant US flag, Jones Act constituency and much of its loss prevention outreach has been related to this, and will continue to form an important part of the overall spectrum of the Club's professional capabilities."

– Joseph Hughes, Chairman & Chief Executive Officer, *The American Club*

age" P&I cover with hull and other insurances such as MEL, MGL etc. While sometimes more easily accomplished by fixed premium, commercial underwriters, for the larger operators, club P&I may still be the best option, particularly for those carrying petroleum cargoes. All that said; it is estimated that in the brown water space, no more than 10% or so of liability of coverage is provided by P&I clubs.

Another Look: Should You Switch?

Some P&I stakeholders insist that inland operators will do better by switching to 'the club' from fixed premiums. "The most obvious upside," says Hughes, "is the availability from clubs of high limits of cover at comparatively modest cost. Another advantage is the availability of superior claims handling, loss prevention and other services for which clubs are rightly renowned." For example, Eagle Ocean America – a sister company to the Managers of the American P&I Club – provides the fixed premium certainty of commercial insurance, the ability to package cover in various ways together and bundles that with well-known claims handling and other capabilities available to American P&I Club Members.

But, what when a particular client experiences a year of bad losses, that reality impacts the bottom line at renewal time. What's key here is the difference between how this is handled in a 'fixed premium' world as opposed to 'the club' That's because a Mutual P&I clubs' overarching concern is the collective well-being of their membership. Since they operate on a not-for-profit basis – and are thus not compelled to satisfy the expectations of outside shareholders – they are alive to the need to maintain equity among all members of the club, and tend to avoid speculative pricing to gain market share.

P&I clubs typically adopt the long view in risk selection and premium pricing in their approach to any market, including the inland marine sector. Hughes explains, "Any prudent underwriter should be motivated by exactly the same instincts, but it is arguable that premium volume and market share might be a more insistent motivation to a commercial underwriter than it would be to a P&I club. This could lead to levels of pricing which do not fully reflect the risks being insured."

As the typical inland operator depends on fixed priced insurance, 'the race to the bottom' is caused by intense competition between insurers. The P&I system works a bit differently, although those competitive pressures exist in any model.

Joe Hughes explains the situation, saying, "Certainly the 'race to the bottom' has featured intermittently in the fixed premium market – and not just within the inland marine sector. The International Group P&I system operates a little differently by virtue of the IGA which imposes pricing discipline where tonnage moves from club to club at renewal, or when new vessels attach to fleets during the currency of a policy year. There remains significant competition, nonetheless, within the Group although it might sometimes not appear to be as intense as it does among commercial underwriters."

Unlike a fixed pricing model, P&I clubs don't operate on a 'for profit' basis. Instead, P&I clubs are assessable mutuals. They do not aim to create profits for outside shareholders. Members of a club are both insurers and insureds, the mutual principle causing excess funds generated in good years to be transferred to reserves in order to smooth out deficiencies on bad years and, over time, to provide stability of cost for members. While clubs will obviously try to avoid losses, they are not designed to generate profits beyond the point necessary to create stable reserve funding.

SubM Arrives, and with it, SMS

As the domestic inland sector evolves in the subchapter M era, so too does their use of SMS and attention to building a better safety culture. And while some inland operators have long had robust safety schemes, this wasn't necessarily the rule as opposed to the exception. Indeed, often it reflected a smaller firm's ability to financially support that model. But that way of doing business (SMS driven) more closely mirrors the blue water, deep draft model.

The blue water, deep-sea model of loss prevention is not intrinsically any different from that which governs the inland marine sector. However, because blue water vessels are larger and may therefore have an inherent propensity to generate more extensive damage than vessels in inland marine business, loss prevention – codified in the form of the ISM regulations in the late 1990s – may have in the past figured more prominently in the blue water sector by comparison with domestic, brown water trades.

P&I Clubs – both historically and in current times – employ far more in way of loss control personnel, ex-senior mariners and in general, personnel who work with their members to find ways to lower incident rates, pollution. That's something that many inland operators haven't seen before.

P&I clubs have added to their loss prevention capabilities in recent years. The initiatives of today, and the resources available to the clubs, represent the gold standard within the insurance industry as a whole. Joe Hughes agrees. "While much of this development has been aimed at blue water operators, some of it is inland marine-specific. The American Club has a significant US flag, Jones Act constituency and much of its loss prevention outreach has been related to this, and will continue to form an important part of the overall spectrum of the Club's professional capabilities."

Indeed, all Group clubs have significant loss prevention capabilities. The American Club in particular prides itself on the range of its services in this area. In addition to a very wide range of loss prevention literature, e-learning tools, videos, and general publications, the Club is also able to undertake management audit assistance for its members and in-house and other seminar guidance on a wide variety of subjects. Some of the American Club's current initiatives – which are particularly relevant to inland operators – are now being pursued in conjunction with ABS and Lamar University.

P&I Cover: Not Just for 'the Blues'

In the green water sector – offshore energy support, for example – some stakeholders are returning to a P&I style scheme. In these cases, 'size' does matter. Large parts of the green water sector have been consumers of mutual P&I cover – in fact more so than brown water operators within the United States. This is partly because green water operators are often involved in the carriage of petroleum products, and their commercial counterparties expect them to have at least $1 billion of oil pollution cover. A similar dynamic applies in the offshore oil industry, where all the major players expect those who service their rigs etc. to have high limits of cover. In this respect there are economies of scale to be found in an International Group club cover by virtue of the Group's bulk reinsurance purchasing power enabling it to access very high limits of indemnity at comparatively low cost.

It is important for brown water operators to understand that they do have choices, and these choices involve the old adage, 'horses for courses.' There may not be a compelling reason why a brown water operator should have a mutual entry – particularly if that operator does not require high limits of liability and needs to have other forms of insurance packaged with the core P&I. On the other hand, some operators – by reference to the size of their fleets and their potential exposures – may find a P&I club a more sensible option in individual cases.

The advent of subchapter M has come and gone. The rule brings with it significant baggage. Smaller, so-called 'mom-and-pop' operators may not be able to continue without significant changes to their operating conditions. Separately, consolidation on the river is gathering steam. Ever larger firms with more diversified customer bases, now with far flung assets operating in unfamiliar waters, need more coverage. The P&I sector wants them to take another look at their model. That might not be a bad idea. Indeed, what do you have to lose?

Distractions Can Sink Careers

Familiarity can and does breed contempt. You don't need anything else added to that heavy burden.

By Randy O'Neill


O'Neill

We live and work in a frenetic environment replete with a wide range of both human and technological distractions. When those two elements came together on the bridge of a towboat traveling downriver to pick up a load of empty barges, the result was career-changing for the vessel's first mate, who was on the wheel. It was yet another costly reminder of the need for professional mariners to give their often dangerous jobs their undivided attention and to stay focused on the task at hand.

Adding more variables to the pre-casualty mix was the fact that it was a nighttime move. While certainly not an unusual circumstance on today's busy inland waterways, that fact doesn't make nocturnal trips any less hazardous. Onboard activities that seem straightforward in the light of day take on a decidedly different complexion after the sun sets and darkness envelopes the river and waterfront. And, while navigational aids on the river and electronic equipment onboard clearly assist nighttime vessel movements, many veteran towboat and tug operators will tell you that fatigue, boredom and endless repetition in the sensory-deprived environment of darkness still present very formidable challenges to even the most experienced rivermen.

Distraction Suspected

These conditions were indeed prevalent in the swift moving western U.S. river on a chilly late autumn night as a workboat left the safety of its riverside dock just after midnight to travel south to meet with and make up a small flotilla of eight empty barges for delivery to a riverside mill the following morning.

The weather was partly cloudy with a gusty wind of up to 20 knots on a moonless night when the first mate guided his vessel away from the dock enroute to an overnight assignment. During departure preparations, he had been distracted by an animated conversation on his radio telephone with a deckhand. Perhaps because of his agitated state and temporary lack of concentration, he was unaware of the fact that his towboat was slowly drifting to port and the safety of the dredged channel as it made its way downriver. Eventually, he acted to adjust his course to starboard.

Too Late to Recover

Before he could alter course, he heard a loud scraping sound on his portside and felt his vessel slow and veer further out of the channel. Eventually, he slowly maneuvered the vessel off the mostly sandy bottom to starboard and deeper water. Unfortunately, the damage was already done and the unmistakable odor of spilled petroleum product and his now balky engine convinced him to return to the dock he had departed from less than 20 minutes earlier.

Once back and tied securely to a remote dock away from other vessels, preliminary inspections were conducted and revealed that not only had the vessel suffered moderate structural damage below the waterline of its portside from the grounding, but also was likely continuing to leak fuel, and possibly oil from its propulsion system. At daybreak, a clearly visible sheen was spotted near the towboat and the dock to which it was tied. Ironically, it was quickly determined by testing that the oil producing the sheen came from another vessel and had nothing to do with the damaged towboat. Ultimately, any petroleum product because of the grounding had long since drifted downriver making it difficult to connect to the towboat's casualty.


Credit: AdobeStock_Imagecore

The Investigation

Once his vessel was secured, the mate notified his company dispatcher of the incident who then reported it to the local Coast Guard office. He then called his license insurer's 24-hour claim reporting hotline and within minutes was speaking with a local maritime lawyer assigned to handle his defense. The Admiral attorney not only helped to calm him down, but more importantly, provided him with guidance to prepare him for his impending initial Coast Guard interview which took place at the dock.

Sadly, deciding not to wait for the results of the Coast Guard's and/or its own investigation, the mate's furious employer terminated his employment contract within eight hours of the casualty.

The mate's career was now in the hands of the Coast Guard investigators working the case. That being the situation, he met at length with his lawyer to prepare a statement and complete the CG2692 marine casualty report form. And in those frank discussions with his maritime attorney, he reluctantly conceded his belief that, although the towboat had grounded outside of the channel, he maintained that it had not left the channel before the initial point of impact with an unchartered object on the bottom.

Predictably, and less than two weeks later, the licensed deck officer was contacted by the local Coast Guard Marine Safety Office (MSO) and directed to come in for a more in-depth interview related to the facts surrounding the grounding and, at that point of the inquiry, possible spill. He attended the interview with his maritime attorney by his side.

Cell Phone Use Investigated

During the interview, it became clear that the Coast Guard investigators suspected that the mate was inattentive to his professional duties and grounded because he was distracted while using his cell phone on a personal call. Aware of his earlier heated discussion on his radio telephone, investigators suspected that, once underway, he continued the argument with the previously fired deckhand on his personal cell phone. Pursuing that suspicion, the USCG's investigating officer requested to see the mate's cell phone records for the period several hours before the early morning grounding. Knowing that the records would be subpoenaed if they did not comply, the maritime attorney instructed his client to contact and procure them from his cell phone carrier. Thankfully for him (and his license), the mate's insistence that he had neither made nor received any personal cell phone calls in the critical pre-grounding timeframe was confirmed by his mobile phone's time-stamped records.

While clear of that suspicion by investigators, the now unemployed mate still had to confront impending negligence charges being brought by the Coast Guard for the actual grounding and suspected minor spill.

A Welcome Offer

Prior to bringing negligence charges which would have subsequently led to Suspension & Revocation (S&R) proceedings, the Coast Guard surprisingly proposed a settlement offer of the case. The offer stipulated that the mate would accept a three-month suspension of his USCG license, remitted on a three-month probationary period. The net result being that the mate, assuming he could find new employment on the water, would be allowed to work under his license as long as he had no further reportable incidents during the 90-day probationary period. Not surprisingly, the settlement offer also mandated him to enroll in and successfully complete a Bridge Team Management course of 24 hours or more duration.

After consulting with his attorney and weighing the unlikely chances of receiving a better outcome if he rejected the Coast Guard's offer, he decided to accept and sign the settlement agreement. He prudently concluded that the thought of being charged with negligence and facing S&R proceedings, particularly with no source of income, was far more daunting than successfully completing his probationary period and attending the prescribed course.

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

Not Worth the Risk

It's a fact of life that rarely a day goes by when news reports of some transportation accident is not attributed to operator distraction of some kind – typically involving a hand-held electronic device. The message to professional mariners operating commercial vessels on America's waterways remains the same: That phone call, text, or email can wait until the end of the trip or duty period.

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

But I Don't Need That Much:

When enough to meet the need is not enough to get the help.

By James A. Kearns

Kearns

From my office window in downtown St. Louis, I can see a dramatic illustration of the inefficiency in how our country moves freight. My office faces east, and I look down on a stretch of Interstate 70, that major east-west highway that runs from Baltimore to Interstate 15 in Utah. It is not unusual to see the traffic on this highway heavily congested, even at a standstill at times. This congested traffic usually includes many tractor-trailer trucks. While some of these trucks might be there to cover the proverbial last-mile for a delivery to a local destination, I feel reasonably certain that, given the nature of this highway, most of them are just passing through, on their way from a remote origin to an equally remote destination.

But just beyond Interstate 70 to the east, as viewed

Credit: St. Louis Regional Freightway

from my perch on the 38th floor, is another highway, where the traffic is never congested and is typically moving steadily. I am referring, of course, to the Mississippi River, which is part of what the U.S. Department of Transportation has designated Marine Highway M-55. As I look down on this contrast in traffic conditions on these two highways, it occurs to me to wonder if maybe, just maybe, some of that freight that is sitting at a standstill on the asphalt highway couldn't be carried just as well on the aquatic one. It would also seem likely to save a great deal of fuel, and to avoid a fair amount of exhaust emissions.

As explained on the website of the U.S. Maritime Administration (MarAd), this is in fact the mission of the Marine Highway Program, namely, "to expand the use of our Nation's navigable waterways to relieve landside congestion, reduce air emissions, provide new transportation options, and generate other public benefits by increasing the efficiency of the surface transportation system." It is such considerations as these that have led to proposals to carry containers on barges, or to build special-purpose vessels specifically designed for such use, or to move freight off of the highways and on to the waterways in other ways.

Your Mode: only as good as the one that precedes or follows it

But there is one critically important thing that the highways and the waterways have in common: you have to be able to get on them and get off of them. The highways have their access ramps and exit ramps. On the inland waterways, these points of access and egress are the many ports and terminals that make the 12,000 commercially navigable miles of the inland and intra-coastal waterways an actual system for freight transportation.

The ports and terminals do much more than just get cargo on to, and off of, the inland waterways. They are the also where cargo moves to and from all of the modes of carriage – water, road, and rail. To and from

the truck; to and from the railcar; to and from the barge. They are where the gears of our nation's freight transportation system meet and mesh. Every river channel could be dredged clean and clear, and every lock and dam could be made like new, and it would matter little if cargo could not get to and from the river and the other modes that make up our total transportation network, through the ports and terminals.

In this regard, the value of our nation's large coastal seaports is being increasingly recognized. Recent legislation, for example, has finally redirected the substantial amounts that have accumulated in the Harbor Maintenance Trust Fund back to their originally intended purpose.

However, the needs of the many, often relatively small, ports and terminals on the inland waterways continue to be overlooked. For example, in the Consolidated Appropriations Act of 2019, which ended the most recent government shutdown, $200 million was appropriated for the Port Infrastructure Development Program that is administered by MarAd. However, as passed, the bill specifies that "projects eligible for funding provided under this heading shall be projects for coastal seaports" (Division F, Title I; emphasis added). For the Marine Highways Program, under which smaller inland ports and terminals would be eligible to receive assistance, only $7 million was appropriated out of the total appropriations to MarAd of almost $1 billion.

Addressing the Imbalance

Presently there are only limited funding opportunities that make inland port infrastructure and inland ports of entry eligible for funding at all, and only a small amount of total funding from those programs typically fund port-type projects. This is the case with BUILD (Better Utilizing Investments to Leverage Development, formerly TIGER) and the INFRA (Infrastructure for Rebuilding America) programs. As a practical matter, inland ports and terminals cannot compete effectively for funding against large highway or bridge projects, and often cannot even meet the $5 million project minimum required by current programs. Somewhat ironically, infrastructure projects of inland ports and terminal facilities cannot obtain funding because they are less costly than the minimum required for those programs.

Efforts are being made in the direction of addressing this imbalance. In October 2018, Senator Tom Carper (D-DE), Ranking Member on the Senate Environment and Public Works Committee, introduced a bill, S.3587, to allow greater amounts to be granted for ports, railways, and intermodal hubs. Specifically, the bill aims to amend the Nationally Significant Freight and Highway Projects Program – which was created as part of Fixing America's Surface Transportation Act (FAST Act) and under which MarAd awards FASTLANE grants – by removing the cap on INFRA grants to multimodal freight projects. However, Senator Carper's bill would still leave in place the $5 million project minimum requirement.

The silver lining may be that at least Congress has appropriated $200 million for port infrastructure development and that an effort is being made to expand the amount available for grants to ports and intermodal hubs.

In July 2018 Senator Roger Wicker (R-MS) introduced a bill, the "Port Operations, Research, and Technology (PORT) Act" (S. 3273), to create a port-related infrastructure grants program to build on the Port Infrastructure Development Program administered by MarAd. This bill specified a $1 million project minimum requirement. Although the bill was reported favorably out of the Senate Commerce, Science, and Transportation Committee in August 2018, it was not voted on by the end of the 115th Congress.

For the current 116th Congress, Senator Wicker is the Chair of the Senate Commerce, Science, and Transportation Committee, so he is in a position to advance his earlier bill. His bill is an authorization bill, not an appropriations bill, so if his bill is eventually enacted into law, it will provide a basis for Congress to provide funding for an expanded Port Infrastructure Development Program, including eligibility for "small" projects that need "only" $1 million.

"Small" is in the eye of the beholder. What might seem "small" from the perspective of Congress seeking to support the nation's freight transportation system as a whole could well be a major contribution to the capital expansion plans or operational needs of a local port or terminal on the inland waterways. But these "small" ports and terminals are the gatekeepers of that larger system. A chain is only as strong as its weakest link. Meeting the needs of the ports and terminals on the inland waterways – however "small" they might appear to be when viewed individually – will have a highly leveraged effect in maintaining and enhancing the efficiency of our nation's freight transportation system overall.

At least one inland waterways industry association with which I am familiar, Inland Rivers, Ports, and Terminals, Inc. (IRPT), is encouraging its members to contact their

Congressional delegations to urge the introduction of a new standalone discretionary program dedicated to inland ports and terminal projects. However, this is an opportunity for all members of the inland waterways industry to call the attention of our lawmakers to this need.

We know that every elected representative values knowing what is important to his or her constituents. Grant amounts might be "small" in the context of an appropriations bill, but for an elected representative there is no vote that is too small. Many members of Congress provide for their constituents to communicate with them on their official websites, by email, or on social media. If those whom we elect do not hear from us about this need, we have no one to blame but ourselves.

James A. Kearns *has represented owners, operators, financial institutions and end users for more than 30 years in the purchase, construction and financing of vessels engaged in both foreign and coastwise trades of the United States. Kearns has earned an LL.M. (in Taxation) from New York University, J.D. cum laude from the University of Notre Dame, and a B.S.E.E., summa cum laude from the University of Notre Dame.*

What's Moving on Your Waterway?

When it comes to inland waterways, conventional wisdom points to the usual cargoes of coal, grain and petroleum. That's true, but any project cargo involves big lifts and even bigger issues.

By Tom Ewing

At last November's WCI meeting held in Chicago, Mike Little of Canal Barge Company gave a startling view of the importance of our nation's inland waterways, a presentation supported by some remarkable images. So – you ask – what's moving on our waterways? According to Little, industrial markets that depend on the waterways include myriad sectors, for many reasons.

Refining	NASA	Fabrication
Petrochem	Power Gen (Coast / NatGas)	Shipyards
Military	Nuclear Power	LNG

But, utilizing the inland rivers for project cargo involves a lot more than just loading up a few barges and pushing them downstream. Project Planning involves collaboration with shippers and owners, much of which requires planning that starts years in advance. Location (of new construction) can be impacted due to the great size of cargoes, route planning, lock maintenance schedules, bridge/transmission line clearances (air draft), time of year (high water, low water, ice) and dozens of other unpredictable variables.

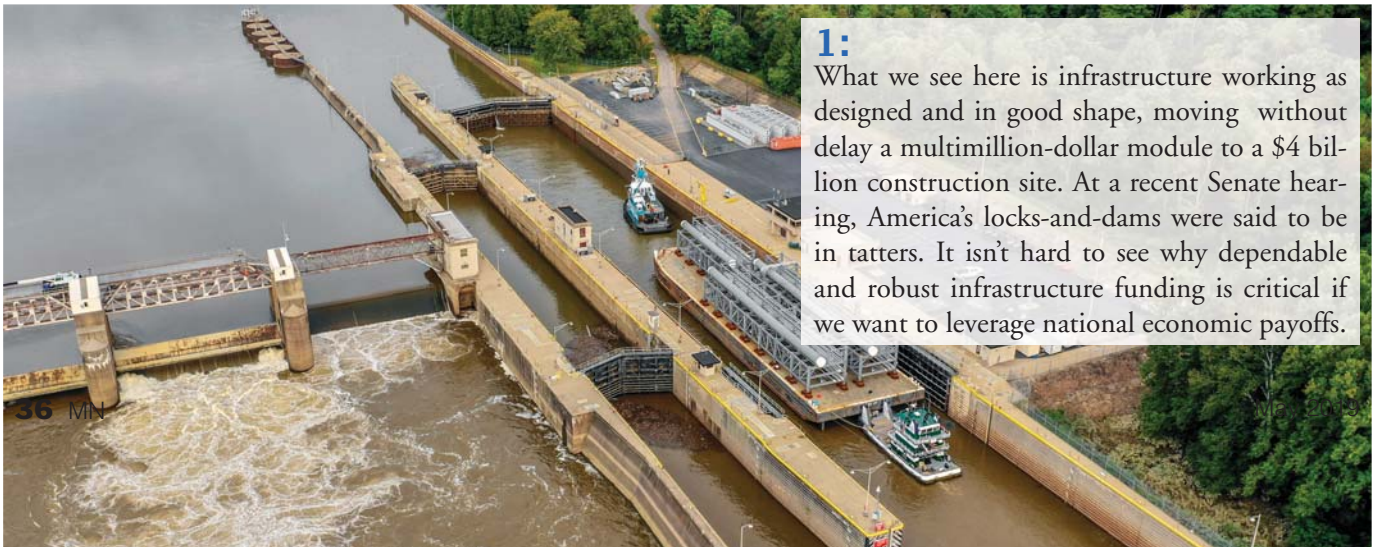
What's Moving on YOUR Waterways?

This is a tribute to rivers – the rivers that form America's 25,000-mile inland waterways system – a visual essay reflecting the talent, energy and muscle that transform rivers into a dynamo, basic to American power. Each photo is singularly outstanding, easily drawing a "Wow!" even from those who've moved a lot of cargo, maybe especially from those who move cargo.

These photos raise questions and make you think – but not just about one river or one vessel or one lock-and-dam. Rather each photo conveys action, portraying countless deliberate, precise, complex steps; movements with impact, big impacts. One initial thought: these projects, these investments – for communities, workers, shareholders – wouldn't happen, couldn't happen, if not for maritime highways.

In 2017 America's waterways carried over 766 million tons of cargo. But this photo message goes beyond that impressive tonnage. Rather it shows that absent these maritime assets – and professional abilities – America's industrial and commercial growth would be unable to maximize and align resources, talent and raw materials. These pictures show the enterprise that powers economic growth.

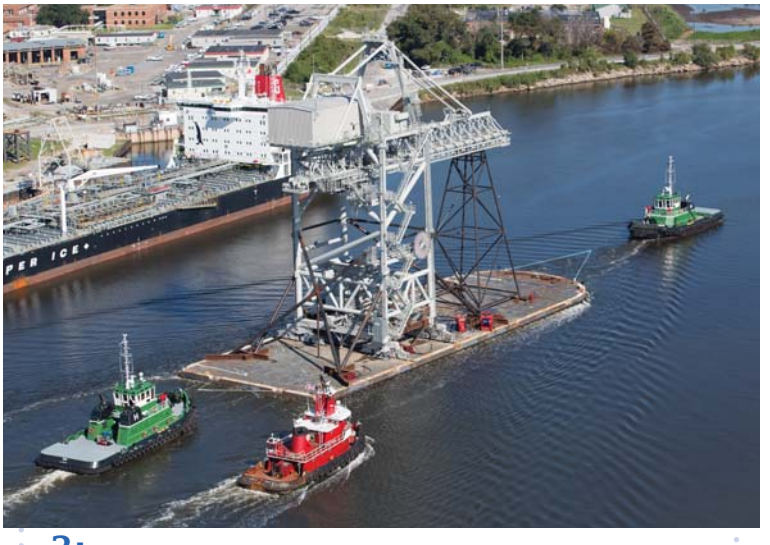
The photos, courtesy of Mike Little, VP Business Development with Canal Barge Company, were originally part of Little's presentation – *"What's Moving On Our Waterways?"* If a picture is worth a thousand words, then in this case, it is also true that what you're looking at is the lesson – that this maritime resource is over-the-top valuable. It doesn't just happen, it demands thoughtful policies and resources. Here are some of the lessons we see when reviewing these pictures:



1:
What we see here is infrastructure working as designed and in good shape, moving without delay a multimillion-dollar module to a $4 billion construction site. At a recent Senate hearing, America's locks-and-dams were said to be in tatters. It isn't hard to see why dependable and robust infrastructure funding is critical if we want to leverage national economic payoffs.

2:

Mike Little captioned this photo as "military barges." True that. But consider a variation - "civilian truck barges?" Think how many tons of NOx, SOx and VOCs are NOT emitted because these trucks are not driving on the Connecticut Turnpike, crawling along at 22 mph. Recall Connecticut Port Authority's ideas for a maritime highway parallel to I-95. Here you can see such a highway working now. In most states and regions there's plenty of capacity on the waterways; almost none on the Interstate system. Where should new freight investments go?



3:

Wherever this crane is headed, it appears just about ready to work. The ability to construct something at one site but move it to work at another site is a value that cannot be overstated. Frequently, "stick construction" at the destination work site is impossible. If this equipment couldn't be moved in, the project fails. Sorry about your employment projections and expanded property tax base for schools.

4:

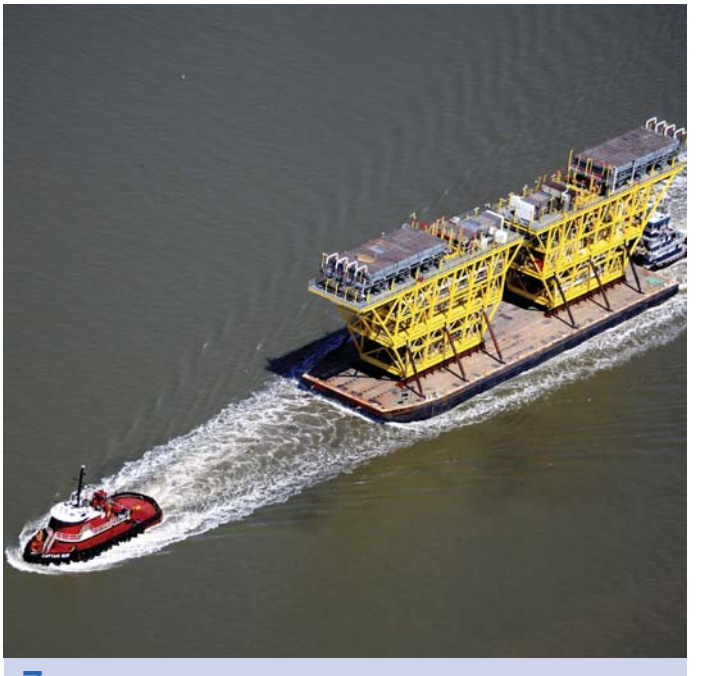
Those blue objects are buoys. Note the clear sailing under the bridge. Project cargo logistics can take at least a year to plan. Nevertheless, demand for sites and projects is up. For 2018-2019, Mike Little's data shows $35.6 billion in new investments in the Northeast Region, a 2.1% increase over 2017. For the South, new investment will total $160 billion, up 2% from 2017. In the Midwest – investment will be close to $80 billion – a whopping 12.8% increase over 2017. No matter the region, getting this cargo through is vital.

5:

This is a cracker unit. Once upright, petroleum feedstocks are heated and "cracked" into increasingly light-weight compounds which rise and vent through the tower's openings. The separated, "cracked" compounds are captured and processed further into intermediate or finished products, such as motor oils and gasoline. The ability to move this equipment means you don't have to transport the raw feedstock to the equipment. That's critical – not just from the standpoint of transport safety (pipelines, trucks, rail and possible spills). In addition, the ability to build refining capacity proximate to raw material production is important for local communities which can lose out if they have to export their raw material wealth rather than having the chance to create, and keep the augmented wealth resulting from refined, higher-value end products. Think of West Virginia – it's exported millions of tons of coal in the last century, but it remains a relatively poor state despite that energy wealth. Now think of the opportunities in Monaca, PA, near Pittsburgh. The local energy wealth from the regional Marcellus play will not be exported as a raw material. Rather, it will be transformed into higher-value products because of the Shell cracker plant being built in Monaca, a project made possible by project cargo carried from New Orleans to the Ohio River to Shell's site at Monaca.

6:

No problem. Plenty of room! Industrial Markets utilizing the waterways include refiners, petrochemicals, power generation – coal, natural gas and nuclear, liquified natural gas, shipyards, the military and NASA.



7:

These are solar project modules. On the land side, this equipment is moved by Self Propelled Modular Trailers. It takes teamwork. Wind turbine components are another likely energy project cargo on the horizon as various states prepare for wind developments. Both New York and Ohio want to build out an entire supply chain for wind. The region's maritime capabilities are a major strength within those plans.

8:

The Corps of Engineers historically uses a ton-mile, volume-based commodity measurement system which can fail to capture cargo value, both in dollars and economic impact. For example, a $1 million fabricated module may only weigh 100 tons but it may be transported to a $4 billion construction site creating thousands of jobs and hundreds of millions in commerce. Without the waterways these construction projects would not happen. The economic loss would easily eclipse the singular value of the freight.

In his closing comments at the WCI meeting, Mike Little asked rhetorically: *"Why wouldn't we fund the modernization of our lock-and-dam systems?"* A timely question. Transportation infrastructure funding remains an unresolved, high-priority issue. These pictures surely focus that discussion. And, anyone can see that. Right?

Tom Ewing is a freelance writer specializing in energy and environmental issues.

Kirby's Secret Sauce

Credit: KIRBY CORP

Another year; another major fleet takeover by Kirby Corporation. But the leader of the inland tank-barge sector is not growing for growth's sake: a deeper look at the numbers shows a disciplined strategy at work.

By Greg Miller

"Kirby is definitely the big gorilla in the inland barge market," affirmed Jefferies analyst Randy Giveans. Indeed, Houston-headquartered Kirby Corp has been extremely active buying fleets over the past few years, most recently acquiring the 63 tank barges of Cenac Marine in March for $244 million. Since the beginning of 2016, it has spent $953 million on vessel acquisitions, including $422 million for Higman Marine in 2018.

Kirby now operates 1,066 inland tank barges out of 3,817 on the water, equating to a market share of 28%. The next largest competitors trail far behind: American Commercial Lines (11%), Canal Barge (8%), Hardin Street Marine (7%), and Ingram (6%).

Wall Street Wonder

To understand what sets Kirby apart as a fleet buyer, consider the Wall Street connection. The company's NYSE-listed stock has been publicly traded since 1976 and was added to the Dow Transport Index in 2012. Its market capitalization was around $4.5 billion as of early April, by far the highest among US-listed shipowners and more than double that of second-place Golar LNG.

On the debt side of the equation, Kirby is designated 'investment grade' by credit-rating agencies. Debt of almost all other shipping companies is rated non-investment grade, or 'junk'. The public listing and investment-grade rating "go hand in hand", said Evercore ISI analyst Jon Chappell. "The public listing and transparent financial statements probably give advantages as far as bank financing is concerned," he told ***MarineNews***, adding, "Kirby's size also gives it big advantages with bank financing."

Giveans maintained that the public-equity component translates into the lower interest costs for both bank and bond debt. "Their liquidity and their market cap are certainly beneficial to their [debt] financing," he said.

Chappell adds, "They've built this really phenomenal track record that puts them in a really good position in terms of flexibility around doing these transactions, whether it's using traditional bank financing, public debt markets, or even finding owners who would take their stock. It gives them a huge competitive advantage."

Kirby has $1 billion in outstanding bond debt, with half

"When you think about the earnings power of the company, it's much higher than it has ever been, and we're just now coming out of the bottom of the cycle."

– David Grzebinski, Kirby Corp CEO

of those bonds issued to fund the purchase of Higman, and others issued to fund the acquisition of Penn Maritime in 2012.

Its bank debt includes a $850 million revolving credit facility, which had an average of $412 million outstanding last year. The majority of its recent tank-barge purchases have been funded with this revolver. In March, Kirby pushed back the maturity of the facility from 2022 to 2024 and tacked on a new $500 million five-year term loan for "general corporate purposes and acquisitions".

The average interest rate on Kirby's debt was a mere 3.5% last year, 3% in 2017, and 2.7% in 2016, which Giveans believes is below interest rates being paid by any of its competitors.

Kirby's NYSE listing also allows for ships-for-shares deals. Kirby issued stock to pay for a portion of the 2017 purchase of S&S for its distribution-and-services division, and for part of the consideration for Penn Maritime and K-Sea Transportation in its marine-transportation division.

"With the S&S transaction, they were able to build their balance sheet up and do a lot more on the marine side," Giveans told *MarineNews*. "I think the company would say that without the S&S acquisition, they wouldn't have been able to be as active on the marine side as they have been in recent years."

By using capital markets and banking access to finance takeovers, Kirby has sharply reduced the age of its inland tank-barge fleet, which in turn lowers maintenance costs to the benefit of margins. Its inland barges' average age was 24-25 years throughout 2000-08, and has fallen ever since, down to just 13 years in 2019. In 2008, the average age of US tank barges overall was 23 years, just below Kirby's average age. Today, the average age is 16 years, three more than Kirby's.

In the Driver's Seat

'What drives fleet deals?' is a common question on conference calls. Are they done to renew the fleet at a dis-

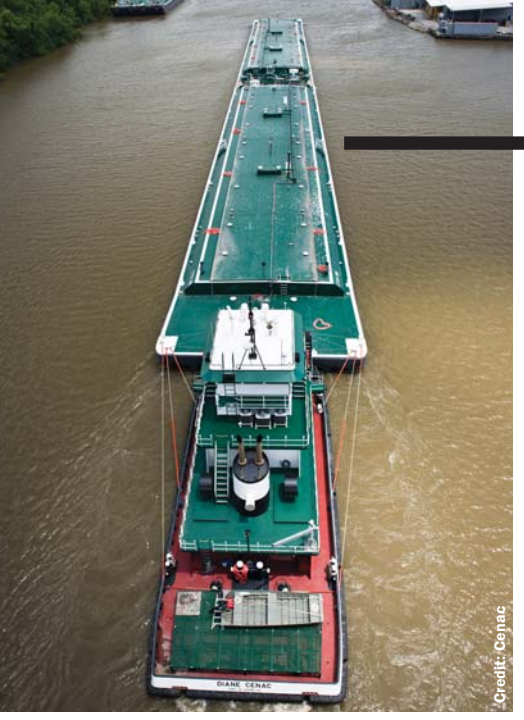
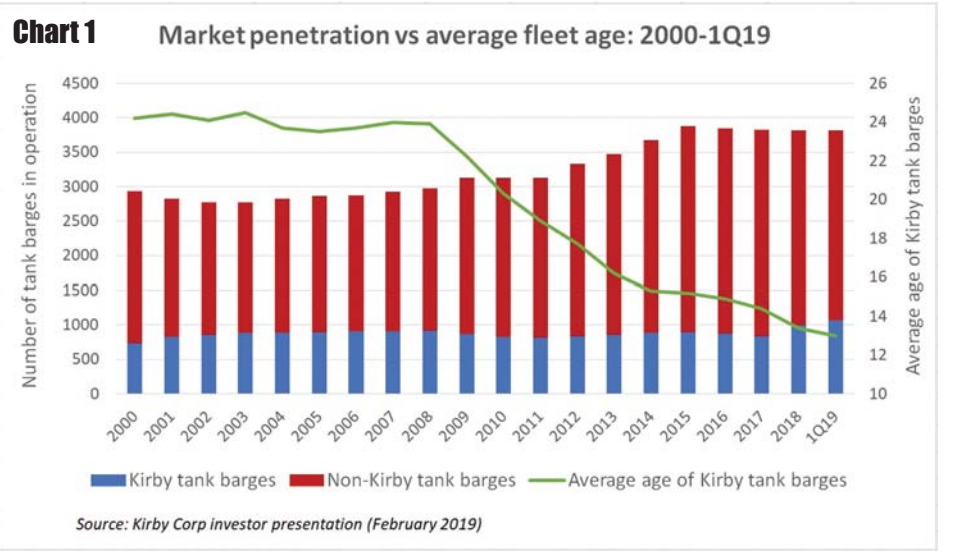


Chart 1 Market penetration vs average fleet age: 2000-1Q19



Source: Kirby Corp investor presentation (February 2019)

count to the replacement (newbuild) cost, or to add capacity, and increase the operating leverage, i.e., exposure to rates? The data confirms that for Kirby, it's more about replacement than incremental growth over the longer term (see chart 1).

On the latest conference call, Kirby CEO David Grzebinski estimated that the Cenac purchase price was 25-35% under replacement cost. "We are buying [Cenac's fleet] at a significant discount to replacement value," he explained. He described this particular deal as more about incremental growth than replacement. "If you look at our barge capacity, including Cenac, from the beginning of 2018 to now, the number of barges we have is up about 26% and the barrel capacity is up 36%. So, when you think about the earnings power of the company, it's much higher than it has ever been, and we're just now coming out of the bottom of the cycle," said Grzebinski.

Asked whether Kirby favors replacement or growth, Chappell responded, "The answer is both. If there is a super-modern 50-barge fleet they could buy that would replace their existing oldest 50 barges, they would do that. But if the same 50-barge fleet was available, and there wasn't necessarily a replacement need, if it was at the same price and the same economics, they would do that too. I don't think they look at these acquisition candidates as just replacement or just expansion. I think they're agnostic to that. They look at what the price is and what the potential return is."

A key and counterintuitive aspect of Kirby's acquisition strategy is that despite all of the money it has spent buying vessels over the past two decades, its share of the inland tank-barge market has remained relatively range-bound. While it is up to 28% today currently from 22% in 2017 – a significant two-year gain – a look further back shows that Kirby possessed 30-32% of market capacity in 2002-08.

According to Chappell, the range-bound nature of Kirby's market share "goes back to the [capital] discipline. A lot of that [market] growth you saw over the last 10 years was people speculatively ordering barges when the US started to become a massive producer of oil and we still had the export ban in place. There was crude by rail and you couldn't build pipelines and rail cars fast enough and it was going to barge. Then the oil price collapsed and there were more pipelines and railcars.

"But Kirby wasn't out there speculatively ordering capacity for the sake of adding capacity – which is what a lot of existing competitors and more importantly, new entrants to the market, were doing. Everything they do – whether it's acquiring a barge or building a barge or scrapping a barge – is about the cash-on-cash returns of that decision. That's why they were letting market share slip away when other people were building: because it didn't meet their return profile. They weren't willing to chase it. And that's why they've been acquisitive recently off of the bottom of the market: because they felt they could get a good entry point that would provide an adequate return over a mid-cycle basis."

Giveans believes the relatively static nature of Kirby's market share over time is intentional. "I think 30% is probably a very good number in terms of not cannibalizing yourself while at the same time having capacity for your customers. That's the 'sweet spot'. If they owned 50% of the market, they'd be competing against themselves for a lot of cargoes and a lot of fixtures."

Asked by ***MarineNews*** whether Kirby's relatively consistent share of the inland tank-barge market was an intentional strategy, the company's vice-president of investor relations, Eric Holcomb, declined to comment.

Competitive Advantage: scale, versatility – and leverage, too

Kirby's current fleet scale provides a number of competi-

tive advantages. Giveans explained how Kirby's scale allows it to offer contracts of affreighment (COAs), wherein a certain volume of cargo is agreed to be carried over a specified time frame. "If you have a fleet of 200 barges, you probably couldn't do COAs, because your barges might be occupied or in different parts of the inland waterway system and you couldn't get to where you need to be in time. If you have 1,000 barges, you're so spread out geographically that you can do COAs."

Takeovers also bring more tugs in-house. "They've basically brought more 'power' in-house and aren't forced to go out and charter-in power when the market is really strong and chartering is at a high cost basis," said Chappell.

Kirby's size also allows it to move multiple liquid cargoes while minimizing tank-cleaning requirements. "If you have 10 barges and want to carry even three or four different commodities, there'll be a lot of switching and cleaning required," said Giveans. "If you have 1,000 barges, you have a lot more versatility in terms of the types of cargoes you can carry."

Finally, Kirby's scale gives it at least some pricing power. According to Giveans, "They have pricing power not only in the chartering of their barges, but also with vendors for fuel, spare parts, and other things." He cited the case of a bunker supplier who used to serve Higman prior to its sale and now delivers the same volumes to Kirby – at a lower price.

Going forward, the pace of the Kirby's fleet deals could slow compared to recent years for two reasons.

First, there are fewer large fleets left to be acquired, so Kirby will have to add capacity in smaller doses. "There really aren't a lot of Higmans left to buy," said Chappell.

Second, Kirby generally pursues acquisitions when markets are weak and asset prices are low, not when markets are on the upswing. Prices and rates are now rising and the demand outlook looks promising, given expected growth in US oil and petrochemical production, and the historical relationship between production and Kirby's marine transportation revenues.

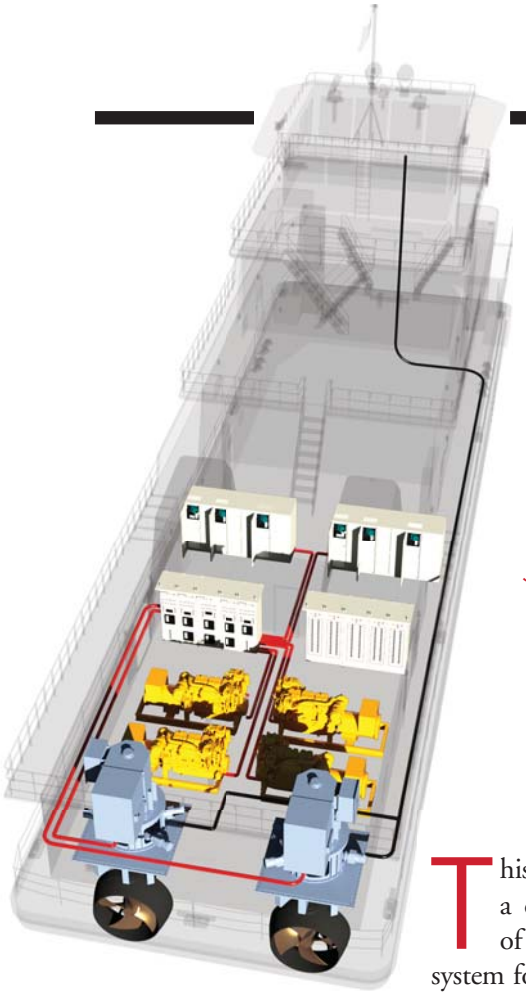
Secret Sauce

"Kirby's 'secret sauce' over the last 30 years has been its well-timed acquisitions, how it has not overpaid when the market was really good, how it has taken advantage of stressed opportunities, and how quickly it has been able to take advantage of those opportunities when others couldn't," said Chappell.

"What would slow their acquisitions down is if the market starts to recover – which it already has – and if assets values went up and they felt they weren't getting the best deal," he continued. "Spot pricing is already up significantly off the bottom and that means asset values are probably off the bottom as well, so I would imagine there would be less stressed sellers out there than there were 12 months ago."

"Kirby is known for acquiring when markets are tough and people are ready and willing to sell," said Giveans. "Kirby is definitely the first call people make when they're selling. But Kirby doesn't buy just to buy. They buy when prices are cheap – and it's getting a more expensive." Will a lack of targets and improved market fundamentals slow Kirby's acquisition pace in the period ahead? That remains to be seen.

__Greg Miller__ is an award-winning journalist and editor. Most recently, he served as the managing editor of Fairplay magazine. Prior to his 14 years at Fairplay, he was the senior editor of Cruise Industry News and the editor in chief of the Virgin Islands Business Journal. He is a graduate of Cornell University. His work currently appears in a number of prominent shipping and energy publications.



Energy Storage Life Cycle Cost Study

Diesel electric propulsion is a concept that uses an electrical power generation plant to deliver power to the propulsion unit. Case studies show reductions in fuel and maintenance costs with such systems. Those improvements can be further enhanced by the addition of an energy storage system to the vessel.

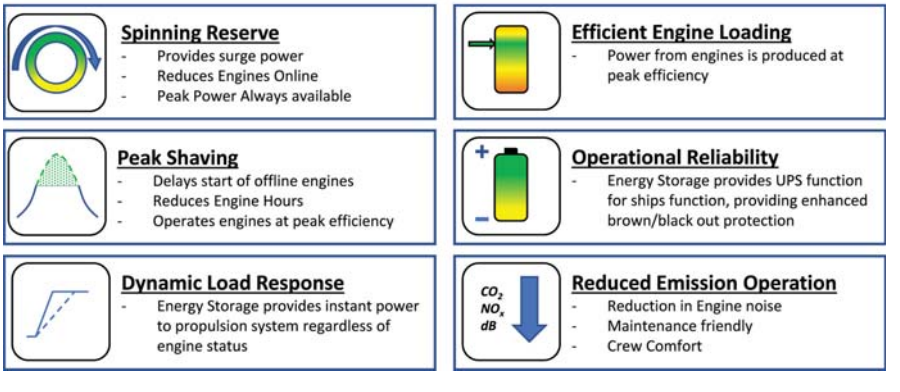
By Joshua Slade Sebastian, P.E.

This case study provides a cost benefit analysis of an energy storage system for a vessel owner using a real-world operational profile and case study. It is not a deep dive into all of the aspects and details of an energy storage system. There are many configurations and options available to fit a wide variety of requirements. Naval architects can work with the systems engineers for these manufacturers to determine the best system for a particular application.

TYPICAL BENEFITS OF ENERGY STORAGE SYSTEMS

For typical marine applications, the use of Lithium Ion batteries (Li-ion) will add spinning reserve, peak shaving, and efficient engine loading to increase the overall efficiency of the vessels. With those system improvements, operators will experience an overall reduction in engine hours, fuel consumption, and maintenance costs while improving the responsiveness and reliability of the vessel's propulsion system. These benefits can be realized with a variety of propulsion systems, including both Z-drives and conventional shafted propellers.

Energy Storage System Benefits

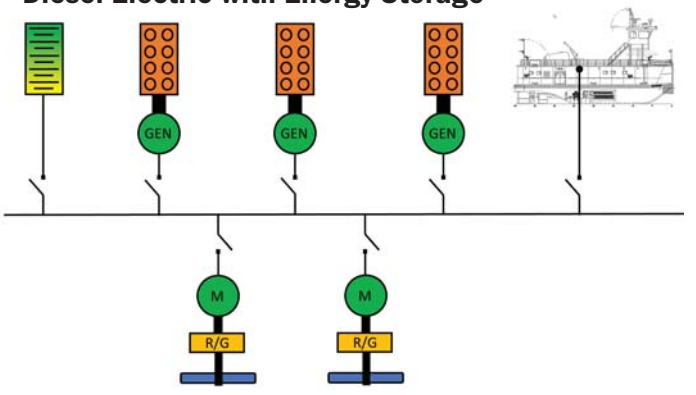


DIESEL ELECTRIC WITH ENERGY STORAGE

A Diesel Electric with Energy Storage (DE/ES) system operates by having the batteries provide power to the grid at all times. With the batteries controlling the power grid, the power management system (PMS) monitors the state of charge on the batteries, discharge rate, and demand loads. The PMS then manages the generators to provide appropriate power to the grid to keep the batteries properly charged.

The "always online" approach to energy storage provides the best overall system performance. With this set up, throttle response from the propulsion system can be nearly instantaneous. The batteries provide the spinning reserve and dynamic response so the DE/ES system can deliver power even faster than mechanical propulsion systems.

Diesel Electric with Energy Storage



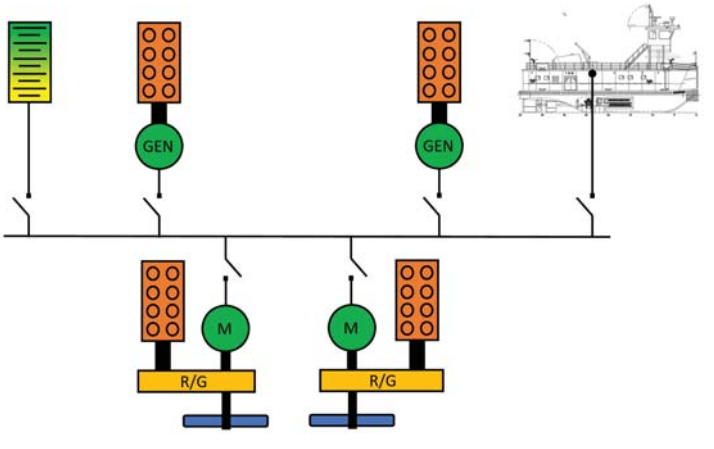
HYBRID WITH ENERGY STORAGE

Hybrid with Energy Storage (H/ES) systems make use of a mechanically driven shaft line with a power take off and power take in (PTO/PTI) connected to a motor/generator (M/G) set. The M/G set can take power from the ships electrical system and/or energy storage to provide additional power to the propeller shaft. This system is similar to those in modern hybrid cars. A hybrid system such as this can be especially attractive as a retrofit option for existing vessels.

LIFE CYCLE COST ANALYSIS

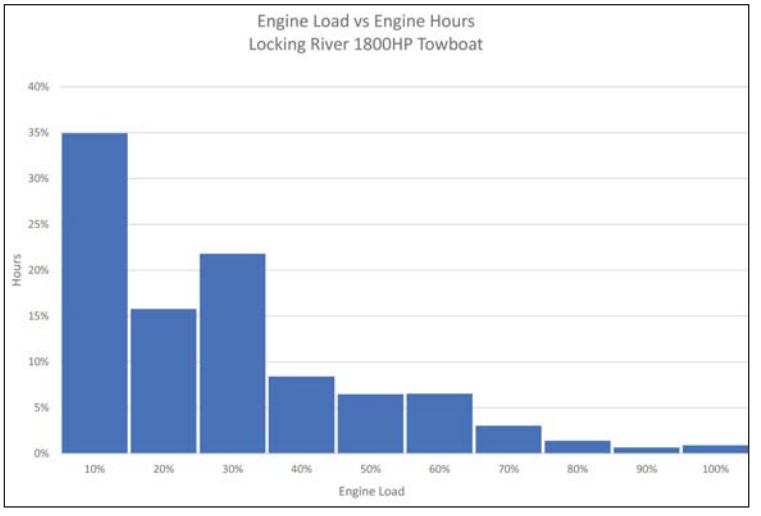
Energy Storage systems should not be considered a one-size-fits-all solution. As with diesel electric propulsion systems, a careful study of a towboat's operational profile should be conducted to determine the operational benefits. Below is a real operational profile used for this case study. This particular vessel is an 1800HP locking river towboat.

Hybrid with Energy Storage



VESSEL: 1800HP LOCKING RIVER TOWBOAT:

Some basic assumptions for the life cycle cost analysis include both a 365 day per year operational tempo with a 40-year vessel life cycle.



There are some minor differences in the systems. First, the total brake horsepower of each system is slightly different. The mechanical system has 1800 BHP while the DE/ES has a maximum of 2000 BHP. Another difference is the mechanical-based design has a total of four engines, with two of those engines being required to be EPA Tier IV, while the electrical propulsion design utilizes only three Tier III generators. The DE/ES system used for these calculations is a DC bus system. The system uses AC generators and AC propulsion motors. However, the main propulsion bus is DC. This provides for a smaller, more reliable system and cost-effective solution.

A DE/ES system does increase the initial capital costs of the towboat. This increase is equal to about $400k increase in overall construction cost of a typical 1800HP towboat. Most of that increase is due to the costs of the batteries and associated battery equipment.

OPERATIONAL COSTS (OPEX)

Operational costs are broken down into two categories: Fuel Costs and Maintenance Costs. For example:

Mechanical Propulsion	
Prime Movers:	2 x 900HP Tier IV Engines
Generators:	2 x 99kW Generators
Propulsion:	Conventional Shafted

Diesel Electric with Energy Storage	
Generators:	3 x 599kW Tier III Generators
Energy Storage:	300 kwHR
Propulsion:	Conventional Shafted

Capital Cost Comparison

Mechanical:	Cost/unit	Qty	Total
Prime Mover	$ 390,000	2	$ 780,000
Gear Box	$ 60,000	2	$ 120,000
Urea System	$ 50,000	1	$ 50,000
Generators	$ 45,000	2	$ 90,000
		Total:	$ 1,040,000

DE/ES:	Cost/unit	Qty	Total
Generators:	$ 125,000	3	$ 375,000
Gear Box	$ 60,000	2	$ 120,000
AC Motor:	$ 75,000	2	$ 150,000
Batteries	$ 300,000	1	$ 300,000
Propulsion Switchboard	$ 200,000	1	$ 200,000
Battery Room Equipment	$ 125,000	1	$ 125,000
VFD Drives	$ 75,000	2	$ 150,000
		Total:	$ 1,420,000

Fuel Cost: A detailed fuel consumption model was run on the operational profile. TSGI's algorithm models various battery sizes, generators, mechanical system performance, and mechanical hybrid systems for comparison and optimization. It uses the actual time data to establish fuel consumption, not an average of engine loads. This results in a more accurate modeling of fuel consumption and system optimization. Calculations were compared with actual fuel consumption data for the profile to validate the methodology.

For these calculations the following assumptions were made:

- *Fuel Cost:* *$2.5/gallon*
- *Urea Cost:* *$3/gallon*
- *Urea Dosing Rate:* *5%*

The fuel savings for the DE/ES system is achieved mostly through the functions of peak shaving and efficient engine loading. By using peak shaving and dynamic response, the overall number of engine hours can be reduced. This has a large impact on the maintenance costs, as discussed further below. In this life cycle analysis, the initial capital cost of the DE/ES system is nearly offset in the first year of operations.

Annual Fuel Cost Comparison				
System	Fuel	Urea	Total	Delta
DE/ES	$ 412,513	$ -	$ 412,513	$ - 0%
Diesel Electric	$ 490,233	$ -	$ 490,233	$ 77,720 19%
Mechanical	$ 517,469	$ 31,048	$ 548,517	$ 136,004 33%

Annual Engine hours

	Prime Movers		House Generators	
	Totals Hours/yr	hrs/engine	Totals Hours/yr	hrs/engine
DE/ES	5288	1763	-	-
Diesel Electric	12279	4093	-	-
Mechanical	17520	8760	8760	4380

Life Cycle Maintenanc Costs			
Item	DE/ES	DE	Mechanical
Prime Movers	$ 1,630,168	$ 3,204,819	$ 6,003,520
Electric Propulsion Drives	$ 300,000	$ 300,000	$ -
House Generators	$ -	$ -	$ 120,000
Energy Storage System	$ 800,000	$ -	$ -
Life Cycle Maintenance:	$ 2,730,168	$ 3,504,819	$ 6,123,520
Savings:	$ 3,393,352	$ 2,618,701	$ -

Total Life Cycle costs

Item	DE/ES	Diesel Electric	Mechanical
Capital Cost	$ 1,420,000	$ 1,180,000	$ 1,040,000
Fuel Costs	$ 16,500,533	$ 19,609,333	$ 21,940,687
Maintenance	$ 2,730,168	$ 3,504,819	$ 6,123,520
Total Life Cycle:	$ 20,650,701	$ 24,294,152	$ 29,104,207
Savings	$ 8,453,505	$ 4,810,054	$ -

MAINTENANCE COSTS:

Beyond fuel savings, there are significant reductions in cost on maintenance budgets with the use of energy storage systems.

Annual Engine hours:

Using a DE/ES system for this profile results in a 70% reduction in engine hours over the current mechanical version of the same vessel. Adding energy storage to a Diesel Electric version also results in a 50% reduction in engine hour.

The below life cycle maintenance costs are based on the engine hours above with a vessel life cycle of 40 years using manufacturers recommended maintenance schedules.

Total Life Cycle Cost:

The below calculations assume a 365 day/yr operational tempo over a 40-year life cycle for the studied vessel. As such, they represent a maximum potential life cycle savings for the reviewed profile.

BEYOND DOLLARS AND CENTS

Maritime industries depend on reliable and safe operations. From the smallest towboat to the largest military ship, any vessel without a reliable power plant is a liability. Many of the industries that rely heavily on safe and reliable power, such as ferries and offshore support vessels, have moved to energy storage systems as they represent a significant jump in those areas.

While the fuel and maintenance costs are brought down with the use of peak shaving, reliable operation is enhanced with the spinning reserve and dynamic response characteristics of an energy storage solution. In the event of an engine failure, the batteries provide continuous operations while more power is brought online, effectively acting as an uninterrupted power supply (UPS) for the entire vessel.

Also, such systems can significantly reduce overhaul times. For both the diesel electric and DE/ES systems, replacing a generator performed quicker than replacing a main diesel engine. Depending on an owner's maintenance program, carrying spare units for a vessel becomes easier as all the generators are the same. Once a unit is removed from a vessel, it can be easily overhauled in a shop without impacting the operational tempo for the vessel.

YOU HAVE OPTIONS

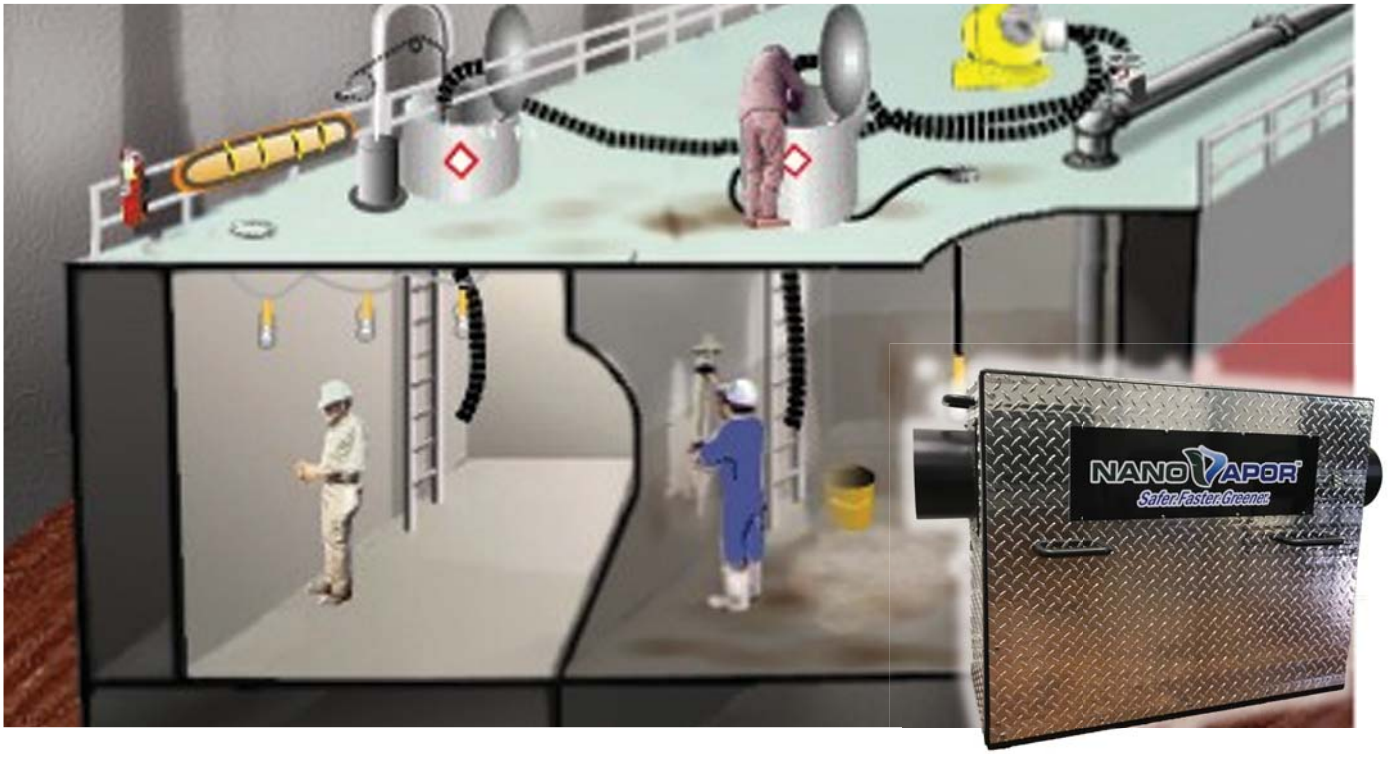
As with any system or technology, a DE/ES system may not be a viable solution for all vessel owners. However, this case study shows savings over the life of the vessel can be significant with a properly designed system.

TSGI recognizes that fuel savings may not return any benefit to the vessel owners depending on contract structure. TSGI expects that the inland market will follow the same pattern that other parts of the marine industry have started to experience, with charterers and commodity owners requesting more fuel efficient vessels instead of just accepting higher fuel surcharges.

Joshua Slade Sebastian, P.E., *is Engineering Manager at The Shearer Group, Inc. (TSGI).* *TSGI would like to thank the Marine Division at ABB for assistance with the electrical design of the concept diesel electric towboat and providing some of the technical information for this article.*

Gas Freeing Barges the Modern Way

Using Nanotechnology to Improve Safety & Efficiency



For as long as oil and petrochemicals have been in use by transportation, safely managing their highly flammable, toxic, and environmentally damaging vapors has been an ever present challenge. Even with increasing emphasis on safety procedures and better training, these invisible and dangerous vapors continue to result in the loss of life and property. But now, new nanotechnologies can provide safer and faster solutions that were not thought possible with conventional methods. NanoVapor's patented nanotechnology systems are now becoming available for marine and other transportation modes, so they too can realize the dramatic improvements in workplace health and safety made possible with more effective suppression of these dangerous vapors in confined spaces.

In the marine transportation business, safety and time often work against each other as operators seek to improve overall efficiency by reducing the vessel downtime related to unscheduled and scheduled maintenance, repairs, and inspections. This time pressure can lead to inadvertent but deadly lapses in the checks and balances that are designed into safety procedures that deal with these hazardous vapors. NanoVapor addresses these risks not only by significantly reducing the time needed to achieve safe vapor levels, but by also maintaining these safe levels for up to a week or more.

Gas Freeing Confined Spaces

When gas freeing a fuel or product tank, NanoVapor's technology can virtually stop vapor formation at its source by forming a molecular barrier on any surface where oil, fuel, and other petrochemicals are present. This molecular barrier is so thin that only a few ounces of its nano-engineered suppressant molecules are needed to fully suppress vapor concentration to safe levels in a 100 cubic meter tank. Because no measurable residue is left behind, the need for costly and time-consuming recovery operations is minimized or eliminated.

To show the degassing effectiveness of NanoVapor's aviation degassing system, a live side-by-side degassing demonstration was performed on the wing fuel tanks of a Boeing 737 aircraft. Prior to degassing, the jet fuel in each of these fuel tanks was drained using normal procedures,

leaving the usual puddles of fuel trapped by the numerous internal structures within the tank. The wing tank on one side was then degassed using NanoVapor, while the tank on the other side was simultaneously degassed using conventional air ventilation. The graph in Figure 1 shows the time it took NanoVapor to reduce the fuel vapors to the safe level of 100 ppm (13 minutes) as compared to normal air ventilation (more than 7 hours).

It is important to know that NanoVapor's molecular vapor suppression continues long after the suppressant delivery system is removed. Indeed, the vapor concentration stayed at safe levels after the delivery system was removed, while the concentration in the tank with air ventilation quickly increased above hazardous levels.

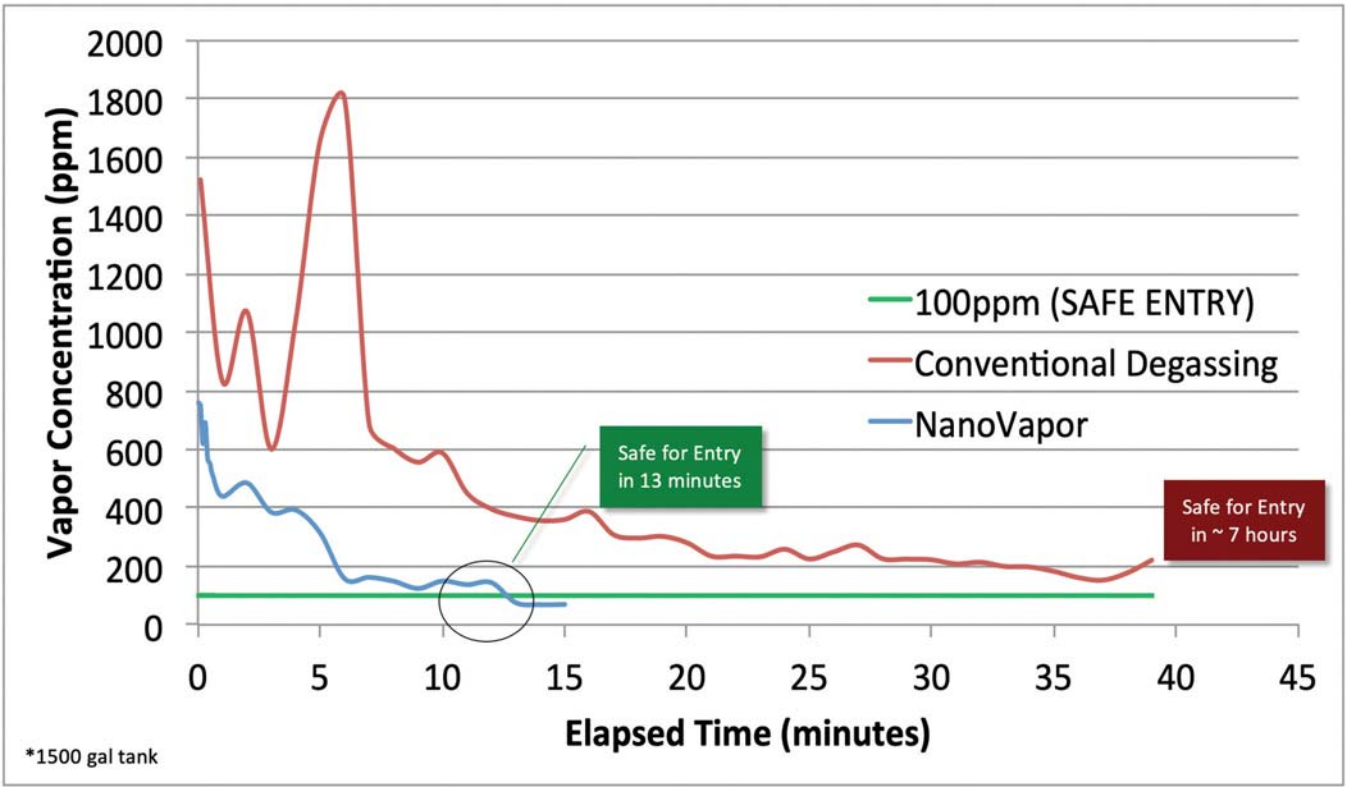
NanoVapor produces similar results at larger scales with time savings of 70% on a 30,000-bbl tank barge, even when constrained by a low-flow vapor recovery system. Savings can be further increased by optimizing for specific product type, tank size, geometry, venting configurations, and flow rates of the vapor recovery systems.

Because there are no reactive chemicals or inert gases involved with NanoVapor, breathable air is never displaced and normal oxygen levels are maintained throughout the confined tank space. This also results in a more environmentally friendly solution, as no additional hazardous waste is created in this gas freeing process.

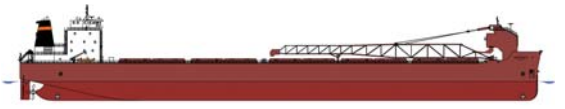
Safety & Sustainability

For barge operators, incorporating nanotechnology into its normal gas freeing procedures can represent a 'win-win' solution by improving safety and efficiency, while saving the cost of downtime related to the typical lengthy gas freeing process. This time savings also translates directly to reducing atmospheric emissions.

Currently, NanoVapor's vapor suppression systems are optimized for hydrocarbons categorized as C5 or higher, including HFO, LSFO, and other refined products. Its patented systems and nano-engineered suppressants have been designated as an international Best Practice Standard for degassing underground storage tanks by one of the largest oil companies in the world, and successfully adapted for use on large aircraft, barges, and above ground storage tanks. It is an APEA recognized gas freeing method, and NanoVapor's ST1000 delivery system is portable, simple to use, and intrinsically safe (ATEX Zone 2). www.nanovapor.com



Interlake, Fincantieri Partner to Build Great Lakes Bulker



A U.S.-flagged Great Lakes bulk carrier will be built for the first time in more than 35 years thanks to a historic agreement recently signed between The Interlake Steamship Company and Fincantieri Bay Shipbuilding of Sturgeon Bay, Wisconsin. The new River-Class, self-unloading bulk carrier will be the first ship for U.S. Great Lakes service built on the Great Lakes since 1983. The ship, which will transport raw materials to support manufacturing throughout the Great Lakes region, also represents hundreds of good-paying, domestic jobs. The Interlake Steamship Company is the largest privately held U.S.-flag fleet on the Great Lakes, with nine vessels carrying bulk cargoes. "When we approached a historic project of this magnitude – building our company's first ship since 1981 – we knew it was critical to choose the right partners. Fincantieri Bay Shipbuilding is the shipyard that has the experience and skill to execute on our long-term vision," says Interlake President Mark W. Barker.

LOA: 639'	Expected Delivery: mid-2022	Deadweight tons: 28,000
Beam: 75'	Shaft horsepower: 7800	Classification: ABS
Height: 45'	Engines: EMD EPA Tier 4 diesel	Service: Great Lakes
Speed: 15+ mph	Propeller: 18' Kongsberg controllable pitch	Flag: USA

Metal Shark Building Fire Boats for Miami-Dade Fire Rescue

Metal Shark has been selected to build the next generation of fire boats for the Miami-Dade Fire Rescue Department. Miami-Dade has selected the Metal Shark "50 Defiant X" fireboat, a welded aluminum monohull vessel featuring a proven hull form and a specialized arrangement optimized for firefighting. The new fire boats are being built at Metal Shark's Jeanerette, Louisiana production facility and are intended to replace older fire boats currently operated by the Department. The 50' x 15' vessels will be powered by twin inboard diesel engines mated to water jet propulsion units, with exact specifications to be announced. Projected top speed is in excess of 45 knots, for the fastest possible emergency-response time. At a more economical cruise 30-knot cruise speed, the vessels are expected to deliver a nominal operating range of approximately 250 nautical miles. The distinctive new vessels were

designed by Metal Shark's in-house engineering team and boast modern, crew-friendly features for improved safety and efficiency. Mission-enhancing features include Metal Shark's signature "Pillarless Glass" pilothouse arrangement, which offers dramatically improved from the wheelhouse compared to the smaller, framed windows used on the outgoing vessels. With the acquisition, Miami-Dade Fire Rescue, one of the largest fire departments in Florida, will join a growing list of Metal Shark fire boat operators.

AAM Delivers Fast Ferry for Kitsap Transit

All American Marine, Inc. (AAM) has delivered the second of three low wake and high-speed passenger vessels for Kitsap Transit. The Reliance, an aluminum catamaran with a composite superstructure, was launched in Bellingham on March 6, 2019 and has been undergoing sea trials and wake-wash testing this past month. During these test periods and in a light laden condition, the crew observed the vessel capable of speeds in excess of 45 knots, over 50 mph. The vessel was designed by Teknicraft and will operate on Kitsap's current cross-sound ferry route between Bremerton and downtown Seattle.

The design of the new vessel was based upon the successful ultra-low-wake Rich Passage 1 (RP1), built by All American Marine in 2011. AAM, the exclusive builder of Teknicraft Design hulls in North America, was tapped as the sole source to build this vessel. Teknicraft's patented hydrofoil-assisted hull design is proven to have industry leading low-wake wash energy signature that will not degrade the sensitive shore lines of Rich Passage.

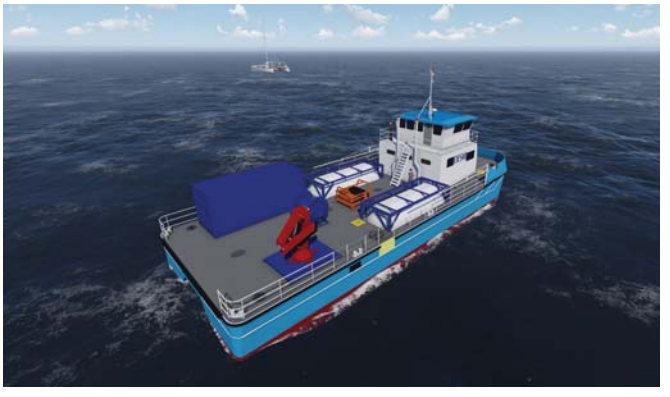
Vigor to Build two 56' pilot boats for Port LA Pilots

The Port of Los Angeles recently awarded Vigor the contract to build two 56' pilot boats. Camarc pilot boats are widely acknowledged worldwide as the gold standard for design quality and reliable performance, particularly in more extreme environmental conditions. This smaller boat currently used throughout Europe, Australia and South America delivers the same consistent performance as the larger boats to the US mid-sized market. The boat features a twin chine heavy weather hull form for excellent seakeeping. The design accommodates multiple heavy fender systems facilitating safer pilot transfers in challenging weather. An articulated rescue davit provides man overboard recovery. The overall design also maximizes the available horsepower and performance from a Tier III (non-catalyst) level engine. Vigor expects to complete construction of the boats by late summer of 2020.

Moose Boats Wins Rochester NY Fireboat Bid

Moose Boats was awarded a contract from the City of Rochester, New York Fire Department for the construction of the first M2-38 Fire Rescue Catamaran to be delivered to the Great Lakes. Twin Cummins 425hp turbo diesel propulsion engines, Twin Disc transmissions and Hamilton waterjets will power the M2-38 aluminum catamaran. Rochester Fire's new Moose Boat will be equipped with a fire pump system flowing over 1,500 gallons per minute of fire suppression water to cabin roof and cockpit mounted monitors while simultaneously maintaining full maneuverability from both propulsion engines and jets. An integrated 5" diameter discharge will allow Rochester Fire to flow water to land based fire apparatus where hydrant systems are not present.

DESMI's KaziCat all-in-one Workboat Solution



DESMI KaziCat is a true Multi-Purpose Catamaran Vessel despite its compact size; just below 24 meters at waterline and 9.6 meters in width. It fulfills the MCA category 2 requirements allowing operation up to 60 nautical miles from safe haven. What is unique for this vessel is its modular design concept allowing shift of operation mode within the hour. The KaziCat can carry up to 4 x 20' ISO containers carrying the various equipment allowing the vessel to handle the more than 10 different tasks, from removal of floating debris all the way to carriage of a special 20' container with 4 special bunks for injured people (SAR operations).

Length Overall: 24.60 meters	Fresh water tank: 10,000 liters	Fuel tank: 15,000 liters
Breadth (moulded): 9.60 meters	Engine: 2 x 610 kW Yanmar @ 1900 rpm	Lightship weight: 92 tons
Draft loaded: 1.75 meters	Full load displacement: 193 tons	Speed loaded: 13 knots


Downey


Hewitt


Gallagher


Drees


Marshall


Morris

Hurtigruten Appoints Downey as Americas President

Hurtigruten has appointed **John Downey** as President for the Americas, based in its Seattle regional headquarters. A seasoned executive, Downey has extensive senior-level experience building and managing market-leading businesses. Most recently, he worked at Amazon. He earned his MBA at Northwestern University's Kellogg School of Management, and his BA in Economics and Psychology also from Northwestern.

ACR Electronics Confirms Leadership Appointment at Ocean Signal, UML

ACR Electronics announced a new appointment for its brands Ocean Signal and United Moulders Limited (UML). **James Hewitt**, previously Director of Sales for ACR and Ocean Signal products in the EMEA and APAC regions, has been promoted to General Manager, Ocean Signal and UML. Hewitt has been managing the sales and marketing efforts for Ocean Signal since 2011 and was promoted to Director of Sales for ACR and Ocean Signal in May 2018.

MMA's Maritime Person of the Year

IRI's **William Gallagher** in April headlined the Massachusetts Maritime Academy's annual presentation of the Emery Rice Medal at the Plaza Hotel in New York City. Gallagher's belief in the value and concept of a public education, coupled with a life of achievement for the global waterfront was the perfect match for the 128 year old academy's values and mission set. Making it all possible, in part, were industry sponsors such as Clean Harbors Corporation, the Marshall Islands Registry, the American Bureau of Shipping, Able Services, Kelliher Group/Morgan Stanley, industry icon Gerhard Kurz, McAllister Towing and Transportation, Moran Towing, Noragh Analytics, Norton Rose Fulbright, Poten & Partners, Ridgebury Tankers, Scorpio Tankers, Seward & Kissel, GT Wilkinson Companies and scores of additional donors. The Medal was first awarded in 1995. On Monday night, six previous Emery Rice Medal recipients were in attendance. MMA President ADM **Fran McDonald** recognized each in turn, including the inaugural Emery Rice medal recipient, Admiral **William Bud Flanagan**.

Brunswick Names Drees President at Mercury Marine

Brunswick Corporation promoted **Christopher Drees** to president – marine parts and accessories, to president – Mercury Marine. Drees joined Mercury Marine in 1998, and during his first eight years, held a variety of positions within the Company, and as general manager of the Mercury propeller business. From 2006 through 2014, Drees led Mercury's Attwood operations, first as COO and then as president. In 2014, Drees was promoted to vice president – Mercury global operations. Drees earned a bachelor's degree in business management from the University of Wisconsin, and an MBA from Marquette University.

Ecochlor Names Marshall VP of Business Development

Ecochlor announced **Andrew Marshall** as its new Vice President of Business Development. Prior to joining Ecochlor, Andrew led several other marine and technology companies. He also served as Secretary on the Board of Directors of the Ballastwater Manufacturers Equipment Association (BEMA) and was elected as Fellow of the Institute of Marine Engineering, Science and Technology (IMarEST).

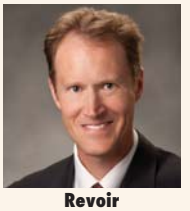
WheelHouse Promotes Morris to VP, Operations

WheelHouse Technologies recently announced the promotion of **Ian Morris** to Vice President of Operations. Morris started with WheelHouse over six years ago in a part time position and his role has grown in tandem with the company's growth.

Crowley Leaders on the Move

Crowley Maritime Corporation announced that **Michael Roberts** will be returning to Washington, D.C., to serve as the company's senior vice president for government relations. Roberts' career in Washington spans

Duluth Seaway Port Authority Elects New Officers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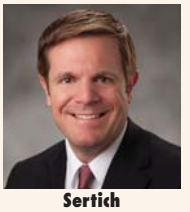
Klosowski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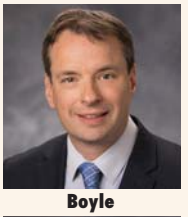

Boyle


Voorhees


Jugovich


Prettner Solon

During its annual meeting held on March 27, the Duluth Seaway Port Authority board of commissioners elected officers for the fiscal year beginning April 1, 2019. The board elected **Rick Revoir** to serve as president. Other appointments included **Tony Sertich** as vice president, **Patrick Boyle** as secretary, **Norm Voorhees** as treasurer and **Mike Jugovich** as assistant treasurer. Together with fellow board member Y**vonne Prettner Solon**, this septet oversees the Port Authority's financial and organizational affairs. The Duluth Seaway Port Authority, governed by a seven-member board, is an independent public agency created by the Minnesota State Legislature in 1955 to foster domestic and international maritime commerce, trade development, and advance port interests.


Crowley Leaders

Roberts **Harrison** **Goranovic** **Hill**


Kindred

nearly 30 years. Since 1991, Roberts has represented Crowley on major issues affecting the industry, including the Maritime Security Program, Jones Act, and economic regulation. One of the founding members of the American Maritime Partnership (AMP), he will continue to help lead that group. **Parker Harrison** will become senior vice president and general counsel and have responsibility for the company's legal and risk management teams. Harrison, formerly senior vice president of procurement and risk management, is an experienced admiralty attorney and marine insurance executive. Additionally, she is the current president of the U.S. chapter of WISTA. Separately, Crowley also announced that **Sandra Goranovic** had been promoted to vice president of finance and accounting for its Crowley Shipping business unit. Goranovic most recently served as finance director for Crowley Shipping, joining Crowley in 2011 as an internal auditor, then served as an analyst in its former salvage group, rising to senior analyst for its ship management group. Crowley Logistics also named **LaSonya Hill**, vice president, customer care. Hill worked for Crowley in 1994 as a part-time student before joining the company permanently in 1997 as a documentation coordinator. In 2012, she was named manager of customer care, and given oversight for the company's key apparel customer shipments.

ISA Selects Ron Kindred to Fill District 9 Vacancy

The Illinois Soybean Association (ISA) board of directors this week selected Atlanta, Illinois, soybean producer **Ron Kindred** to fill the District 9 director vacancy representing Cass, Logan, Mason, Menard, Morgan and Sangamon counties. Kindred operates a 1,600-acre family farm and is a previous ISA director, having served the association for 13 years, including time as vice president, secretary and legislative chairman and participation in a number of committees. He is current chairman of Illinois Soybean Growers (ISG) SoyPac and a Soy Advocate for ISG's Voice for Soy program. The Illinois Soybean Association (ISA) represents more than 43,000 soybean farmers in Illinois.

Harley Franco Departs Harley Marine Services

In April, Harley Marine Services announced that **Harley Franco** will no longer be serving as the Company's Chief Executive Officer. **Matt Godden** will remain as President of the Company.

James McCall "Jimmy" Baldwin, Jr. named 2019 C. Alvin Bertel Award recipient

The World Trade Center of New Orleans has announced **James McCall "Jimmy" Baldwin, Jr.**, founder of Southern Sails of Louisiana, LLC and SVP of Sales & Marketing for the Coastal Cargo Group, as the recipient of the 2019 C. Alvin Bertel

Godden

Baldwin

IMTRA Executive Team

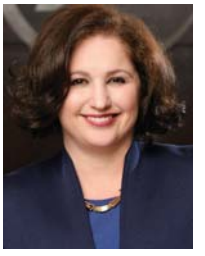
Award. The award was established in 1967 and is presented each year to an individual who has made significant contributions to the Louisiana port and maritime community. The award will be presented posthumously due to Baldwin's untimely death in late March 2019. Baldwin worked in the maritime industry since 1979. Baldwin sat for six years on the New Orleans Public Belt Railroad Board and previously served as Chairman of the Board of Commissioners of the Port of New Orleans. Baldwin was the Honorary Consul of Norway for Louisiana and Mississippi and was awarded the Royal Order of Merit First class from the Kingdom of Norway for his service. Baldwin was a native New Orleanian and a graduate of Tulane University.

IMTRA Restructures Leadership Team, Adds Staff

IMTRA announced that **Colby Chevalier** has joined the IMTRA Leadership Team and has taken on the role of Director of Product Management. **Tom "TJ" Orr** was hired to fill Chevalier's position as Lighting Product Manager. IMTRA's longtime Office Manager, **Lisa Nolet** has been added to the Leadership Team as the Director of Customer Service. **Derek Stern** has been promoted to Director of Sourcing/Operations. Longtime IMTRA employees **Scott Stevens** and **Larry Lake** have also been added to the Leadership Team with their focus on production and warehouse operations. The

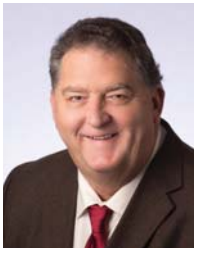
Merritt Mead

Johnson



Perras

Cernak



Nelson

company also hired **Alex Sykes** as Commercial Product Manager, **Joe Pimenta** as Buyer and **Joe Mediate** as Consumer Sales Manager for IMTRA's sister company – Maximum Weather Instruments.

AWO Elects Merritt as Chairman

The members of the American Waterways Operators (AWO) elected a new slate of leaders during the association's annual Spring Convention. **Scott Merritt**, former Chief Operating Officer for Foss Maritime Company, LLC, was elected Chairman. **Arthur F. Mead**, Vice President and General Counsel at Crowley Maritime Corporation, was elected Vice Chairman. As AWO celebrates its 75th Anniversary, Merritt emphasized the association's many accomplishments from 2018. "In addition to continuing to stave off Jones Act repeal efforts, we completed a 15-year collaboration with the United States Coast Guard to bring about Subchapter M, a regulatory doctrine designed for our industry, and in partnership with our industry. We passed VIDA to move us closer to a regulatory regime that is not subject to the whim of state politics and politicians. We enacted legislation to protect our harbor services members against anti-competitive negotiation practices by ocean carrier alliances."

Cook Inlet Tug & Barge Announces New President

Cook Inlet Tug & Barge (CITB) announced that **Jeff Johnson** has been named as the company's new President. Johnson brings to CITB two decades of leadership experience, after 16 years with ARCO and BP Shipping, most recently serving as Director and General Manager of BP Maritime Services. He began his career at sea in the fishing industry of Alaska. After a period with ARCO marine's tanker fleet and Polar tankers, he transitioned ashore with ConocoPhillips in 2003, eventually becoming the fleet operations manager for their international and US flagged tanker fleets. He holds a USCG Masters license, a BS in Business Administration from Northern Arizona University in Flagstaff, and a BS in Marine Transportation from the California Maritime Academy.

Foss Maritime Names General Counsel

Foss Maritime Company announced that **Sloane Perras** has joined the company as Vice President, General Counsel & Chief Ethics Officer. Prior to joining Foss, Perras served as Chief Administrative and Legal Officer for The Krystal Company. Perras has a degree in Finance from University of Florida and earned her law degree, Cum Laude, from University of Georgia School of Law.

AAPA Posthumously Honors Cernak with its Distinguished Service Award

At a tribute service on March 29, AAPA President and CEO **Kurt Nagle** posthumously honored the late Port Everglades Chief Executive and Director **Steven M. Cernak**, with AAPA's Distinguished Service Award. Mr. Cernak, who lost his fight with cancer on March 16, was AAPA's immediate past Chairman and the association's 2019 Cruise Person of the Year Award recipient. AAPA's Distinguished Service Award is periodically presented to one or more individuals for their dedicated efforts on behalf of all ports in the Western Hemisphere and for the enrichment of the maritime and port industries. Eulogizing the life of Mr. Cernak, Nagle said, in part, "Steve was always willing to share his experience with his Western Hemisphere port colleagues. He was highly respected by all who knew him. And, as a sign of that respect, Steve was elected to serve as AAPA Chairman of the Board for 2017-2018."

AAPA Elects Nelson as its 2019-2020 Board Chairman

During its 2019 Spring Conference in Washington, DC, the American Association of Port Authorities (AAPA) elected **Gary G. Nelson**, executive director of Washington State's Port of Grays Har-


Smith


Fort Pierce


Svitzer


Stephaich

bor, to serve as the association's chairman of the board for the 2019-20 activity year. Nelson is slated to be installed as chairman for a one-year term on the final day of AAPA's 2019 Annual Convention, set for October in Norfolk, VA. He will assume the AAPA chairmanship from **William D. Friedman**, president and chief executive officer for Northeast Ohio's Cleveland-Cuyahoga County Port Authority, who began his one-year term on Oct. 10, 2018.

Stakeholders Push Coast Guard on OSV Use for Disasters

In March, the National Offshore Safety Advisory Committee (NOSAC) recommended that the U.S. Coast Guard remove the hinderances that prevented U.S. energy industry vessels from assisting Puerto Rico with recovery efforts after Hurricane Maria. In the aftermath of Hurricane Maria, several Louisiana-based energy vessels attempted to carry cargo to Puerto Rico or between ports within Puerto Rico. While these vessels were capable of safely completing these tasks, many were turned back due to strict or differing interpretations of USCG regulations. To that point, OMSA proposed that NOSAC empanel a subcommittee of industry experts to study how OSVs, crewboats, and other energy vessels could be safely utilized to provide disaster assistance. **Aaron Smith**, President of OMSA, commented, "The technology and expertise contained in the offshore service industry is second to none. And those of us that live and work in south Louisiana know the power of neighbors helping neighbors to endure and recover from a natural disaster."

Derecktor, St. Lucie County Ink Deal for New Repair Facility

In mid-April, the County and Derecktor Shipyards signed a long-term agreement for the development and operation of a megayacht maintenance, repair and refit facility at the Port. The new shipyard will be built specifically to accommodate power and sailing yachts in the 200+ foot range. Until now, these large yachts, particularly sailing vessels which require extreme air draft clearance and considerable under keel clearance, have had few other domestic options. Derecktor Ft. Pierce (DFP), as the new yard will be known, provides direct access from the Atlantic with no overhead obstructions and a maintained depth of 28 feet (8 meters). Vessel hauling will be accomplished through both a mobile lift and a 4,000 ton capacity drydock, giving DFP flexibility in the range of yachts it can handle. The lift is anticipated to have an impressive 1500 ton capacity, with plans for it to be fully operational by fall of 2020.

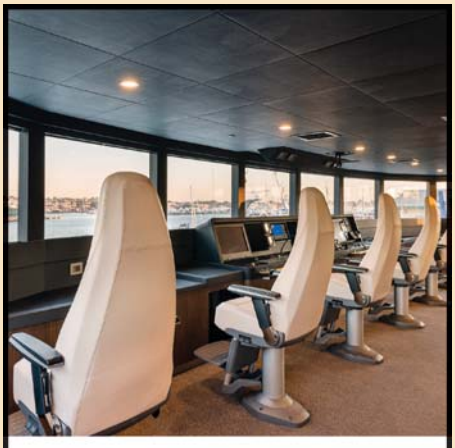
Svitzer Seals Tug Contract with St. Croix Refinery

Svitzer Caribbean Dominicana has secured a 5-year contract with Limetree Bay Terminals (LBT). LBT, located at Limetree Bay, St. Croix, USVI, is in the process of restarting an idled refinery with a previous peak processing capacity of 650,000 barrels per day and approximately 32 million barrels of storage capacity, located at a deep-water port. Restart work began in 2018, and the refinery will resume operations in late 2019. Svitzer Dominicana is in the process of preparing the tugs and operational set-up to ensure the delivery of the tugs in St. Croix in mid-June. The company has been providing Limetree with tugs on a spot basis since 2017.

WCI Chairman Testifies on the Hill

Peter Stephaich, Waterways Council, Inc. (WCI) Chairman of the Board, and Chairman of Campbell Transportation Company in Pittsburgh, PA, testified before the House Transportation & Infrastructure Committee's Water Resources and Environment Subcommittee on "The Cost of Doing Nothing: Why Full Utilization of the Harbor Maintenance Trust Fund and Investment in our Nation's Waterways Matter." In his testimony on behalf of WCI, Mr. Stephaich addressed the importance of the inland waterways transportation system, and recommended a policy improvement to advance modernization of the Nation's critically important inland navigation infrastructure.

PRODUCTS



In-Mar Solutions: Alu Pilot Chairs & Deck Rails

In-Mar Solutions offers a complete line of Alu Design & Services Marine Pilot Chairs and Deck Rails. There is a standard line in addition to the option for custom designs to suit specific needs. Sleek, modern design and maximum utility and comfort are emphasized.

www.inmarsolutions.com

Furuno's 12KW Radar for Inland Waterways

Furuno has introduced a higher-powered FR1918VBB River Radar. With a 12kW output and all of the same critical features and functionality of its "little brother", the FR1918VBB will enhance the situational awareness of any river vessel. The FR1918VBB Radar uses a custom river mode with an ultra-short pulse length that provides navigators with superior bank, buoy and vessel detection.

www.furuno.com

First U.S.-built Voith Schneider Propellers delivered to NCDOT

VSP propulsion systems offer precise maneuvering and fast response time for safe operations for vessels with a high demand for maneuverability like the new ferry for NCDOT Construction at Voith's York, Pennsylvania, plant allows VSP users to fulfill "Buy America" requirements. The two VSP units will help a ferry safely shuttle passengers and vehicles between islands in the Outer Banks.

www.voith.com

MTU Engines Power New Foss Tugs

Pacific Power Group worked with Nichols Brothers to outfit the newest Foss Maritime tugs with MTU 16v4000M65L EPA Tier 4 diesel engines with Rolls-Royce US255 azimuth thrusters. The propulsion system includes an MTU Selective Catalytic Reduction (SCR) exhaust aftertreatment system. Additionally, the Z drive thrusters allow for 360-degree rotation, which provides the maneuverability required in ship assist and escort work.

www.pacificpowergroup.com

The Release of Rose Point ECS 4

Rose Point Navigation Systems latest release of its commercial navigation product, Rose Point ECS 4, brings Voyage Planning tools to streamline Subchapter M Navigation Assessments, automatically creating routes showing locks and bridges, as well as updating AIS data such as destinations and tow size. ECS4 helps meet USCG requirements for paperless inland navigation and web-based portal can be accessed from any location with internet access.

www.rosepoint.com

SEA READY MARINE PETROLEUM

Sea Ready Marine Petroleum's Alliance with ARG

The Sea Ready / ARG Alliance was developed in a 'Hybrid' business model to optimize the best qualities of a Manufacturer, a Distributor and a Trader. American Refining Group's (ARG) Refinery and Blend plant are co-located in Bradford, PA, and offers EMD approved LMOA Gen 7 / Tier IV Lubricant now for 25,000 locomotives and marine vessels, proven with millions of operating hours.

www.amref.com

Caterpillar Develops Solutions for EU V Inland Waterway Vessels

Caterpillar Marine's development of new technology solutions for European Union inland waterway vessels comply with the next generation of regulatory emissions required for EU IWW applications and will be available starting in 2020 for various power ranges: for engines with less than 130 bkW, 130 to 300 bkW, and 300 to 1350 bkW. These solutions leverage proven technologies of Caterpillar's Marine EPA and IMO products.

www.caterpillar.com

MJP Wins Taiwan CG Propulsion Contract

Marine Jet Power (MJP) has won a multi-year contract with CSBC Shipyard to provide propulsion for 15, 100-ton class vessels for the Taiwan Coast Guard (TCG). Selected for its superior quality and durability, MJP's DRB line of waterjets are constructed from duplex stainless-steel and feature all inboard hydraulics. The mixed flow pump design offers performance and increased operational efficiencies, with low maintenance cost and minimal service intervals.

www.marinejetpower.com

Victaulic Celebrates 100 Years of Patented Innovation

In April, Victaulic celebrated a century of innovation – 100 years since it was granted its first industry patent for mechanical pipe joining solutions. On its Centennial "Innoversary," the company continues to develop and patent groundbreaking technologies, with a current portfolio of more than 2,000 patented solutions that transform the industrial and marine industries, while driving new industry standards in performance and safety.

www.victaulic.com/100-years-innovation/

Shannon Reusable Insulation for Engine Efficiency

Shannon Enterprises' custom-designed insulation systems improve engine efficiency, safety and acoustics on board each vessel. For high-temperature applications such as engine manifolds, mufflers and exhaust piping, Shannon manufactures a custom fit reusable high-temperature thermal blanket, which, among other things, resists chemicals and weather and retains radiant heat up to 1,100 F (593 C). Shannon thermal blankets meet ASTM C335 requirements, and acoustic blankets pass ASTM-E1222 and ISO-15665 tests.

www.blanket-insulation.com

Wärtsilä's Hi-Rez Radar for Port Safety

Wärtsilä's RS24 high resolution radar is the world's first commercially available K-band maritime radar. By detecting far smaller objects and at a much higher radar resolution than conventional S or X-band radars, the RS24 enables small vessels and other potential hazards close to large ships to be visible. This promotes safety, especially for ferries in congested shipping lanes and busy ports.

www.wartsila.com

Survitec's Novel Evacuator Emergency Descent System

Survitec's new fire-proof emergency descent system is designed to evacuate people at altitudes of 6 to 300 meters. Fully mechanical, it does not require electricity or any other power, guaranteeing its operational reliability in all circumstances. The descent is fully automatic at a controlled speed of one meter per second. It is designed for use on wind turbines, offshore substations and harbor cranes.

www.survitecgroup.com

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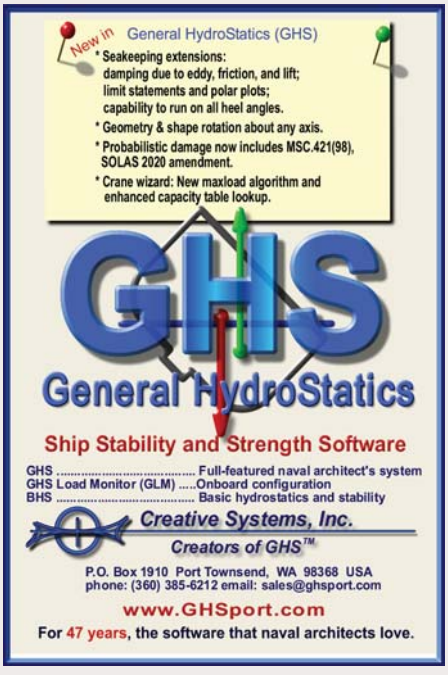

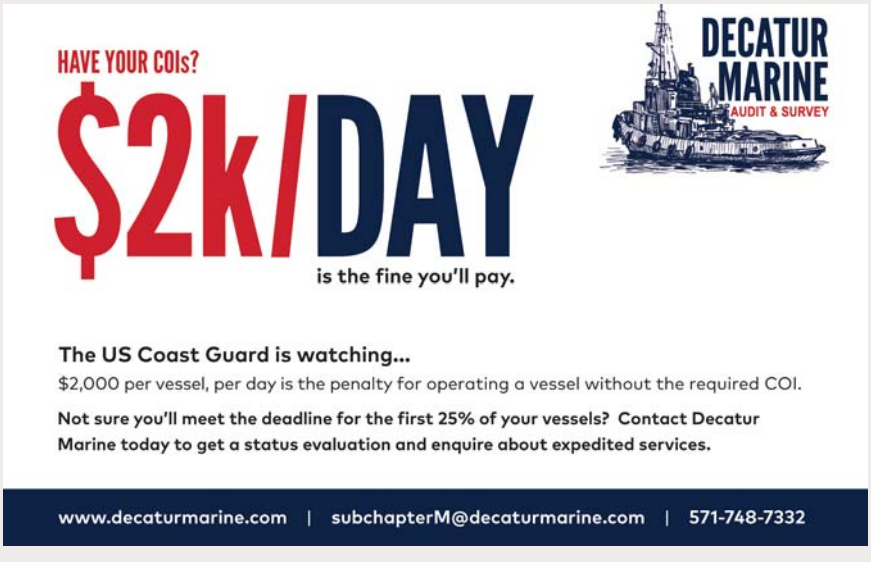

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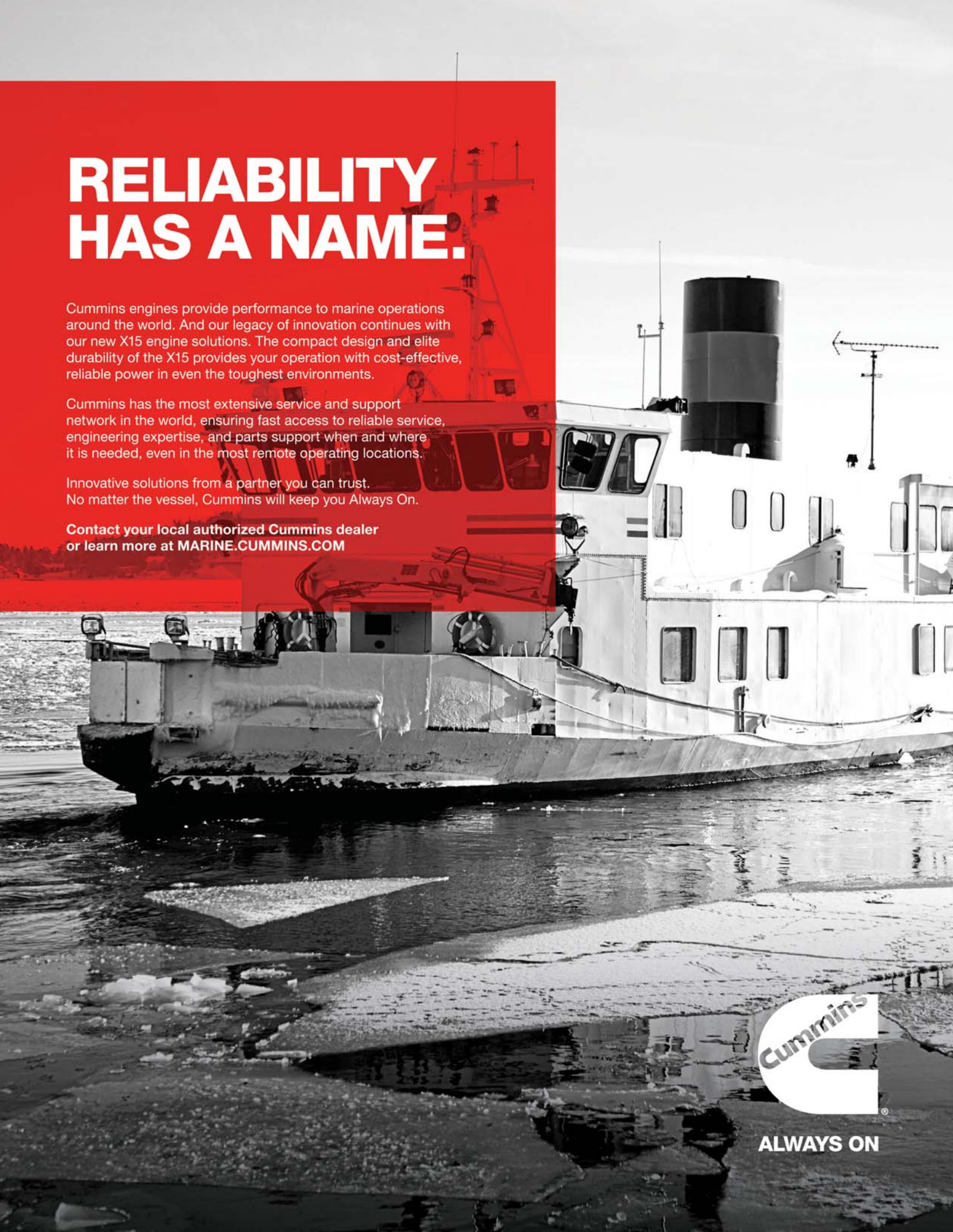
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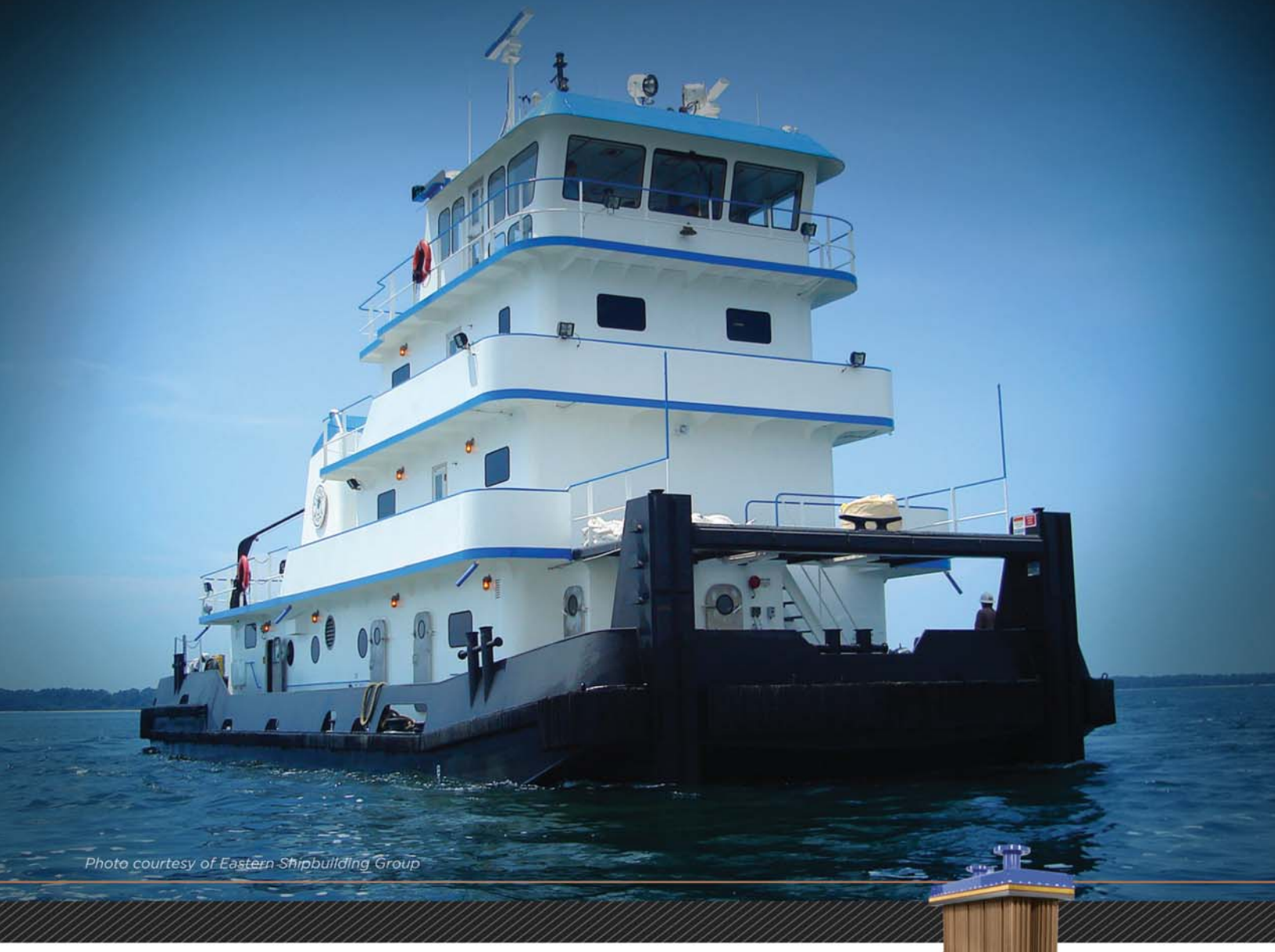

Photo courtesy of Eastern Shipbuilding Group

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