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Marine News

Volume 30 • Number 4

APRIL 2019

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COATINGS / CORROSION CONTROL

ATB REVIEW

COATINGS

Credit: Ulstein

ON THE COVER

Bouchard's building boom continues as the iconic East Coast operator today remains 'all in' with the ATB concept. The story begins on page 44.

Image credit: Bouchard

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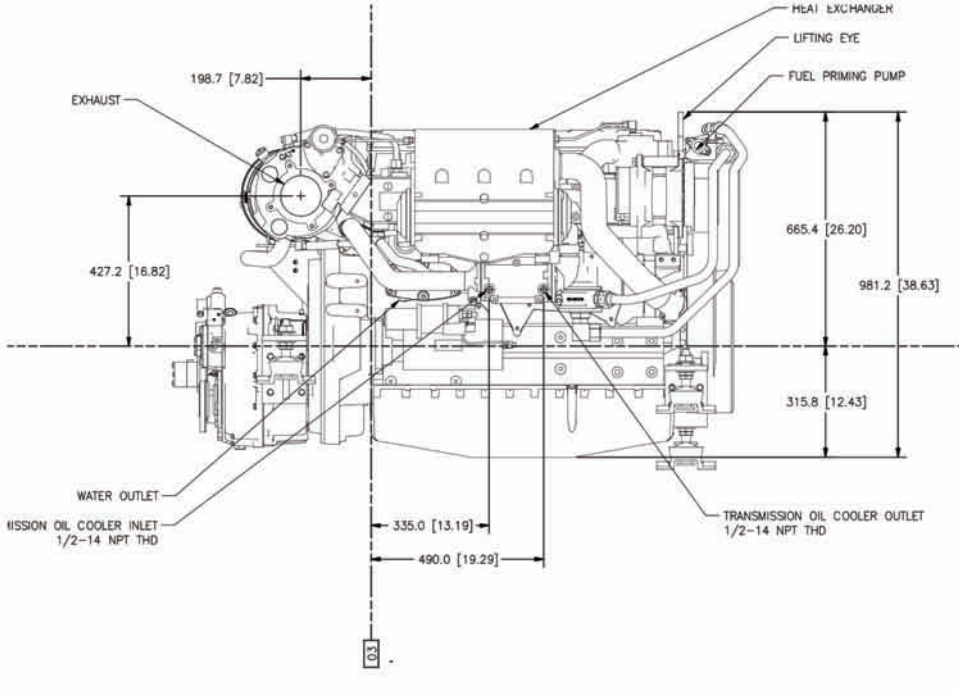

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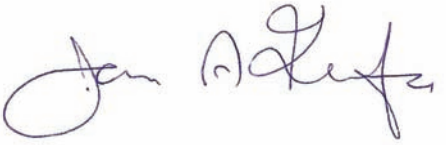
This year's vernal equinox has come and gone. We can only hope and pray that warmer weather soon follows, and with it, that sun (whose declination now sits firmly in the northern latitudes) will provide a brighter outlook for what comes next. Before you know it, your boss will want to know what the FY 2020 forecast looks like. I can't help you with that deliverable, but a SITREP on what's transpired in 2019 is well within my capabilities. To that end, 2019 has brought something for everyone; with it, a raft of variables for the domestic waterfront.

The headliner for this edition is 'boatbuilding and repair.' And, where you stand, as always, depends on where you sit, or in the case of the nation's boatbuilders; what they've done to position themselves for success. In February, I traveled almost the full breadth of the Gulf Coast, visiting as many shipyards as possible. I spent one business week doing it. In truth, a month wouldn't have been enough. Looking back, I would say that the biggest 'take-away' from that epic journey was that a diversified backlog portfolio, supported by a relentless eye on modernizing the manufacturing process, will be and is, the ticket to future success.

Way back in 2012, during yet another visit to the U.S. Gulf Coast, it was Chris Bollinger who told me flatly, *"Shipbuilding has to evolve into manufacturing."* It turns out that he is right. My travels brought me to the conclusion that at least two Gulf Coast builders – VT Halter and Metal Shark – today fully embrace and epitomize that culture commitment. In the case of VT Halter, their new high tech blast and paint facility is already yielding green dividends; both for the balance sheet and the environment, as well. That story begins on page 40. As for Metal Shark, I refuse to steal Chris Allard's (considerable) thunder, which begins this month on page 18. Both entries are compelling threads.

I promised you a bit of wisdom at the beginning of this note, and that's not just hot air. In this edition, Rick Eyerdam's telling look at what's evolving in the Arctic sector and who's building what to meet coming demands also points to (at long last) the advent of offshore wind for North America. Looking at where those offshore renewable assets will evolve, hopefully in the near term, also tells us that cold weather operations will be a part of it. If ballast water treatment and looming stack emission deadlines were the story of yesteryear, then offshore wind is the next big thing; for shipyards and everyone else. You read it here first.

Finally, you can't talk about domestic boatbuilding without realizing that the nation's collective manufacturing output over the past three decades includes as many as 175 ATB's, most of which are still in operation. In this edition, we examine the business model that propels that demand. And, that's a good place to end, and let you turn the page to learn why.



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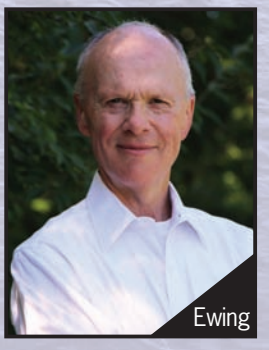
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Replace your Workboat Engine (now)

New Research Doubles Service Life Estimate of Marine Workboat Engines, Reveals Big Opportunities for Diesel Emissions Reductions

It turns out that commercial workboat engines are staying in service more than two times longer than predicted by the U.S. Environmental Protection Agency (EPA), according new research from the Diesel Technology Forum (DTF) and Environmental Defense Fund (EDF). That says a lot for the quality of marine engines, but at the same it isn't necessarily a good thing. But, the news provides clues to a new path for clean air improvements in large port cities.

The new report, entitled *"Impact of Updated Service Life Estimates on Harbor Craft and Switcher Locomotive Emission Forecasts and Cost-Effectiveness,"* found the average Category 2 workboat remains in service for 50 years, instead of the 23-year lifespan estimated by the EPA in the 2008 Heavy Duty Locomotive and Marine Rule. A longer service life reduces the fleet's turnover rate to cleaner, lower-emitting engines, therefore increasing future-year emission estimates.

Separately, the U.S. Army Corps of Engineers estimates that, as of 2014, there were approximately 9,000 Category 1 and 2 marine vessels operating on U.S. waters. The Category 2 workboats highlighted in the DTF and EDF report have displacements of 7 to 30 liters per cylinder and are installed primarily in larger pushboats, towboats or offshore support vessels.

But, the DTF underscores the reality that more, older engines remain in service today. Since real-world workboat engines are operating with longer lifespans, the actual nitrogen oxide emission reductions are 52 percent weaker than predicted in EPA's 2008 Rule calculations.

The EPA estimates that, as of 2014, 81 percent of Category 1 and 2 workboats used older, uncontrolled or Tier 1 diesel engines, which are 10 times higher in emissions than a modern Tier 4 diesel engine. The slow turnover rate of these technologies means communities will only see nitrogen oxide (NOx) reductions of 161,167 tons per year, well below the 333,925-ton reduction predicted in the EPA 2008 Rule. Similarly, fine particulate emissions will only be reduced by 3,537 tons per year, instead of by 8,758 tons per year.

Starting in 2015, new diesel engines used in marine applications in the United States were required to meet Tier 4 emissions standards. Relative to previous generations of technology, these latest clean diesel technologies are proven to dramatically reduce emissions, including nitrogen oxides and fine particulates, by 88 percent to 95 percent compared to previous generations. Despite the widespread availability of the new, cleaner diesel engines for workboats, the cost and downtime required to upgrade and other factors have likely delayed investments in the newest technologies. Hence, if the rate of turnover to the newest generation of diesel technologies can be accelerated, near-port communities stand to reap significant air quality benefits. EDF calls it 'low hanging fruit.' For example, if all existing Category 2 vessels serving the New York Harbor upgraded to the newest diesel engines, emissions in the New York metropolitan area would be cut by more than 8 tons of nitrogen oxides per day. In the Port of Houston and Galveston, more than 4 tons of nitrogen oxides reductions per day could be realized for the Houston metropolitan area.

The opportunity to immediately replace old work boat engines with new ones already exists; using funds from Volkswagen's $2.9 billion environmental mitigation trust for marine repower projects. And, previous DTF/EDF studies confirm that upgrading workboats to the newest-model clean diesel engines delivers the greatest emissions improvements for the lowest cost. For example, on average, upgrading the engines of a single tugboat to the newest diesel technologies eliminates 14.9 tons of nitrogen oxide emissions per year for only $4,379 per ton of nitrogen oxide eliminated. Other types of nitrogen oxide-reduction projects can cost more than $30,000 per ton of nitrogen oxide.

In a nutshell, the Diesel Technology Forum and the Environmental Defense Fund undertook this analysis to better understand the potential opportunity the Volkswagen $2.9 billion Environmental Mitigation Trust could have on reducing diesel emissions from older marine workboats and switcher locomotives.

States, as beneficiaries of the Trust, maintain an account with the Trust and the amount therein is determined by the population of passenger vehicles found to have been outfitted with technology to sidestep emission requirements. The Trust allows for the replacement or repower of heavy-duty equipment which are the largest contributors to NOx emissions. Repowering large applications, including switch locomotives and marine workboats, is

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an eligible category of funding through the Trust.

These workboats and switch locomotives operate at marine ports located in or adjacent to major cities and contribute to hazardous smog pollution. Replacing these older engines with new clean diesel models can have an immediate and significant beneficial impact in reducing emissions for sensitive communities. Relative to previous generations of technology, the latest clean diesel technologies can reduce emissions, including NOx and fine particle emissions, by 88 percent to 95 percent. While the latest clean diesel technologies are ready and available to reduce emissions, the EPA estimates that by 2020, unless additional action is taken, only 5 percent of the switch locomotive and 3 percent of the marine workboat fleets will be powered by these clean technologies.

Through the Trust, states may use Trust revenue to fund up to 40 percent of the cost and installation of new cleaner engines that power marine workboats. Moreover, equipment owned by government agencies may receive up to 100 percent of the new engine cost. Other incentive programs are also available for states and others to pursue these projects. The Diesel Emission Reduction Act (DERA), for example, managed by the EPA, is a federal program that provides grant funding to help with the cost and installation of new cleaner engines or upgrades to older engines that improves emission performance.

Commercial marine and locomotive source categories should be a primary focus of future emission reduction efforts for retrofit/repower programs based on cost effectiveness. Compared to other mobile source emission reduction projects, projects to reduce emission rates from commercial marine vessel engines typically have a longer project life based on the remaining service life which produces greater project total emission reductions. Greater project emission reductions results in more cost-effective projects. In other words: a great opportunity for operators to get green cheaply, and a terrific way to keep our shipyards humming along.

Table 2-4. Category 2 Engine Emission Factors by Tier Level. (Tables 3-16 and 3-41 in EPA (2008) RIA)

Model Year			Emission Factor (g/kW-hr)			
Start	End	Tier Level	HC	NOx	PM	CO
1900	1999	Uncontrolled	0.134	13.36	0.32	2.48
2000	2006	Tier 1	0.134	10.55	0.32	2.48
2007	2012	Tier 2	0.134	8.33	0.32	2
2013	2015	Tier 3	0.07	5.97	0.11	2
2016	2050	Tier 4	0.02	1.3	0.03	2

Table 2-1. EPA (2008) RIA annual hours of use.

Engine Type	Annual Activity (hours per year per engine)
Commercial Marine	
Category 1 Propulsion	<600 kW: 943 hours >600 kW: 4503 hours
Category 2[6]	Tow boats (tugs of all types): 3306 hours Ferries: 1356 hours Offshore Support: 6060 hours Average All: 3882 hours
Auxiliary	<600 kW: 742 hours >600 kW: 2500 hours
Locomotive[1]	
All	Line-Haul: 4350 hours Switch: 4450 hours

[1] Average estimates shown here. Activity is estimated to decline by age as described in this report.

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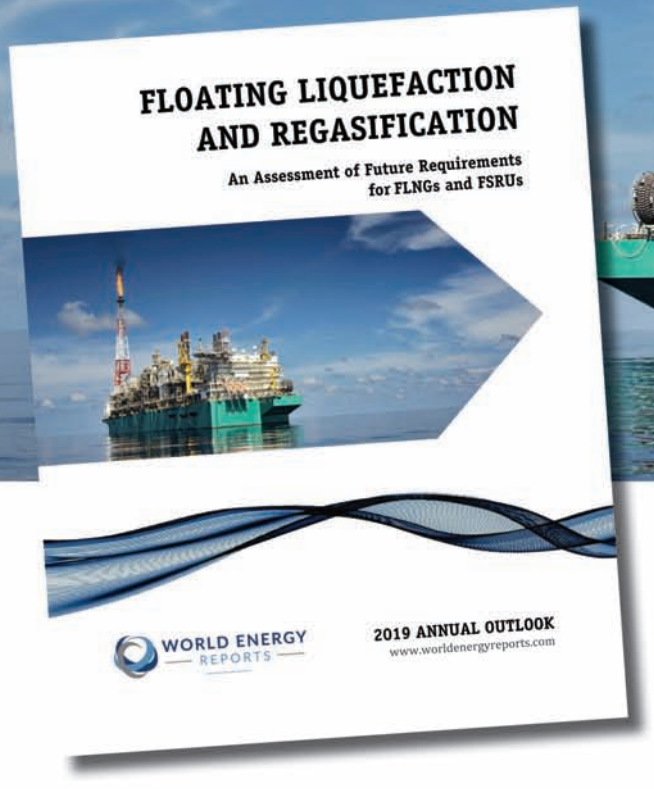

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The most cost-effective upgrades make the biggest health impact

New Tier 4 engines for tug boats reduce NOx emissions by 91%

The $2.9 billion VW Environmental Mitigation Trust provides funding to upgrade older vehicles and equipment to rapidly reduce nitrogen oxide (NOx) emissions, which contribute to hazardous smog pollution. Upgrading just one of the oldest, dirtiest tug boats is like taking tens of thousands of passenger vehicles off the road per year, bringing substantial health benefits to at-risk communities. With states now deciding how to invest these funds, repowering these older vessels with cleaner Tier 4 engines is a game-changer for delivering immediate and cost-effective air quality benefits.

Upgrading an old tug boat with new Tier 4 engines removes

96,000 lbs of NOx/year

This is equivalent to

Replacing **76** older trucks

OR

Removing **74,000** cars for 1 year

Upgrading old engines means cleaner air for all

EPA estimates that by 2020, only 3% of tug boats will be replaced with cleaner Tier 4 engines. The VW Environmental Mitigation Trust provides a rare opportunity to retire the oldest diesel engines still in operation, which can last 50 years or longer. Cleaner Tier 4 or Tier 3 engines will deliver cleaner, healthier air faster to at-risk communities. These new engines also improve fuel efficiency, which reduces CO_2 and black carbon emissions, two important greenhouse gas pollutants.

Tug projects are a better value

Tier 4 engines

1 ton of NOx reduction costs

Source: FHWA, 2015, CMAQ Cost-Effectiveness Report

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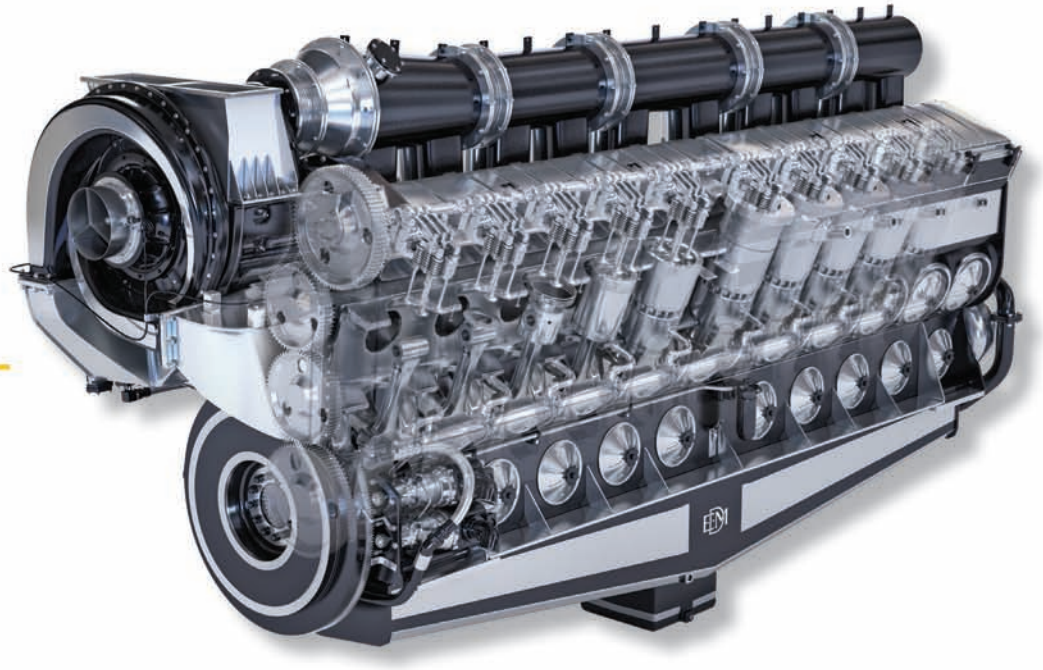

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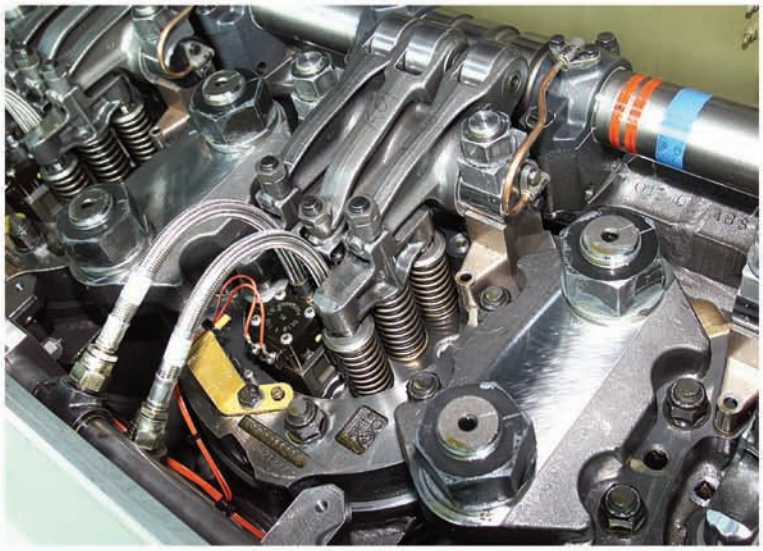

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Today, at three fully self-contained facilities in Alabama and Louisiana, Metal Shark manufactures vessels in aluminum, steel, and fiberglass, with current capabilities supporting production for vessels up to 300' in length.

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With all that happening today, it is also true that best may be yet to come. Listen in this month as Chris Allard tells us how, and why.

2018 was a good year for Metal Shark. Give us just a few of the major highlights and lead us into what's new – and coming – in 2019.

Probably our biggest announcement last year was our acquisition of the assets of Horizon Shipbuilding, which brought a 35-acre Alabama shipyard into our portfolio, bolstering our steel shipbuilding capabilities and facilitating our entry into multiple new markets. Our launch of Sharktech Autonomous Vessels was another highlight. Our US Coast Guard RB-S program continued in force, with over 320 units in service by the end of 2018. In all, last year we delivered over 200 vessels to operators in a range of markets including US and foreign militaries, passenger vessels, and others.

2019 is poised to be another exciting year for Metal Shark. We've already delivered the first two 40 PBs to the US Navy. We'll be in full rate production by the third quarter of 2019 with multiple large delivery orders placed so far. The small boat business at our Jeanerette production facility remains stable and robust. At our Franklin facility, high volume ferry production is ongoing, while we are also simultaneously building multiple government and military platforms. We'll be entering new sectors in 2019 with some as-of-yet unannounced but very exciting large projects. Our Alabama yard has come on strong with faster than anticipated growth in new steel construction as well as refit and repair projects. We're forecasting record revenues for 2019 and early indications show a projected further increase.

You now own three yards on the U.S. Gulf Coast; each providing a different sector of industry with focused output. What is your 10,000 foot view of the state of boating building in the United States today, and what are the prospects for tomorrow?

It's an interesting time to be shipbuilder in the US today. Material and labor costs are changing faster than I've seen in my career. While tariffs and the current political climate are likely a driving factor, I'm concerned that we're entering a period of more significant inflation than we've seen in a decade or more. Regardless of the driving factors, we see rising materials costs impacting pricing, which will in turn affect end users. While current economic indicators are generally viewed as positive, I'm concerned with the triple threat situation of high stock market, low interest rates, available capital and low fuel prices. It reminds me a lot of 2008.

The Jones Act is another area of note. We monitor Jones Act issues closely and support efforts to keep the Act in full effect. There's significant concern that seemingly small "waivers" could lead to gradual erosion and eventual repeal of the law. Whether or not politicians or the public agree with the Act, the simple fact is that a wholesale repeal would end shipbuilding as we know it in the United States. As a taxpayer, that's not something I think is best for our country.

An oft-raised topic within the government shipbuilding sectors is industrial base preservation. There seem to be many questions asked regarding how the government can best support the industrial base. I heard a simple, but succinct answer from a fellow shipyard CEO this year: "Just order stuff." At the end of the day, the best way the government can support the industrial base is to do just that. It is the role of business to develop the talent and the workforce we need to support our contracts. We can be more efficient at this than the government; creatively tailoring our efforts to suit the needs of our situation. Simply put, being the industrial base is our job. With the right opportunities and well constructed requirements and contracts, the opportunity to profitably serve the government is the best driver of industrial base development that there is.

Diversification seems to be the ticket for shipyard survival in this 'up and down' industry. When one sector is down, another surges. Give us the Metal Shark version of 'diversified' operations.

We've done a good job of spacing our revenue stream across multiple sectors. Our version of diversification involves multiple markets, vessel types, customers, and production locations. As much as this approach adds complexity, I believe it mitigates risk.

A common thread that we often hear is that U.S. builders can't compete with the foreign yards. However, you export a lot of hulls – and you do it well, often outside of FMS controls, and you have an international client list that returns, time after time. What's the secret sauce?

It's difficult to compete internationally as an American shipbuilder with only American facilities. There's no doubt that the labor cost structure in the US is higher than many other locations, and recent tariffs have made it even more challenging to compete in a true export manner. Regardless of whether or not anyone agrees with the tariffs, it is simple fact that their current impact on cost has

made it even harder to export against foreign competition. Additionally, many countries with native shipbuilding capability have similar Jones Act-like regulations, which also works against us.

We export a great deal, with FMS being a key portion of that, but certainly not all. We are blessed with dozens of repeat international buyers. We attribute this to simply designing and building a high quality product at a fair price; by focusing on the customer and providing good support. Our use of technology has helped us bridge the gap in cost, but at the end of the day the customers buy the product for the quality and service.

At this point in time, your largest LOA build history is in the 100-to-150 foot range. The smaller, aluminum manufacturing niche seems to be your sweet spot. Could you accomplish bigger projects in any of your existing yards? If so; which one?

That certainly was, and largely still is, the case today. Our core competency is in smaller aluminum new construction of boats and small ships, but with multiple different 120'+ steel and aluminum new construction ongoing in both Franklin and Alabama the range of our expertise continues to grow. By applying the high volume production methods learned in the production of smaller boats, combined with newly implemented technology, and, in some cases even incorporating more traditional shipbuilding styles, we're creating an extraordinarily dynamic environment that allows us to address multiple projects and programs across a multitude of sectors. For practical reasons, our Jeanerette production facility will continue to focus on smaller, trailerable vessels (50' and under), both Franklin, and even more so, Alabama, have significant upside growth potential on the size of vessels within our skill set.

Would you contemplate the purchase of another yard in the near term?

Contemplate? Certainly, and in fact I think it's highly likely at some point. However, it is not currently our focus and I don't expect us to execute another shipyard acquisition in the near term. That said; we do continue to watch the North East offshore wind market and would love to partner with or acquire a yard in the region as the market develops.

New Metal Shark 50 Defiant fireboat to be built for Miami Dade Fire Department

You are building a 150' yacht for a private client in the Franklin yard. That a U.S. yard is building a yacht is big enough news, but using aluminum in these types of luxury vessels isn't the rule. Nevertheless, your welding techniques have brought aluminum finishing in line with what was only thought possible with fiberglass. Can we expect more of that work in the future?

Yachts span the gamut in terms of materials; aluminum, steel, and composite. Certainly the use of composite construction has grown in prevalence in the last decade. However, aluminum offers flexibility, lower tooling costs and time advantages when building a custom vessel. The quality of our aluminum craftsmanship has resulted in an amazing finish, especially considering this vessel isn't faired. We view the hull material as agnostic; we would build a vessel in aluminum, steel, or composite if it was the right choice for a given application. For the sake of our current build, aluminum offered the best value for the reasons just given as well as durability for the owner's mission.

Producing 200+ boats annually keeps your yards busy, but that takes a disciplined manufacturing process. And, that's what shipbuilding has evolved to be – a manufacturing process. Tell us about the Metal Shark approach to modernizing your work lines.

We have spent a tremendous amount of time developing and subsequently refining our manufacturing processes. It's an ongoing effort and the only thing I'm certain of is that we aren't done. Daily, we work to improve what we do, come up with new methods, and to push ourselves forward. We started building ferries upside down, now we construct them right-side up. Everything is on the table to be evaluated and potentially changed, and of course our diversification adds another layer of complexity. The other day, we were building a 20' boat costing less than $100,000 while at the same time building multiple, dissimilar, 100+ foot, deca-million dollar vessels. The variety of what we do at times can be daunting.

We continue to push and rely on modern software and management tools to organize the operations. Whether it

"We monitor Jones Act issues closely and support efforts to keep the Act in full effect. There's significant concern that seemingly small 'waivers' could lead to gradual erosion and eventual repeal of the law. Whether or not politicians or the public agree with the Act, the simple fact is that a wholesale repeal would end shipbuilding as we know it in the United States."

be Solidworks and their powerful modeling and product management software, our new ERP system, or work station terminals as opposed to drawings; technology continues to permeate the modern manufacturing world. The automation of cut file and drawing creation continues, as does IoT implementation, such as cloud-connected welding machines.

Technology aside, this is still a people business. As much as innovation has helped us, so have our senior operations managers. Tim Schieb, COO/President, joined us and continues to drive forward operational improvements. Industry veteran Doug Barrow has led the way in Alabama and Jon Gravois continues to drive the small boat side of the business.

Are you employing – or contemplating – robotic welding and/or any other advanced changes to your manufacturing procedures? If so, where and how?

We spent a tremendous amount of time and money implementing robotic welding a few years ago. It was a spectacular failure, so naturally we are doing the logical thing and trying again. We learned a lot in our last effort and remain convinced it will be the way of the future. Robotic welding, and other more advanced manufacturing techniques, will be the only way for US yards to retain any competitiveness in the world shipbuilding arena. While the Jones Act may steady the US shipbuilding sector, technology will be the only true way we retain a real competitive stance and or even regain a position worldwide as a leading shipbuilding nation. Beyond robotic welding, I see other advances which are also mostly focused on technology – whether that means 3D printing, virtual reality or even just more advanced software tools. I remember only ten years ago doing CRM with a server database driven program. Today, there is an app for that.

Your collaboration with ASV Global – now a subsidiary of L3 – is an interesting development. From which sector do you see the most interest in autonomous newbuilds and how quickly can it grow?

We strongly believe in the future of autonomy. In 2018 we founded our Sharktech division, which is focused on the advancement and implementation of autonomy. Our first Sharktech effort was in partnership with ASV/L3, clearly a leading name in the space. Our two companies partnered to bring ASV/L3 technology to market in a more commercially available, "check the box"-style option. While the integration of the system is more complicated than that, it's our job to make it as simple and seamless as possible for the customer. It was an amazing project and a complete success.

We're now seeing interest in autonomous technology from every sector. Certainly the military has multiple well-known autonomy-focused programs, and there's also strong interest from commercial operators. Certain sectors are jumping straight to full-fledged unmanned autonomy and the pace of development is startling. Open-ocean operations can now be safely and reasonably automated. Technology development has actually outpaced the HM&E development and soon the limiting factors will be the systems on board, the need for human maintenance, and the interface for longer-than-typical durations. We are looking to suppliers, specifically on the propulsion side, to help us advance certain operations that will allow longer range, longer duration, autonomous missions with higher level of redundancy and reliability. Engine manufacturers will need to proactively work with industry to address remote diagnostics, service intervals, and inherent redundancy required for extended unmanned operation.

Not all sectors will jump straight to full autonomy; many will follow the automotive path, where the first step is human load reduction. The immediate result is an increase

in safety and accountability. The ability to remote monitor fleets or missions will allow improvements to both the process and the results. The next step will be reduced manning. Eventually, the vessels will be networked and communicate autonomously behind the scenes. Imagine AIS units actually talking to each other, providing corrective actions between vessels, and reporting events to command and control, even in inland waterways.

For the future, Sharktech lies somewhere between the software autonomy providers and the traditional shipbuilder. It focuses on the "design for autonomy" elements needed to integrate and support autonomous operations, providing an engineering-centric approach to the complex problem of how to bridge the gap between software and the real-life challenges of the sea.

Ferries, municipal and government patrol boats, fireboats, yachts, survey vessels, pilot boats – and now – towboats in Alabama. What will be the next 'big' thing in the Metal Shark basket?

Well, it wouldn't be sporting to share that, but I would say there are logical steps in our trajectory within our existing portfolio. We will continue to reinvest in what we do now, making sure we continue to do the best job possible. We cannot lose sight of what got us here and we must work every day to make sure we continue to grow and improve those skills. Strong efforts in Pilot boats and Fire boats will be a cornerstone of 2019. We focus our efforts on markets we where we feel we can make a measurable impact. We look for opportunities where we can develop product with a reasonably repetitive need, and apply new technology, designs, and methods.

The oft-rumored "yacht" we have under construction will be interesting to watch. It's a unique, immensely capable vessel that will be both loved and loathed. It's quite different than most of what the market has seen, and I am excited about where it will take us. Will we build multiple of them? I sure hope so. But more than anything, I think it will open new opportunities for us that we aren't able to see at the moment. It will also offer another option for yacht owners who desire to build a customer yacht domestically. A contraction in that market has left few options for Americans who want to build in the United States.

Longer term, you can expect to see Metal Shark continue its geographic diversification, both domestically and internationally. American-owned shipyards can compete globally. International shipyards and shipbuilders routinely span multiple countries, so why can't American shipyards do the same?

A Tale of Two Fleets:
Mixed Government Support for U.S. Shipbuilding

By Jeff Vogel


Vogel

It has been a busy start to the 116th Congress for the U.S. shipbuilding industry, with three congressional hearings in early March focused on the industry's role as a critical component of the U.S. national security industrial base. In addition, the Consolidated Appropriations Act, 2019, which was signed into law on February 15, contained mixed news for shipbuilding programs. Through the congressional hearings and enacted legislation, two opposing themes have emerged. First, on the positive side, there is strong support for domestic shipbuilding projects to recapitalize U.S. government-owned fleets. Second, on the negative side, support for commercial projects in U.S. shipyards remains intermittent and falls well short of the support shown by foreign governments for their domestic shipbuilding industries.

U.S. Government Sealift Fleet

Hearings before (1) the House Subcommittee on Coast Guard and Maritime Transportation, (2) a joint session of the House Subcommittee on Seapower and Projection Forces and Subcommittee on Readiness, and (3) the Senate Committee on Commerce, Science, and Transportation, provided opportunities for leadership from the Maritime Administration (MARAD), United States Transportation Command (USTRANSCOM), U.S. Coast Guard (USCG), together with members of the maritime industry, to educate Congress on the strategic and economic importance of America's shipyards.

A constant theme through all three hearings was the critical need to recapitalize the federal government's organic sealift fleet, comprised of MARAD's 46 ship Ready Reserve Force (RRF) and the Military Sealift Command's 15 ship Surge Sealift Fleet. Disturbingly, as emphasized by USTRANSCOM Commander General Stephen Lyons, 19 of the 61 vessels in the combined fleet (31%) are either "not mission capable" or have lost their USCG Certificate of Inspection. Combined with the demonstrated U.S. mariner shortage, and a continually shrinking U.S.-flag international commercial fleet, the United States is woefully unprepared to meet its military's sealift requirements.

Maritime Administrator Mark Buzby testified that MARAD has adopted a three-prong approach to recapitalize the U.S. government sealift fleet, which includes the purchase of used vessels from the open market for rebuild in U.S. shipyards, and building new vessels domestically. Continuing his trend as a champion for the U.S. shipbuilding industry, Rep. John Garamendi (D-CA) emphasized the need at both House hearings for U.S. shipyards to have a full role in repurposing any used vessels purchased by MARAD.

MARAD has taken the first step to implement its plan, issuing a Request for Information (RFI) on February 14 to identify existing RO/RO vessels that could replace its aging RRF capacity. According to the RFI, the vessels must be available for acquisition between July 1, 2019 and December 31, 2022. If MARAD follows through on these plans, American shipyards potentially can expect an influx of rebuild work from the federal government in the coming years. Unfortunately, Administrator Buzby also testified that MARAD is likely five or more years away from pursuing any new build projects to recapitalize the RRF.

However, while new-build RRF ships are unlikely, there are other areas where new build projects will be moving forward. For example, the Consolidated Appropriations Act, 2019, contained $300 million in funding for the construction of a second National Security Multi-Mission Vessel (NSMV), to replace Massachusetts Maritime Academy's T/S KENNEDY. During the recent hearings, Rep. Randy Weber (R-TX) also voiced his strong support for Fiscal Year 2020 funding for a third NSMV to replace Texas A&M Maritime Academy's T/S GENERAL RUDDER. The Act also included $655 million for production of the first USCG Polar Security Cutter (PSC) and an additional $20 million for long lead time materials for a second PSC. Congress also appropriated $100 million for additional

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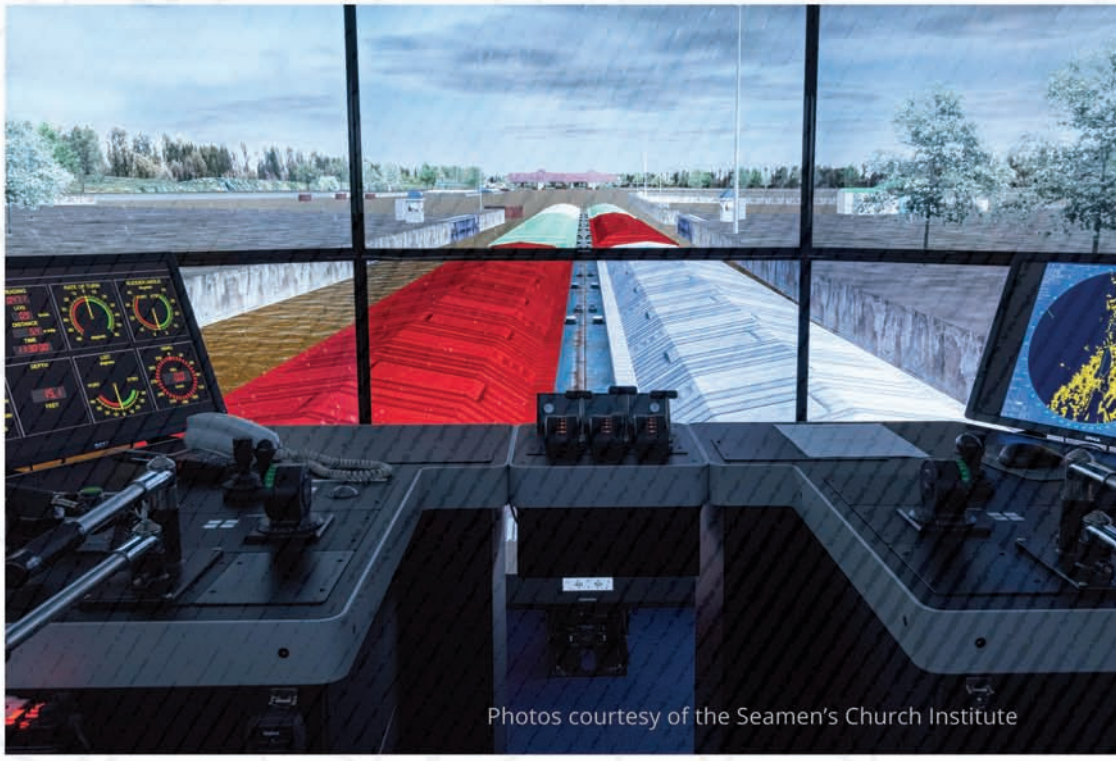

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"... what ultimately emerges is a mixed tale of support for the U.S. shipbuilding industry. While the government is taking positive steps to invest in the recapitalization of its own fleets, it is also providing, at best, tacit support for commercial shipbuilding projects."

USCG Fast Response Cutters.

In addition to these prospective and funded projects, during the Senate Commerce Committee hearing, Senator Tammy Baldwin (D-WI) voiced her intent to reintroduce the Made in America Shipbuilding Act, which would require all federal government contracts for the construction or conversion of a vessel to be performed in U.S. shipyards. The bill also requires certain enumerated vessel components included in such projects to be constructed domestically. Collectively, it appears that the U.S. government may be an increasing part of U.S. shipyards' customer base in the coming years.

Support for Commercial Shipbuilding

While the news out of Washington is relatively positive for government projects, support for commercial projects is less encouraging. For example, the Governor of Puerto Rico has requested a 10-year waiver of the Jones Act, arguing the waiver's necessity to support the transportation of liquefied natural gas to Puerto Rico. Troublingly, the Executive Branch has not yet denied the waiver. Members of the maritime industry testified that a waiver of the Jones Act would (among other impacts) undermine the domestic shipbuilding industry and negatively impact our national security. More to the point, members of Congress and the shipbuilding industry

Credit: AdobeStock © SunnyS

strenuously maintained that there is no national defense basis for the waiver, as required by federal law.

Following the theme of questionable support, the Consolidated Appropriations Act again failed to provide funding for MARAD's Federal Ship Financing Program (Title XI). The program currently has $32 million in available subsidy, equating to approximately $504 million in loan guarantees. However, with the recent approval of Title XI financing for Matson's two containerships currently nearing completion at Philly Shipyard, the program is virtually out of money. Accordingly, vessel owners will have to continue relying on the commercial market to finance new vessel construction projects.

The news is not all negative, however, with the Consolidated Appropriations Act providing $20 million in funding for the Small Shipyard Grants program. MARAD issued a Notice of Funding Availability on March 8th, with applications due by April 15th. In addition, MARAD's two tax deferral programs – the Capital Construction Fund (CCF) and Construction Reserve Fund (CRF) – remain intact despite recent changes to the Internal Revenue Code. When enrolled in these programs, U.S. vessel operators can continue to defer tax on operating income and/or vessel sale proceeds, depending on the vessel operator's trade, to support shipbuilding projects.

Thus, what ultimately emerges is a mixed tale of support for the U.S. shipbuilding industry. While the government is taking positive steps to invest in the recapitalization of its own fleets, it is also providing, at best, tacit support for commercial shipbuilding projects. In stark contrast, as Congress heard during recent testimony, countries such as China and Korea are providing billions in subsidies to their domestic shipyards as critical component of their overall national security strategy. Without similar investment, recent Congressional statements about the strategic national importance of our domestic shipbuilding industry are meaningless.

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Credit: Ampelmann

ARCTIC (& Wind) OPERATIONS: HANDS ACROSS THE WATER

As the North American offshore wind model evolves, it is clear that fit-for-purpose, Jones Act compliant and Arctic ready tonnage will need to be part of the equation. If so, we've got that box checked, with a little help from Europe.

By Rick Eyerdam

As of September 2018, the Walney Extension off the United Kingdom is the largest offshore wind farm in the world at 659 megawatts. There are at least 70 major wind farms, each with hundreds of wind turbines, each generating as much as 10 megawatts in offshore England, the North Sea, Russia and China. Across the big pond, in Canada, the offshore wind industry is even less developed than in the U.S. The first ever project, the 180MW St. George's Bay project, is still in the development stage.

The United States has one little offshore wind farm, Rhode Island's five-turbine, 30-megawatt Block Island project. But the developer, Deepwater Wind, shipped the five General Electric nacelles across the Atlantic aboard the Fred. Olsen Windcarrier and then used the barge for installation of the full turbines at Block Island, thus avoiding Jones Act restrictions. U.S. flagged feeder barges assisted by transporting the towers and blades from shore. The scope also included marine engineering, lift engineering, general operations planning, the design, fabrication and mobilization of grillage and sea fastening and lift supervision. Earlier this year, the project's developer, Deepwater Wind, was acquired by Danish power company Ørsted, hinting at what was to become the "let's learn from Europe" movement.

Meanwhile, the U.S. Department of Energy predicts around 22,000 MW of offshore wind from 10 states by 2030 if the U.S. can get past the Jones Act barrier or charter European designed offshore wind vessels. Inevitably, so it seems, American wind farm developers have finally accepted the vast experience and innovation of Norway and Denmark and adapted it to Jones Act construction of European vessel designs.

NASCENT STIRRING IN THE COLONIES

The first fit-for-purpose wind support vessel in fact emanated from the UK, whose design was used to construct the first US-built and operated offshore wind farm crew transfer vessel. The Atlantic Pioneer, built in 2015 in Rhode Island by Blount Boats, is a 21 meter aluminum vessel that was designed by South Boats, a pioneer in designing and manufacturing crew transfer vessels. Prior to this historic achievement, South Boats had built approximately 81 crew transfer vessels for the European offshore

Offshore wind farms already applied for:

#	Owner
1	Avangrid
2	CIP
3	Deepwater
4	Dominion
5	Orsted
6	Statoil
7	US Wind

Credit: US Bureau of Offshore Energy Management

wind sector, servicing wind farms throughout Europe.

Continuing that leadership from the Continent, last October, Orlando, Florida-based Aeolus Energy signed an agreement with Norwegian shipbuilding group Ulstein Design & Solutions, B.V. to design the first Jones Act compliant service vessel for the blooming U.S. offshore wind market.

Aeolus says the purpose-built vessel, known in the industry as a Service Operations Vessel (SOV), will be the first among a fleet of vessels to support the full scope of offshore wind farm operations from installation through decommissioning of turbines. Additional plans for the fleet include cable ships, crew transfer vessels and floating offshore hotel ships.

"The design and ultimate construction of these vessels will result in significant job creation and is a demonstration of confidence in the American shipbuilding industry," said Elia Golfin, CEO of Aeolus Energy Inc. "We are excited to be working with Ulstein, an established market leader in vessel design for offshore wind. We look forward to pushing the envelope in the offshore wind industry where Jones Act-compliant vessels are concerned."

"Ulstein is proud to have been selected as design partner by Aeolus for developing the United States' first purpose-built SOV vessel," said Tore Ulstein, deputy CEO of Ulstein. For the design, Aeolus has selected Ulstein's proven SX195 SOV, which will be fully customized to Aeolus'

specifications and U.S. Coast Guard requirements ahead of bidding by qualified American yards.

The SX195 is 93 meters in length, with a beam or 18 meters. It weighs 3,200 tons with a maximum draught of 6.0 meters and a maximum speed of 13 knots. It will accommodate 80 to 120, including crew and technicians, because of its unusual massive bow.

"The project starts with customizing the SX195 design, to optimize the new walk-to-work vessel for operations in U.S. offshore wind farms, including featuring the patented X-BOW and X-STERN hull shape," Ulstein said in a press release.

"The X-BOW was developed during 2003-2004 – one of the latest tough periods for the offshore industry - and revealed in 2005, together with the contract for the first vessel, 'Bourbon Orca', an anchor handling tug supply vessel for Bourbon Offshore Norway," said Ulstein Group CEO Gunvor Ulstein.

The beginnings for this bow design can be traced to the late 1990s and the collaboration between Damen Shipyard, a commercial and military vessels builder, and the faculty of Delft University of Technology, the U.S Coast Guard and the Maritime Research Institute Netherlands (MARIN).

This design was specifically developed to improve the sea keeping at high speed and ensuring 100 percent operability in the North Sea at 50 knots with a 50 (164') meter patrol boat, according to Jaap Gelling, Product Director of Damen. In 2016 the X-STERN was introduced. This aft design element is a natural evolvement of the X-BOW, and allows computer assisted bridge operation fore and aft. Both the X-BOW and the X-STERN are patented and have won several marine industry awards worldwide.

In latter years the X-BOW was introduced on 41 vessels for the offshore renewables industry and for expedition cruise including the Lindblad Expeditions / National Geographic expedition cruise vessel, the National Geographic Endurance. Ulstein Verft, Norway is constructing the vessel due to launch in 2020.

IN THE ARCTIC

The Endurance was named in honor of polar explorer Ernest Shackleton's ship. It is designed to navigate polar passages year-round while providing exceptional comfort. It will safely explore uncharted waters and new latitudes, including Northeast Greenland, remote Jan Mayen Island, the Northeast Passage, and more, according to National Geographic. The Endurance accommodates 126 guests in 69 spacious cabins—all of which face outside and have large windows or balconies, private bathrooms, individual climate control and an expedition command center.

Miami-based SunStone Ships and China Merchants Industry Holdings have also signed a framework agreement to build four expedition ships with options for six more with the X-BOW. The 104-meter vessels will be constructed by China Merchants Heavy Industry (Jiangsu) Co., Ltd. near Shanghai, with the design, equipment and management supplied by Norway's Ulstein Design & Solutions.

The ships will hold 80 to 95 passenger cabins and be rated Ice Class 1A or Polar Code 6. The first delivery will

Credit: Illo by Ulstein

The Aeolus fleet will include, from L to R in this artists image, a crew transfer vessel, a cable laying vessel and a floating hotel.

be in August 2019, with one vessel to follow every six months after. Ulstein has produced 100 of these patented X-bow ships.

For the Aeolus Energy SOV, the aftermarket additions from Uptime International could include a newly designed active motion compensated gangway and an adjustable pedestal integration which will be mounted towards the elevator tower. The interaction between gangway and vessel will enable personnel and cargo transfer through the gangway in addition to the gangway also being used as a crane.

A sign of its growing importance in the 'Walk to Work' market is evidenced by DNV GL's publication in June 2015 of an industry guidance document for walk-to-work vessels, so called because neither skiffs nor helicopters are employed for ship-to-structure transfers, only gantries.

The International Maritime Construction Association developed a consensus on the optimum design and configuration of boat landings for accessing wind turbine foundations from crew transfer vessel gantries, to standardize the structural design and strength with the aim of reducing operator costs and increase safety of personnel when transferring to these offshore structures.

There are half-dozen choices in Europe now for walk to work gantries. They include the Dutch firm Safeway/Van Aalst, Norway's, Salt Ship Design and Osbit Power in the UK.

Closer to home, Aeolus' plans for the fleet come as more and more

Credit: Ulstein

An artist's depiction of the National Geographic Endurance, the first cruise liner with the Ulstein X-BOW.

U.S. states, such as Massachusetts, New Jersey, and New York, move closer to having wind farms off their coasts. The Trump Administration has also signaled an eagerness to boost development in the U.S. offshore wind industry, part of the Administration's policy to boost domestic energy production and domestic shipbuilding.

WALK TO WORK IN WINTER

As wind farms move into colder and rougher waters one innovation required by the European regulators will be a blessing for offshore wind farm crews transferring from SOV's to wind turbine towers and offshore platforms. And that is the Ampelmann N-type, a proven gantry system that transfers personnel

THE FIRST AND ONLY JONES ACT COMPLIANT OFFSHORE WIND TURBINE INSTALLATION VESSEL

Credit: Block Island Reservations

The R.D. MacDonald was not just any jack up barge. It was imagined to be the first Jones Act compliant off shore wind turbine installation vessel back in 2013. Wind farms and the engineering that made them possible began in the North Sea and along the British coast decades ago because European countries really needed the energy, their coasts are in relatively shallow water and they have winds strong and steady but without the curse of U.S. wind farms: four months of hurricanes every year in the relatively shallow Gulf Coast and East Coast.

And then there is the Jones Act that prohibits transfer of any type of cargo from any point in the U.S. to another port in the United States unless the vessel hull was laid up by a Jones Act compliant yard in the United States. But it was not for trying. In 2013, New Bedford, Massachusetts launched a plan to build a terminal, the South Terminal, where wind terminal components could be loaded onto the custom designed jack up barge RD Macdonald.

The RD MacDonald was constructed by Weeks Marine to comply with the Jones Act: the only vessel purpose built in the U.S. for offshore wind farm deployment. The hull was built in Jacksonville, FL, after which it was towed to Louisiana where her cranes were installed, and then back up to Massachusetts.

Intended to be just small enough to leave the narrow port to travel to the Cape Wind farm location just off shore, it was also meant to be large enough to take, assemble and install a first generation 3 megawatt wind turbine handled by a crane with a 280 foot boom, capable of extending 350 feet when the barge was jacked up.

But the Cape Wind field and the South Terminal and the tiny barge faced too many insurmountable challenges from politics, engineering and from conservationists. Worldwide the specialized barges used for ocean wind turbine installations are 127 feet and wider. The special jack-up barge though originally planned to be much larger, was the smallest in the world, less than 90 feet wide.

Nevertheless, the RD McDonald was then tried on the first U.S. offshore farm, the 30MW Block Island Wind Farm, opened in 2016 off the coast of Rhode Island. But the 6 megawatt wind turbines, twice the size of the Cape Wind field were too large and the water off Rhone Island too deep.

So Rhode Island's five-turbine, 30-megawatt Block Island project used another ploy to bypass the Jones Act restrictions. The developer Deepwater Wind, shipped turbines from France on an installation vessel that was never able to dock in the United States in the course of construction. Other components were shipped out from a U.S. port.

Though geared for service in the St. Lawrence Seaway the RD McDonald was eventually towed and continues her services as a floating crane in the Gulf of Mexico, her Jones Act credentials long forgotten.

Background image credit: Weeks Marine

safely in extreme cold weather.

Known as the Icemann, it is fully operational in temperatures as low as -28°C, ice, snow, and sea states up to 3.5meters (about 11.5 feet.) It is fully motion compensated on six hydraulic legs, resulting in zero movement of the gangway. Using technology inspired by the flight simulator industry, Dutch offshore technology firm Ampelmann has enhanced the design of its conventional W2W system, employed in relatively benign environments for Arctic conditions on vessels greater than 70 meters.

The N-type system, otherwise known as 'Icemann', addresses the combined challenges of sub-zero temperatures, snow and sea spray icing, as well as wind speed, sea state, visibility and vessel movement. It was developed to provide safe access for personnel in remote areas such as northern Russia, Norway and Canada, and parts of the Caspian Sea.

The system underwent rigorous testing prior to deployment last August for Sakhalin Energy Investment Company at the Sakhalin-2 field center in the Sea of Okhotsk offshore northeast Russia, and has since performed more than 16,000 transfers, and nearly 1,000 landings.

Icemann is fully enclosed and insulated and features a transfer deck for up to 20 people, can rotate 360 degrees, and is controlled from the vessel to ensure flexibility in platform landing locations and directions. It has a maximum gangway length of 32 meters (105 ft), a telescopic scope of 11 meters (36 ft).

The advent of North American offshore wind brings with it the need for fit-for-purpose, appropriately classed, ice and Arctic ready platforms, and the safety measures that make it all possible. All of that, and more, is already happening, across 'the big pond.' For U.S. boat builders, the coming boom can't come a minute too soon. And, the learning curve just got a lot shorter.

What's in Your Workboat?

Moose Boats rises to the challenge of building its biggest vessel ever. That's an important step forward for this growing California shipyard. Equally impressive is what's inside that rapidly developing hull and why those features were chosen.

By Joseph Keefe

The U.S. boatbuilding scene is a changing landscape of waterfront manufacturing that constantly evolves to meet the inevitable peaks and valleys of demand. Nowhere is that reality more apparent than at California-based Moose Boats. In October 2016, Lind Marine announced the acquisition of Moose Boats. That move was important because Lind Marine operated a 5-acre shipyard including a 430 foot dry-dock and 1,600 feet of linear pier on Mare Island in Vallejo, CA. With the ink still wet on the contract, Moose was ready to evolve into another phase of its growth.

Moose Boats was founded in 2000 by Roger Fleck and, in a very short period of time, has delivered an impressive total of about 100 military, law enforcement and fire rescue vessels. Moose Boat's relocation into a larger production facility at Mare Island allowed the business to scale its production line to meet demand for larger aluminum vessels and offer a wider range of designs. The catamaran Moose Boats is currently building for Westar Marine Services in San Francisco – 75 feet LOA and 130,000 pounds of full displacement – is a perfect example of that evolution.

Nearly two decades of building smaller catamarans of up to 46 feet, 40,000 pounds full load displacement with semi-custom fabrication, and the need to support all of the systems and amenities of much larger craft, made the transition to builder larger 75-foot catamarans (and beyond) a simple and obvious shift for Moose Boats. Mark Stott, Moose Vice President and Sales Engineer, told ***MarineNews*** in March, "Our greatest innovations stem from solving the specific needs of a client or collaboratively bringing a solution the client devised to reality."

With larger craft, such as the new catamaran Moose Boats is currently building for Westar Marine Services, the yard was able to leverage its internal design principles in a more spacious realm, with greater possibilities. The core philosophy of Moose Boats has always encompassed terms such as "form, function, practicality, seaworthiness, crew safety, stability, serviceability and maneuverability." If so, then their biggest boat to date will provide all of that, and more, when it finally slips into the water in Q3 2019.

'Checking' all the Boxes

Westar Marine Services sought out Moose Boats with basic criteria that called for crew boats to ferry personnel and ship's stores to various destinations around San Francisco Bay. This demanded a hull capable of transporting 28 passengers and 20,000 pounds of palletized cargo with an integrated cargo crane. Westar's existing crew boats are steel mono-hull designs with deck level pilothouses, sub-

deck level crew seating and a service speed of around 10 knots. In addition, Westar's existing boat engine compartment accesses were obstructed when a large amount of cargo was stored deck, leaving captains and deckhands with no direct access to crew cabins from the pilothouse.

Westar has also been successfully running steel mono-hull crew boats with conventional propeller propulsion for decades and was understandably somewhat hesitant to change what was working for them. Hence, the initial design concept for Westar's new vessels was a 65 foot aluminum mono-hull with conventional propulsion. Westar's requirement for service speeds in the low to mid 20 knot range with EPA Tier 3 engines brought about the concept of investigating a high efficiency displacement catamaran hull form to satisfy both the performance and fuel consumption requirements.

Employing Incat Crowther's catamaran design expertise that advised a 70 to 75 foot high-efficiency displacement catamaran, Westar's speed and load requirements were met. Various propulsion analyses were performed and eventually, water jets were ruled out due to their lack of efficiency in the 20 knot speed range. With a proven track record in Europe, and impressive reviews from U.S. East Coast pilot boat operators, Westar adopted Volvo Penta's IPS system for its thrust, maneuverability and efficiency.

Incat Crowther then specified the IPS 900 propulsion package, consisting of Volvo's D13-700hp engines and IPS3 drives. The conservatively projected full load performance at 85% of MCR is an impressive 24.5 knots while limiting fuel consumption and engine stress. The shipyard design team then set out to capture the Moose Boats hallmark goals of an aesthetic, practical and functional workboat. As the design took shape, a new breed of crewboat emerged; one with a modern hull form and next generation propulsion system.

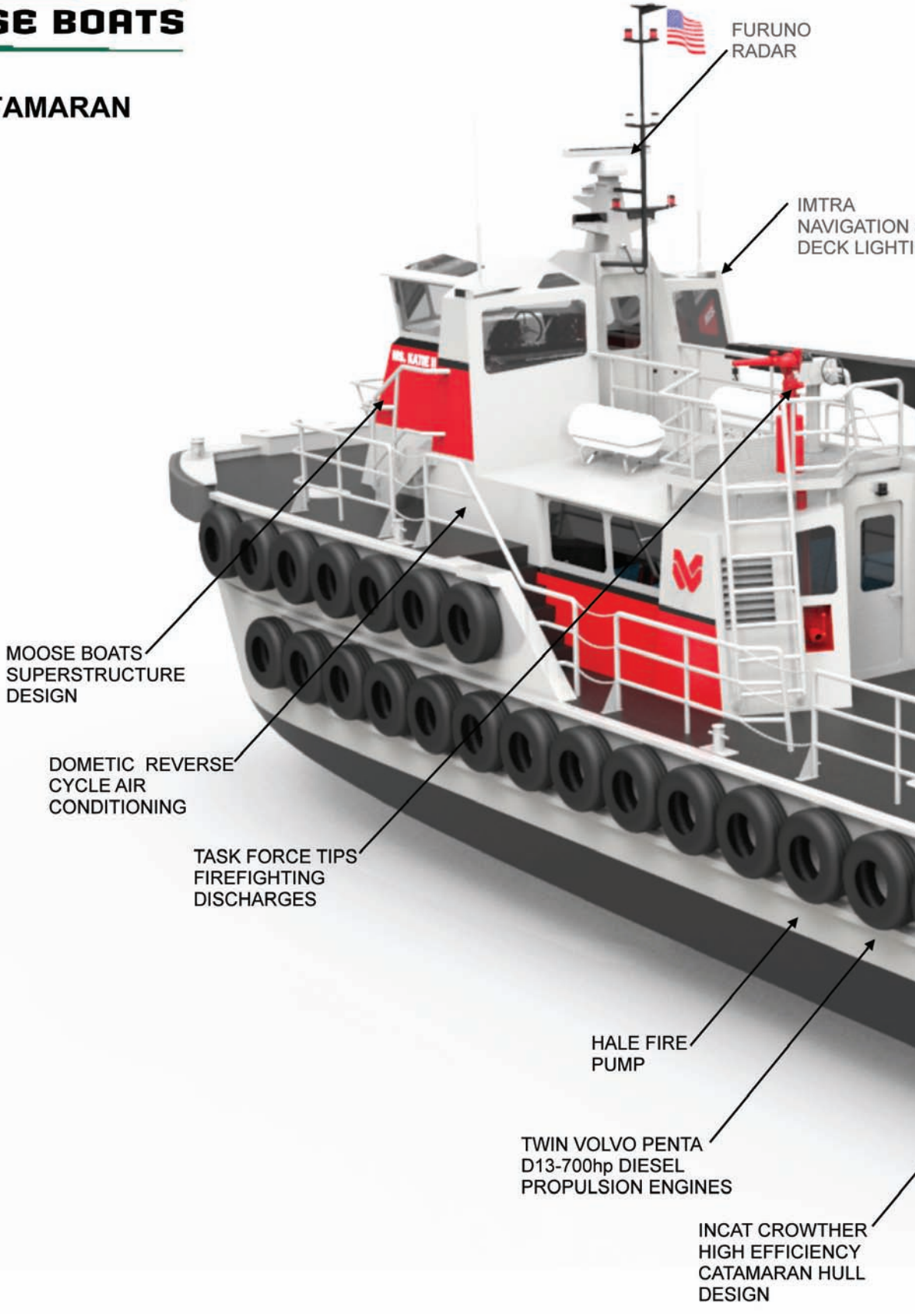
What's in Your Workboat?

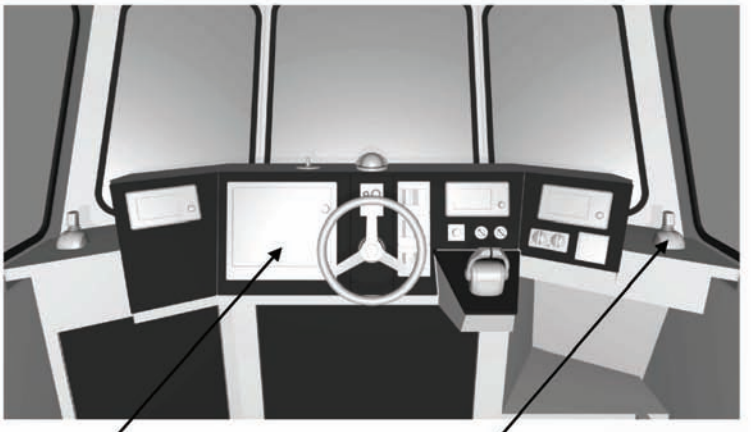
The old adage that says *'the devil is in the details'* doesn't quite fit here. But, like any quality vessel, the final product is most definitely *'the sum of its many parts.'* If so, any prospective operator looking to build a new hull should be asking, ***"What's in your workboat?"***

For the Westar hull, a Northern Lights 20kW diesel generator will support two Dometic reverse cycle air conditioners and a 4,000 pound telescopic boom crane with an electric hydraulic power unit. A dedicated diesel-powered Hale fire pump will supply a Task Force Tips monitor and discharge valves. Both the crane and fire fighting discharges are mounted on the passenger cabin roof taking

MOOSE BOATS

75' CREW CATAMARAN





ROSE POINT
NAVIGATION

VOLVO IPS
JOYSTICK
CONTROLS
PORT & STBD

NORTHERN LIGHTS
DIESEL GENERATOR

FREEMAN
HATCHES

SCHUYLER
RUBBER
FENDERING

VOLVO PENTA
IPS3 DRIVES

"The old adage that says 'the devil is in the details' doesn't quite fit here. But, like any quality vessel, the final product is most definitely 'the sum of its many parts.' If so, any prospective operator looking to build a new hull should be asking: ***what's in your workboat?"***

advantage of the engine room accesses for plumbing connectivity and ease of maintenance, also leaving the cargo deck unobstructed.

The pilothouse has wrap-around dash supporting a Furuno TZ-touch 14" multifunction navigation display, climate control thermostats, Imtra wipers, Volvo helm controls, two Volvo wing station joysticks, Volvo engine, alarm and steering displays. Custom built Blue Sea Systems 360 switch/breakers will handle power distribution, Hella navigation lights and Imtra deck lighting.

Window area has been maximized for situational awareness and the comfort of passengers and crew. Transparent Armor Systems will supply more than twenty laminated exterior windows, four watertight exterior doors and five interior doors.

Perhaps the most significant change from Moose Boats' typical output, other than the sheer scale of the vessel itself, can be found in how the fendering is achieved. In the crew and commercial boat world, it seems that there is no substitute for tires when it comes to protecting the hull from other craft and piers. Dozens of repurposed aircraft tires will line the catamaran's hull sides, bow and stern, and custom looped tire rubber pads from Schuyler Rubber for the forward and aft quarters. Stainless steel wire cables, with turnbuckles to allow maintenance crews to quickly change and re-tension the when a tire is torn or damaged, will suspend the aircraft tires. The aesthetics of this arrangement was a departure from the typically sleeker Moose Boats product, but, says Mark Stott, "We've now embraced its rugged commercial look and functionality."

Drilling down a little deeper, the boat's impressive equipment package was chosen, in part because of some of the following features:

- ***Hull:*** *This adaptation of Incat Crowther's proven hull form is specifically designed and optimized for Volvo's IPS drive. Its hard chines and aft end shape have been developed to maximize flow to the drive units. Designed with high freeboard and tunnel clearance, it will cope well with offshore conditions.*
- ***Propulsion:*** *The twin Volvo Penta diesels with IPS steerable pod drives with forward-facing dual counter-rotating props make for a highly efficient propulsion solution for crew boats. Volvo Penta reports that IPS produces 30-40 percent longer cruising range, 15-20 percent higher top speed, 20-35 percent reduction in fuel consumption, 20-35 percent lower CO2 emissions and 50 percent lower perceived noise levels. IPS is also easier to install, taking about 50 percent less time than inboard shafts and is easier to service. The pods also provide higher torque and faster acceleration, as well as higher bollard pull of approximately four tons per pod unit. Connected directly to the engines, the IPS pods are further forward than inboard shaft drives, providing more interior space. Moreover, IPS provides safe and predictable boat handling in close quarters, especially with the joystick controls. Volvo Penta's Power Center in San Francisco, Helmut's Marine Service, will install and test the propulsion system.*
- ***The IMTRA Package:*** *IMTRA provided a number of features for this new build, including Frensch heavy duty interior LED utility and engine room lights; DRH navigation lights, IMTRA's offshore series LED deck lights; and Exalto windshield wipers. The Frensch utility lights are extremely efficient, super high output, surface-mounted fixtures selected for their durability and compact form; ideal for engine compartments. The DHR LED navigation lights offer a unique commercial design with back-up LED drivers built right into the fixture and the ability to service the fixture onboard if needed. The Offshore series LED deck lights are specifically designed with the extra protections required to survive life on the open ocean and further provide the illumination needed to focus on the job at hand. Exalto wipers offer unmatched mounting flexibility, ease of installation, and are built to perform in the harshest conditions.*
- ***Navigation:*** *Rose Point ECS improves operational efficiency, situational awareness, and decision making with straightforward, uncluttered displays and controls that provide instant access to the information professional mariners need to navigate safely. Rose Point ECS provides comprehensive, sophisticated navigation tools, all in one package.*
- ***Fendering:*** *Schuyler Rubber Company manufactures the fenders that work boats need to stay working. Durable in the harshest conditions, these fenders are made from post consumer truck tires and utilize the best rubber construction the tire industry has to offer. All fender systems are custom made for each unique configuration and come with the attachment system built into the fenders. The Westar catamaran*

will utilize the Schuyler SR3D Loop Fender system that has excellent energy absorption properties as the rubber compresses on contact but still maintains its shape and protects the structure of the hull behind it.

Finishing Touches

The forward end of the pilothouse takes its design cues from the Moose Boats M2 catamaran's cabin with the addition of a widened aft end allowing access to the foredeck via port and starboard doors and the aft station via a door on centerline. An internal stairwell provides access to the crew lounge, head and passenger cabin. The raised pilothouse gives Westar's captains the sightlines they require while remaining narrow enough to not to come into contact with the counter of large ships during crew and cargo transfers.

Additionally, it was decided that fewer deck level changes results in higher levels of safety for the crew. The final design allows for the transit from the helm to aft steering station without negotiating any steps. Similarly, the passenger cabin, head and crew lounge are all located on the main deck level, providing Westar's deckhands and customers with enhanced safety and comfort.

Access to engine compartments is via stairwell at aft corners of the passenger cabin, allowing crewmembers to access machinery spaces while underway, regardless of deck cargo and without compromising the engine room environment.

All of that, packaged with an impressive array of quality OEM components will, later this year, produce the workboat that Weststar has always wanted. Along the way, Moose demonstrated its ability to scale up to even bigger hull forms. *And, that's what's really in this workboat.*

Shipyard Coatings: Green is the Best Color

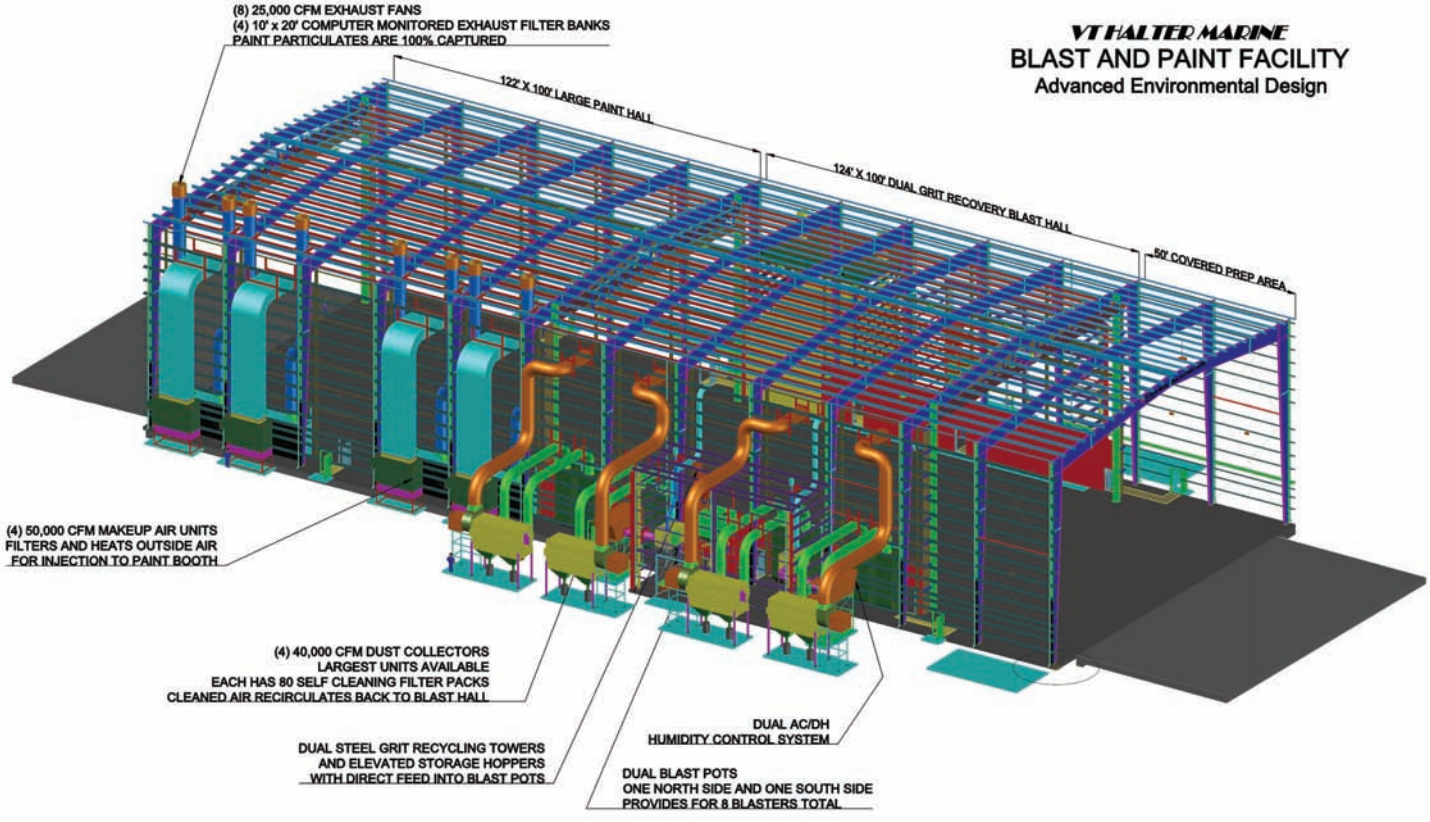
VT Halter's new state-of-the-art blast and paint facility, already paying dividends for the shipyard's bottom line and the environment alike, is poised to lift your bottom line with improved coatings and reduced corrosion.

By Joseph Keefe

When it comes to marine coatings, preparation is everything. If that's the case, then Gulf Coast-based VT Halter has all the boxes checked when it come to making sure that every vessel component and exposed surface that leaves its facility is ready for whatever harsh conditions come next. That's because, in April of 2018, VT Halter Marine unveiled a state-of-the-art blast and paint facility that today allow ship sections to be prepared, blasted and painted in a controlled environment. The new facility incorporates cutting-edge technologies into VT Halter's marine construction programs.

Located at the northeast corner of VT Halter's Pascagoula shipyard, the facility consists of a large 304' x 120' main building with adjacent spaces for blasting and painting of small parts of large ship sections with dual independent grit recovery, and cleaning processes to enable reuse of abrasive media. Able to accommodate ship sections as large as 105' W x 80' L x 40' H, weighing up to 500 tons each, the facility is designed for 24/7 operation in all weather conditions and utilizes 100 percent LED lighting to reduce energy consumption and carbon footprint.

Already, the yard has blasted and coated the complete hull of a 120-foot tugboat weighing 440 tons. Another tugboat hull – with a total LOA of 135 feet – can fit in on the diagonal. In a nutshell, the blast and paint facility may well be the most cutting-edge of its kind in North America, while at the same time providing environmental protections for employees and nearby residential areas. At a time when the properties of blasting grit have become a major topic for environmentalists and regulators alike, VT Halter is leaps and bounds ahead of everyone else.



Up and Running; Already Paying Dividends

The VT Halter Marine Blast and Paint Facility went through equipment commissioning in September 2018 with BlastOne and MegaDoor put into full operation in October 2018. That's a good thing, because the yard has secured new contracts since its opening and the facility is currently 100% booked to the end of July 2019.

Timothy Pryor, PE, is a VT Halter Marine Facilities and Structural Engineer at the Pascagoula yard. In January 2016, he took on the project. During the design and construction phase, he worked closely with equipment supplier BlastOne International as well as VT Halter Marine coatings experts Bennie Curry, Anthony Krebs, and Ron Arnold. Arnold now runs the facility.

When it was fully up and running, VT Halter Marine President and CEO Ronald Baczkowski called the new facility, "a game-changer." Pryor agrees, explaining, "There are three aspects to the facility that Ron is referring to. Firstly, from an environmental standpoint, the facility will allow us to minimize particulate matter emission into the atmosphere during blasting or painting operations. So, that is definitely a key advantage that this facility has brought to our operations.

"Secondly, with this new facility, we are operating within a controlled environment within a sheltered space. No longer at the mercy of the weather, schedule variability is a thing of the past. This translates into less weather-related disruptions that may affect delivery schedules.

"Finally, the reduction in costs due to recycling of the grit, reduction in paint usage by eliminating almost all wind-borne overspray, and reduction in man-hours, will allow the facility a reasonable payback period."

The facility, of course, allows VT Halter personnel to work in any and all weather, but it is more important than that. Pryor explained, "Being able to do the work in a controlled environment that is weather proof means more than just cost-savings for us. It allows us to deliver work of enhanced quality to our customers, which is really why this investment is so critical to us. For example, we no longer experience flash rusting from a sudden rain shower or from high humidity, and the paint is applied under proper humidity conditions, day and night. In the past, the difference in humidity and temperature levels had prevented us from doing paint work at night, but with this facility, we now can. Again, that speaks to the enhanced efficiency on our part in addition to improved work quality."

Beyond this, and because most of the coatings in use at the yard are two part epoxies, meaning cure times are chemical and not environmental, not having to re-blast due to

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– Timothy Pryor, PE, VT Halter Marine Facilities and Structural Engineer

flash rust and not delaying painting times while waiting for the humidity to improve is a huge time advantage.

With 65 blasters and painters working on a two-shift basis, the yard is certainly getting its money's worth out of the new shop. But, that's only half the story. VT Halter CEO Baczkowski reports manning and labor curves that produce close to 40 percent efficiencies as a function of using the facility. We asked Pryor to substantiate those claims. "When you stop losing 30% of your paint to the wind you are naturally using less man-hours. When you stop re-blasting because it rained, you reduce that re-work time by 100%. It becomes very easy to do better."

When we suggested that 40% efficiency improvements in paint and coatings for a large hull would translate into a competitive advantage, Pryor agreed but insisted that the real advantage – at least in the eyes of the customer – rests elsewhere. "The customers that I have talked to certainly can see the natural advantage of lower costs, but what interests them most is the increase in quality from painting on a cleanly blasted unit. The facility enables us to paint better using less paint, with less chances of re-work due to weather or environmental related factors. This results in better schedule conformance and lower man-hours."

Environmentally Friendly: two kinds of green

Even as efficiency improvements drive the bottom line for most shipyards, for VT Halter, one of the most important reasons to building this state-of-the art facility involved the protection of the environment and the surrounding communities. As the facility collects that blast material as it is used, it is also filtered and eventually recycled. Actually, the planned safeguards go much deeper.

The air that is supplied to the workers is filtered and heated or cooled as required, promoting better productivity as the environment becomes more comfortable. Beyond the air supply to the blast hall and paint booths, all workers are supplied with 4-stage filtered breathing air to their hoods that is monitored for carbon monoxide and which come with visual and audible alarms. This air supply can also be used to provide cooling under their hoods.

An aerial view of the VT Halter Marine Shipyard, with the new state-of-the-art blast and paint shop in the foreground.

Elsewhere, the type of media that is being used to blast hulls is a hot topic when it comes to shipyards. A previous federal edict to change the type and origin of the blast medium to something supposedly less toxic has been delayed or pulled off the table completely. Here in Pascagoula, says Pryor, that discussion is now moot. "We have already converted to coal slag in our outdoor blast yard many years ago, so we have been very low on crystalline silica levels. The steel grit we use inside the facility is just steel, and is highly reclaimable, but cannot be used outdoors as it will rust. This steel grit is the ultimate abrasive as it has zero environmental impact and zero toxicity. Steel is the most environmentally-friendly material available. It is highly recyclable, non-toxic, and familiar to all our workers."

All of that does come at a premium price, but the savvy boat builder can amortize those costs into savings down the road. The new (safer) blast material is more expensive because the standard blast medium is basically a waste product from the glass industry, whereas the new materials are specifically manufactured. Pryor explains, "The steel grit, while pricier, is highly engineered, and comes in a multitude of grain sizes and 6 different intensities (hardness). You can tailor your abrasive to your product and work environment. In addition, you can reuse it 300 to 1,000 times and it is self-exclusionary as it gets filtered out in the dust collectors when it gets too small. These are long term advantages to our environment which cannot be traded off with the cost of the raw materials."

Coatings: 99% Preparation; 1% Paint

If, as many shipbuilding stakeholder claim, coatings are one of the most important, but sometimes most underappreciated aspects of shipbuilding, it is also true that a quality coating job (should) involve 99% preparation and 1% paint. Assuming that to be the case, the new blast and paint facility provides VT Halter with a remarkable advantage over yards not so equipped. "It is true that this facility provides an advantage for us," insists Pryor, adding, "The preparation for that, including rounded edges, prefabrication primer, post fabrication blasting, and multi-stage painting with inspections required at every level could not be done in the former environment we had. Our ability to apply the final coating without having to go back and do re-work only leads to higher quality."

All that said, every coating assignment is different, and a paint representative associated with the coating supplier is always on site, independent of the yard, advising on procedures and then monitoring to make sure it gets done right. According to Pryor, the paint system itself is almost always customer specified to match performance with their own fleet.

Benchmarking the Dividends

Beyond the obvious environmental and efficiency gains, VT Halter Marine eventually intends to benchmark the quality of its finished coatings against that which came before. Especially important in an industry where corrosion and maintenance costs can be prohibitive, the real test will be the comparison of the warranty costs associated to paint failures and doing a comparison with projects completed prior to Fall 2018. Tim Pryor, however, readily admits, "Of course, that measurement will not be available until some years down the road."

It's a tightly competitive shipbuilding market out there. For its part, VT Halter Marine designs, builds and repairs a wide variety of ocean-going vessels such as patrol vessels, oil recovery vessels, oil cargo vessels, ferries, logistic support vessels and survey vessels. Those projects all require quality coatings as the finishing touch. Arguably, that makes all the difference – and VT Halter Marine knows it. It turns out that, when it comes to marine coatings, green IS the best color.

The Enduring, Iconic U.S. Flag ATB Model

The view from the Bouchard Boardroom and … beyond.

By Joseph Keefe

The roots of the now familiar and reliable articulated tug and barge (ATB) business are deep and stretch all the way back to the 1800's. Along the way, various patents to connect a tug and a barge with a secure mechanical connection were filed. The concept began to gather momentum in the late 1960's when Edwin Fletcher with ARTUBAR, and the Bludworth family of flexible pushing systems were pioneering efforts to marry the economies of pushing with the safety and seakeeping inherent in mechanically linking the tug and barge at sea. Other systems were developed and tried; not all were successful.

As a baseline, the ATB owes its current market position, in large part to the progression in development of ARTUBAR, and BLUDWORTH in the U.S., and then the landmark ARTICOUPLE system in Japan, followed by the INTERCON system in 1986. The 21st century has now also seen the wide application of the JAK system on small to mid size ATB's.

Eventually, Robert Hill and his Ocean Tug & Barge Engineering Corporation emerged as the driving force behind the growth of the ATB concept. Hill and OTB are the co-inventors of the Intercon Connection System, now by far the most popular system of many use. In a nutshell, Hill has had a hand in over 70% of the operational ATB's in service in America – including 80% of those built or converted since 1994. In large part due to Bob Hill's efforts, the ATB is now a familiar standard in the U.S. flag fleet for coastal, Jones Act and some inland applications. Also prominent in that discussion is Bouchard Transportation Co., and its current President and CEO, Morton S. Bouchard III.

From his first introduction to the concept, Morton S. Bouchard III immediately grasped the notion that ATB's married both low-cost marine transport with reliable marine transport. Barges, of course, had always been a less expensive option to move cargo, but they were also slow, fuel-inefficient, and when bad weather emerged, unreliable. For example, Robert Hill explains that when Mobil first approached his firm to design an ATB for Northeast service, the entire reason to even consider an ATB was weather-reliability. And, they got just that.

BOUCHARD ENTERS THE ATB GAME

If, as Robert Hill insists, the credit for the success of the AT/B is a story of engineering, risk-taking, and a rapid

"By using the same Intercon system on the various size ATBs in our fleet; we have the flexibility to change tugs in the event of unplanned shipyard maintenance or other issues that may arise. However, we dry dock the ATBs together (both the tugs and barges) for planned/routine maintenance."

– Bouchard Transportation Co.
President and CEO, Morton S. Bouchard III

ATB Coupler Systems in Use *(Feb. 2017)*

OEM / Type	Number
Intercon	100
JAK	37
Bludworth	23
Articouple	9
Artubar	4
Unknown	2

Major ATB Operators *(source MARAD)*

U.S. Flag Operator	Number of ATB's
Bouchard	21
Crowley	12
K-Sea	11
Kirby	22
Moran	10
OSG	10
Penn Maritime	12
Reinauer	20
All Others	57

industry-wide acceptance of a concept, then Bouchard Transportation was also one of the first firms to fully embrace the concept. That sort of early adoption is anything but common on the domestic waterfront. At the same time, it has long been a hallmark of the Bouchard brand.

In the early 1990's, Bouchard was the first company to build double hulls. But, Morton Bouchard III did not yet know of the Intercon Coupler System. While attending the American Petroleum Institute Conference in Chicago, a series of meetings piqued his interest. Referencing that API conference, Bouchard told *MarineNews*, "I learned about the Intercon system and was interested in understanding why Bouchard did not install this system on the B. No. 230 & B. No. 240. I returned to New York and met with my father, Morton S. Bouchard Jr., who was upset we did not pursue this system for the B. No. 230 & B. No. 240. We then agreed that moving forward all new Bouchard barges would be ATBs equipped with Intercon."

In 1997, ATB unit Danielle M. Bouchard & B. No. 245 was built, and Bouchard was yet again, the first in the 1990's to introduce the Intercon system. In fact, the Danielle M. Bouchard was Bouchard's first 10,000hp ATB tug and the B. No. 245 was Bouchard's first 250,000 barrel barge. This unit was the first of its kind ever built in the industry. It also began a love affair with the ATB that continues to this day. In a fragmented and wide ranging market, Bouchard

On the likelihood of the iconic ATB getting much larger:

"If you go any larger, the economics favor a ship, which is where I do see Bouchard going in the future."

– Bouchard Transportation Co.
President and CEO, Morton S. Bouchard III

now has as many ATBs under U.S. flag as almost any other operator, and exclusively employs the Intercon system.

Today, Bouchard boasts 22 ATB Tugs, servicing 20 ATB Barges. Bouchard continues to build and further improve its fleet, and the ATB unit M/V Evening Breeze & B. No. 252 were both only recently delivered.

The Evening Breeze, built by VT Halter Marine, is notable in that it is the first tug in Bouchard's fleet equipped with tier 4 engines. Looking ahead, the ATB Tug Evening Stroll is currently under construction at VT Halter Marine. And, while all Bouchard tonnage is U.S. flag and Jones Act compliant, the firm's vessels are all ocean load lined, and are able to trade in any region. But, says Bouchard's CEO, the firm's primary areas of operation include the North East and Gulf Coast of the United States.

Importantly, 85% of the Bouchard fleet is "connection" agnostic; meaning the tug can connect / couple to any barge. Bouchard explains, "By using the same Intercon system on the various size ATBs in our fleet; we have the flexibility to change tugs in the event of unplanned shipyard maintenance or other issues that may arise. However, we dry dock the ATBs together (both the tugs and barges) for planned/routine maintenance."

To that end, Bouchard, since its early entry into the ATB markets, always uses the same connection system. "Absolutely, Bouchard does," said Bouchard, adding, "We always use Intercon; why change something that works and is the best? It is more expensive than other systems to both build and operate, but it is the most reliable and the safest – which is the most important."

BOUCHARD'S ATB 'BUSINESS MODEL'

The ATB 'business model' is built – in part – on the economies of reduced manning, increased coastwise flexibility,

Bouchard Transportation Co., Inc. ATB Fleet Details …

Barge	Tug		Barge	Tug
B. No. 270	Kim M. Bouchard		B. No. 245	Danielle M. Bouchard
B. No. 272	Donna J. Bouchard		B. No. 250	Evening Star
B. No. 280	Ellen S. Bouchard		B. No. 252	Evening Breeze
B. No. 282	Denise A. Bouchard		B. No. 265	Marion C. Bouchard
B. No. 285	Robert J. Bouchard		B. No. 205	Linda Lee Bouchard
B. No. 295	Bouchard Girls		B. No. 210	Morton S. Bouchard Jr.
B. No. 215	Brendan J. Bouchard		B. No. 220	Frederick E. Bouchard
B. No. 225	Jane A. Bouchard		B. No. 230	Ralph E. Bouchard
B. No. 242	Morton S. Bouchard IV		B. No. 235	J. George Betz
B. No. 240	Barbara E. Bouchard		***	***
Tug Buster Bouchard: Intercon equipped; not currently married to any Bouchard Barge.				
Tug Capt. Fred: equipped w/Intercon but not currently married to any Bouchard Barge.				
Tug Evening Stroll: under construction at VT Halter Marine, &will be equipped w/Intercon.				

(*) Bouchard Transportation co.

better speed and endurance in rougher seas (than, as compared to a standard barge tow). Bouchard take on the ATB business model case includes all these metrics, and more. But, says Morton Bouchard III, it's not all about saving money. Indeed, some aspects of his overarching plan involve spending more today and amortizing those cost to yield greater dividends down the road.

"Bouchard only operates manned barges," explains Bouchard, continuing, "Although we are now studying the possibility of changing to unmanned barges. However, the manning requirements today are more dependent on a safe operation. The wheelhouse of ATBs today requires an enormous amount of oversight, so Bouchard always operates within or above regulation."

It's about safety, too. For example, ending the need to go from the towing wire to push gear by picking up the barge is eliminated – along with all the chances of injury, damage and time – by sticking to the ATB model. And, while achieving better speed and endurance in rougher seas is another advantage, Bouchard insists, "ATBs do help increase speed and time. However, Bouchard leaves that decision to our Captains."

When it comes to building the ATB, it is more expensive to construct the barge due to the ladders and ballast. The tugs may be less expensive due to single wheelhouse, but Bouchard still builds all of its tugs with two wheelhouses.

The economy of scale, especially as ATBs became larger and with increased cubic capacities, is undeniable. But, Bouchard doesn't see the iconic ATB getting much larger. That's because, he offers, "If you go any larger, the economics favor a ship, which is where I do see Bouchard going in the future." That's an interesting revelation for Bouchard, but not necessarily surprising, since the firm has long operated with very much of a blue water SMS system, well prior to the advent of the subchapter M towboat rules. Hence, the Bouchard Safety Management System (SMS) is already in Compliance, but adds Bouchard quickly, "We continue to look at areas of improvement in order to be the safest operator possible. Safety first and foremost is the only Bouchard way. Bouchard's safety program is simple: There is no budget for safety."

Clearly, Bouchard believes in the ATB, and his firm is heavily invested in its use. But, like everything else on the domestic waterfront, international market pressures and current events have a way of impacting even the best laid plans. Bouchard looks at today's markets with guarded optimism. "The market as we see it today is overbuilt. When President Obama opened up crude exports, it certainly hurt the Jones Act. I understand why crude exports were opened, but the market is soft. Now it is getting tighter every month there is less building and more scrapping. Bouchard's fleet is well positioned in this market."

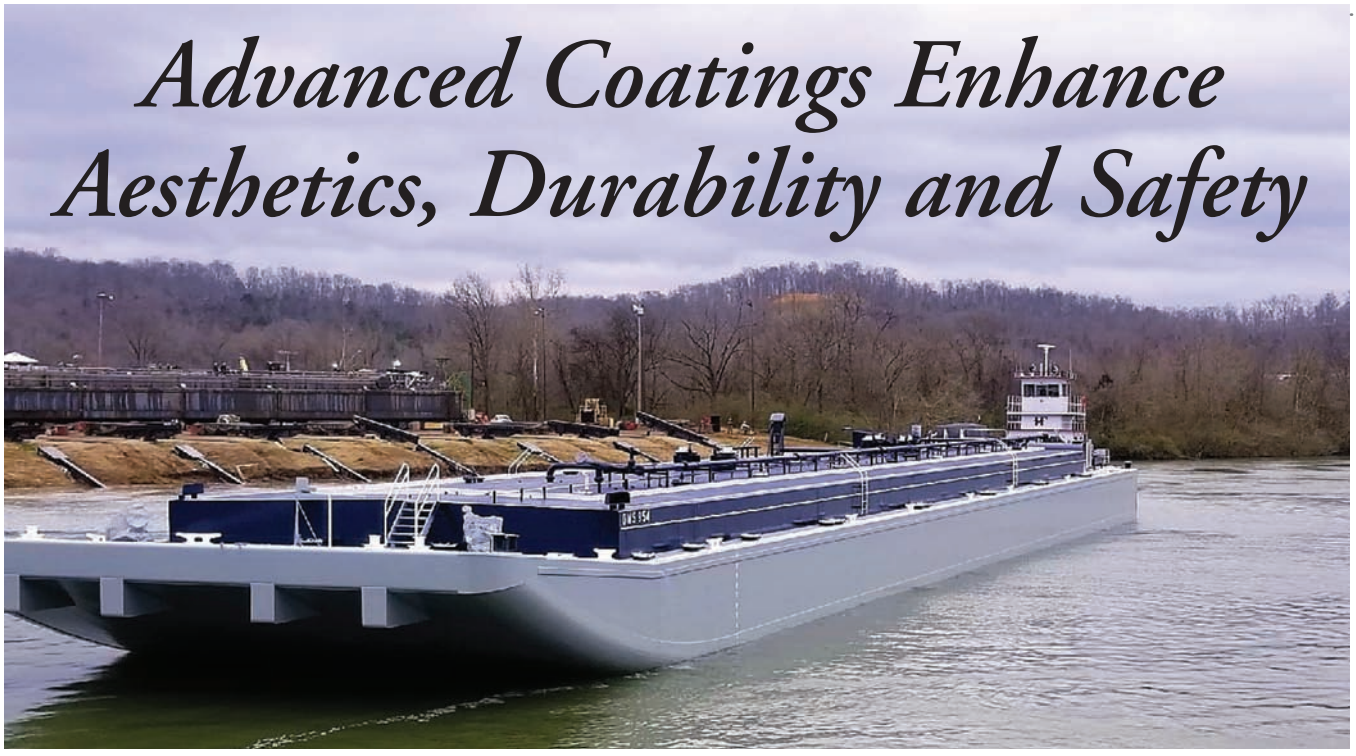
THE ICONIC ATB: SAFELY HERE TO STAY

As of February 2017 – and no doubt these numbers have further expanded – the U.S. flag ATB fleet totaled 1,530,916 gross tons and a whopping 18,916,471 barrels in total cubic capacity, spread out over more than 175 units. That's come about because of many factors; some, to be sure, rooted in sound economics. But, that also comes with a remarkable safety record. That's something that Morton Bouchard III takes to heart.

"We maintain our vessels above and beyond regulatory standards and perform safety management audits and inspections regularly ... There is nothing more important to me than running a safe operation. The only way to be profitable is through a safe operation, and we all believe in the philosophy – safety is first and foremost, and the only Bouchard way. This is instilled across our entire fleet, in every crewmember and in every shoreside employee," Bouchard told *MarineNews*.

Firmly anchored in the economics of the coastwise trading model, the ATB business model is at the heart of Bouchard's business today. That's not likely to change any time soon. That said, the possibility of a blue water, deep draft vessel addition to the Bouchard fleet, as hinted at by Mr. Bouchard, could well bring about an interesting twist to that formula. Until then, however, Bouchard remains a leader in the ATB game, and probably, always will.

Advanced Coatings Enhance Aesthetics, Durability and Safety



As Maritime Partners LLC Coatings built out its modern fleet of new tank barges, quality coatings and responsiveness to last-minute color changes supported that fleet expansion. Sherwin-Williams was there to meet the challenge.

By Michael Manetta

The hulking silhouette of a tank barge is instantly recognizable to anyone who has spent time on the shores of an inland waterway in the United States. These massive flat-bottomed vessels help to maintain the healthy functioning of the domestic economy, transporting vital commodities such as agricultural products, chemicals and petroleum products. With more barges traversing waterways today, signs are pointing to a growing economy.

Recognizing the barge market's current growth potential, Maritime Partners LLC, an established player in the U.S. maritime leasing industry, recently began building its own barges to lease directly to customers. As the Metairie, Louisiana-based company expands its role, it plans to build a safer fleet of barges and pushboats. Most recently, the company completed a build of six new 30,000-barrel tank barges for use on inland U.S. waterways. Seeking to deliver a durable and aesthetically pleasing long-term solution to its leasing customers, Maritime Partners turned to Sherwin-Williams Protective & Marine Coatings to provide a premium protective coating system for the new barges.

"Our primary focus is on our customers and their service needs," said Austin Sperry, Chief Operating Officer at Maritime Partners LLC. "Therefore, we wanted to ensure the coating system we chose would facilitate reliable performance anywhere our customers may operate."

To meet the demanding service requirements for the tank barges, Maritime Partners selected a series of primers, epoxies, polyurethanes and additives from Sherwin-Williams. In addition to providing important performance functions like corrosion resistance and non-skid service, the coatings will maintain gloss and color after years of service in the challenging marine environments in which the barges will operate.

DEFINING PERFORMANCE DEMANDS

The six new towable tank barges are among the latest additions added to Maritime Partners' fleet. With plans for future fleet expansion, it was crucial for the vessel owner to set a high standard for performance with this round of construction. The new barges will be responsible for transporting a variety of commodities through inland rivers and canals, requiring corrosion resistance to both freshwater

Maritime Partners launched the first of its new barges featuring coating systems from Sherwin-Williams in an inland waterway where it was ready to be put to work hauling commodities.

Applicators carefully coated topside equipment to ensure long-term resistance to corrosion, weathering and chemicals.

and saltwater environments.

The design and construction of the tank barges focused on three main service requirements: reliable performance, durable aesthetics and improved safety features. Sherwin-Williams' premium coatings systems met each of these requirements, providing long-lasting solutions that will make work safer for deckhands and minimize future maintenance needs.

"The coating solution delivered by Sherwin-Williams was exactly what we needed to be confident in the extended service life of these new barges," said Sperry. "In addition, their technical expertise was extremely valuable during the shipbuilding process, as they offered another set of eyes on the coating applications to confirm we were on the right track. We are extremely impressed with the products and service we have received to date and look forward to continuing our partnership with Sherwin-Williams."

BUILDING COATING PERFORMANCE: LAYER BY LAYER

The shipbuilding process began by preparing the steel for construction and creating a suitable surface profile to promote coating adherence. Immediately after abrasive-blasting the steel at the shipyard, applicators primed the steel onsite using Sherwin-Williams' Zinc Clad 3100 as a pre-construction primer (PCP). Used as a PCP, the coating prevents general corrosion from taking place on the steel during barge fabrication, saving time and money by eliminating the need to reblast the steel before applying coatings.

After assembling the barge, applicators power washed the vessels to remove dirt and contaminants before coating. They first applied a stripe coat of Sherwin-Williams' SeaGuard 6000 Marine Epoxy to corners, welds, seams and any sharp edges to ensure a high coating build on these rough areas and assist with edge retention. A modified epoxy phenalkamine, SeaGuard 6000 provided the necessary freshwater and saltwater immersion resistance demanded by the new tank barges. The use of the SeaGuard 6000 aluminum option – for both the stripe coat and the first coat that touched the steel – further enhanced corrosion resistance for each barge.

Following the stripe coat, applicators then coated every piece of steel on the inside and outside of the barge with SeaGuard 6000. Next, they applied a third coat of the epoxy, bolstered by non-skid aluminum oxide additives used on topside deck surfaces, to the entire exterior, including an additional stripe coat for good measure.

The applicators completed the barge coating process using durable polyurethane coatings specified to the barge owners' individual color schemes, with three different color systems used across the six new vessels. For the first vessels, they used Sherwin-Williams' high-gloss Hi-Solids Polyurethane coating, resulting in a striking finish and high-performance protection. For the later builds, Maritime Partners opted for Acrolon 7300, a lower-gloss acrylic polyurethane coating. Both coatings provide resistance to corrosion, weathering and chemicals, as well as excellent gloss and color retention, ensuring the tank barges will maintain their impressive appearance over years of service.

All told, each barge used approximately 350 gallons of the Zinc Clad 3100 PCP, 2,000 gallons of SeaGuard 6000 and 180 gallons of the polyurethane coatings.

The topside deck and other walkable surfaces of the new barges feature a non-skid aluminum oxide coating system to enhance operator safety.

FLEXIBILITY: WITH COLORS & SERVICE REQUESTS

Sherwin-Williams' industry-leading experience and local inventory availability proved to be invaluable during shipbuilding, as Maritime Partners changed its requested color systems for two vessels late in the process. With Sherwin-Williams' ability to perform custom tinting in its local store, the company was able to meet the barge owner's change requests while keeping pace with the ambitious construction timeline.

By meeting Maritime Partners' needs and providing valuable technical oversight, Sherwin-Williams also proved to be a worthwhile partner in the construction process. An onsite Technical Service Representative ensured that each step of the coating process was completed to Sherwin-Williams' standards, while keeping the barge owner and shipyard up to date with evaluations, reports and opinions.

"We were thankful for the ability of Sherwin-Williams to respond to some last-minute changes without affecting construction," said Sperry. "Their agility and preparedness allowed us to proceed with confidence that we were best meeting our customers' needs for aesthetics."

PIONEERING SAFETY

As Maritime Partners expands its barge fleet, the leasing operator intends to break new ground in tank barge safety. A new set of barges, to be built in mid-2019, will feature the widest decks ever to be constructed on a tank barge. This expanded surface area will make work safer for deckhands, giving them more room to maneuver and reducing the potential for injury.

Supporting this safety initiative, the walkable topside surfaces of the wider-deck barges will feature a 20-mesh non-skid coating system from Sherwin-Williams. Applicators will add small granular particles of aluminum oxide to the intermediate epoxy coat and lock them in with the polyurethane topcoat to ensure the skid-inhibiting surface profile will not wear down over time during deck washdowns. The resulting non-skid surface will provide a useful grip that will enhance operator safety, much like it is on the six recently completed barges, which also feature this solution.

SETTING THE STANDARD FOR A GROWING FLEET

As Maritime Partners continues to expand its fleet, the new tank barges will serve as an important benchmark for quality, appearance and durability. The premium coating system delivered by Sherwin-Williams will enhance Maritime Partners' ability to satisfy its leasing customers, while the teamwork and responsiveness demonstrated during their collaboration bodes well for future developments in tank barge construction.

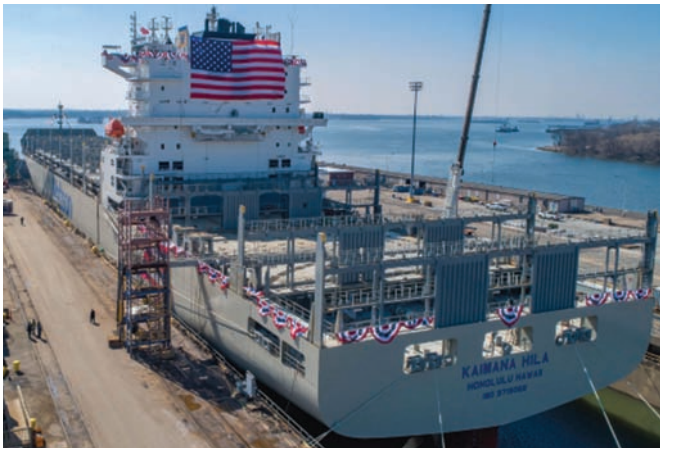
***Michael Manetta** is Global Market Director – Rail, Marine and Power Generation for Sherwin-Williams Protective & Marine Coatings. He has 15 years of experience in the coatings industry with several sales and marketing roles within multiple end use segments. He is a NACE CIP level III inspector. He can be reached at michael.manetta@sherwin.com*

RAstar 3200 Tugs Dazzle at Blessing Ceremony

Against a backdrop of freshly fallen snow on the local mountains, the two new RAstar 3200 escort tugs SST Grizzly and SST Orca for SAAM SMIT TOWAGE CANADA (SST Canada) were the toasts of a blessing ceremony in Vancouver Harbor. Designed by Robert Allan Ltd, these two significant additions to the fleet were showcased at a February blessing event in Vancouver. The tugs are notable for their responsive azimuthing stern drive (ASD) propellers; all while keeping the working decks remarkably dry, a testament to the RAstar hullform's superior stability and seakeeping characteristics. The tug's Fi-Fi 1 class fire-fighting system puts the exclamation point on the largest and most powerful escort-rated tugs in the region. With bollard pulls in excess of 80 tonnes, and the ability to generate indirect escort forces at 10 knots of 82 tonnes in steering, and 130 tonnes in braking, these state-of-the-art tugs have already been proving themselves as highly capable platforms in the SST Canada fleet, especially in the context of escort towing.

Matson Boxship Kaimana Hila Christened

The DNV GL classed vessel Kaimana Hila, the largest containership ever built in the United States, was christened in a ceremony on Saturday, 9 March 2019. At 3,600 TEUs, the "Aloha Class" vessel soon to be delivered from Philly Shipyard demonstrates the strength of U.S. Shipbuilding and the U.S.-flagged operator's commitment to supplying efficient, effective and environmentally sound ocean transportation to the U.S. market. The Aloha Class design features dual-fuel engines with liquefied natural gas (LNG) capability, double hull fuel tanks, fresh water ballast systems, and a more fuel-efficient hull design. Constructed specifically to satisfy the future freight demands of Hawaii, the vessels bear increased cargo capacity, with the ability to accommodate a diversified mix of cargoes. The ship will be delivered with class notation, Hull: 100 A5

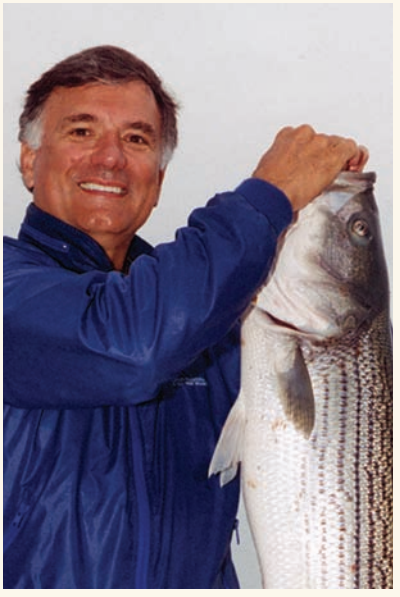


Container ship BWM (D2) DG Gas ready (AEI, D, MEI, P, S) IW LC NAV-INS RSD; Machinery: MC AUT EP-D.

Gulf Island Delivers Second Z-Tech 30-80 Terminal/Escort Tug

Gulf Island Fabrication's Shipyard Division has successfully delivered the M/V Ted C. Litton, a Z-Tech 30-80 Terminal/Escort Tug to Suderman & Young Towing Company. The M/V Ted C. Litton was designed by Robert Allan Ltd of Vancouver, BC and built at Gulf Island's, Jennings, Louisiana facilities. The vessel will be operated by G &H Towing on behalf of Suderman & Young Towing Company. Gulf Island is currently building nine (8) sister vessels that are at various stages of construction.

LOA: 98'	Bollard Pull (tugs): 80 Tonnes	Horsepower: 6,772
Breadth: 42'	Z-Drive: 2X Schottel SRP 510 FP	Propulsion: 2X CAT 3516 E
Depth: 16'	Class: ABS, A1, AMS, Towing Vessel, Escort, FFV1	EPA Rating: Tier 4



Navico Mourns Passing of Lowrance

Darrell J. Lowrance, founder of Navico's Lowrance brand, has passed away. Darrell served as President and CEO of Lowrance Electronics from 1964 to 2006, and was responsible for many breakthroughs in marine electronics. In addition to the first recreational sonar product for anglers, he led the development of the first graph recorder, the first integrated sonar/GPS unit, and many others. He was President of the American Fishing Tackle Manufacturer's Association (AFTMA) from 1983-1984. Darrell also served as a member of the Board of Directors for AFTMA from 1978-1986, and again in 1988, and was inducted into the Bass Fishing Hall of Fame in 2013.

Monahan

Fitzgerald

Doell

Frölich

Monahan Elected to Blue Danube's BoD

Mike Monahan was elected to Blue Danube Incorporated's Board of Directors on February 8, 2019. Blue Danube Incorporated is the holding company of Campbell Transportation Company Inc. Mike joined Campbell Transportation Company, Inc. as President in October of 2011.

Witt O'Brien's Welcomes Crisis Communications Leader

Witt O'Brien's, LLC announced that **Sean Fitzgerald** has joined the firm to expand its crisis communications services. Fitzgerald brings over 20 years' experience providing strategic communications counsel and support to Fortune 500 firms, and other international corporations. Fitzgerald's career includes over 17 years with Ketchum, one of the world's leading public relations and communications agencies.

Seafarers' House to honor AMO's Doell

Paul Doell, National President of the American Maritime Officers (AMO), has been selected as the recipient of Seafarers' House International Golden Compass Award for 2019. The award is given each year to those who have achieved distinction in the maritime world, those whose vocation or avocation has been the sea, or those who have ministered to or otherwise assisted seafarers. Doell, who heads the nation's largest union of licensed seagoing professionals, has served the organization for 47 years. This year's annual Golden Compass Gala is being held on May 18 in Fort Lauderdale.

Lankhorst Ropes Names Frölich as Commercial Director

Lankhorst Ropes has appointed **Mark Pieter Frölich** as commercial director for Lankhorst Ropes USA. Frölich will head the development of Lankhorst Ropes' sales in the maritime and offshore markets in the United States and Canada. A mechanical engineer by profession, he brings to the job over 12 years' experience of maritime ropes with European and Middle Eastern shipping and oil and gas markets. Frölich will be responsible for establishing the local commercial and technical support office for Lankhorst Ropes' customers, working in parallel with Phillystran, a leader in custom engineered fiber ropes.

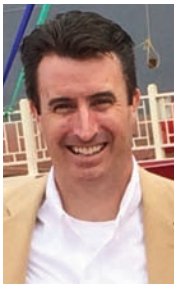
DSC's Wetta Receives NSSGA Award

William J. "Bill" Wetta, Senior Vice President of Product Development & Chief Technology Officer (CTO) of DSC Dredge, LLC was awarded the Barry K. Wendt Commitment Award during National Stone Sand and Gravel Association's annual convention in Indianapolis, IN. NSSGA established the Wendt award more than two decades ago to recognize individuals who exhibit the dedication and commitment to the industry that Barry Wendt did. Wetta serves on the Executive and


Wetta


Douglas


Volgyi


McManus

Díaz-Balart Nagle


Gratton

Membership Board for National Sand, Stone & Gravel Association (NSSGA) Manufacturers and Services Division.

Crowley Promotes Douglas to VP, Labor Relations

Crowley Maritime has promoted **Ira Douglas** to vice president, labor relations, to lead the company's relationships, operating agreements and partnerships with unions representing seafarers, terminal stevedores and truck drivers. Douglas joined Crowley in the company's labor relations department as a marine recruiter in 2006, before becoming manager of marine recruiting and development in 2008. He is a 2003 graduate of the U.S. Merchant Marine Academy with a bachelor's degree in marine engineering systems.

Bouchard Promotes Volgyi to Crewing Manager

Bouchard Transportation recently announced the promotion of Ms. **Marsha Volgyi** to crewing manager. Ms. Volgyi graduated from SUNY Maritime College in September 2018, with a master's degree in international transportation management and a license as third mate unlimited tonnage. Prior to working at Bouchard Transportation Co., Inc., Ms. Volgyi worked for twelve years onboard various cruise lines. She also managed cruise ship crew members onshore.

McManus Appointed as Master of T/S Empire State VI

SUNY Maritime College has appointed **Captain Morgan McManus** as the Master of the T/S Empire State VI. An alumnus of SUNY Maritime College, Captain McManus graduated in 1992 with a bachelor's degree in Marine Transportation. Captain McManus has over 12 years' experience sailing as Master including on the SS Cape Jacob, the sister ship to T/S Empire State VI. His sailing career has taken him on various types of commercial ships including steam, motor, breakbulk, container, car carriers, tankers, and cutting-edge dynamic positioned drill ships.

AAPA Selects Cong. Mario Díaz-Balart as 2019 'Port Person'

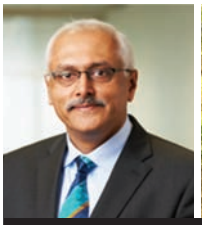
The American Association of Port Authorities (AAPA) has selected U.S. Congressman and House Transportation, Housing and Urban Development (T-HUD) Subcommittee Ranking Member **Mario Díaz-Balart** (R-FL) as 2019's "Port Person of the Year" for his stalwart advocacy of the port industry. "In his more than 16 years in the U.S. House of Representatives, Congressman Díaz-Balart has consistently championed legislation to benefit our nation's ports," said **Kurt Nagle**, AAPA's president and CEO. In the fiscal 2019 T-HUD appropriations bill, Rep. Díaz-Balart negotiated language which resulted in nearly $293 million in first-ever funding being appropriated for the Port Infrastructure Development Program within the U.S. Department of Transportation's Maritime Administration.

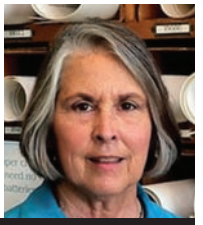
TJ Tracy to Lead Viega's Marine Division

T.J. Tracy has been named Director of the Marine Division at Viega LLC. Tracy is charged with further developing the company's fast-growing marine division. Viega offers a full line of fittings and valves designed specifically for joining pipe systems on board military vessels, commercial vessels, oil platforms, cruise ships and mega yachts. Tracy has spent his entire career in the maritime industry. Prior to joining Viega, he was vice president of sales and marketing at Survitec Group & Zodiac of North America. The Coast Guard veteran has a criminal justice degree from SUNY Oswego.

RMK Merrill-Stevens Hires David Gratton

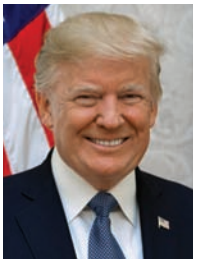
Florida-based shipyard RMK Merrill-Stevens is adding a new Electronic Systems Division to the company. To lead the new wing of the shipyard, the company has hired electronic systems integrator **David Gratton**, who will oversee and manage the division. Gratton's career in electronics began in 1980 upon entering the U.S. Air Force. David later worked on the environmental testing of NASA components for Teledyne Systems Company. Gratton has specialized in navigation, communications, and audio-visual, IT/networking, and PLC systems for commercial and recreational vessels. He served on the board of the National Marine Electronics Association for 11 years partici-




NOAA

Chopra Hargrave Kinner


USCG


President Trump

pating in the development of its standards and education programs.

NOAA Appoints New Hydrographic Services Advisory Committee Members

NOAA Assistant Secretary of Commerce for Oceans and Atmosphere Rear Adm. Tim Gallaudet, Ph.D., USN Ret., has appointed three new members and reappointed two current members to the Hydrographic Services Review Panel, a federal advisory committee that gives NOAA independent advice for improving a range of services and products that support navigation services and coastal resilience. The new members of the panel are **Capt. Anuj Chopra**, Vice President - Americas, RightShip, **Deanne Hargrave**, of Shell International Exploration and Production, **Capt. Ann Kinner,** Chair, Harbor Safety Committee, San Diego, California. Two members of the panel were reappointed; **Dr. Larry Atkinson**, Professor Emeritus at Old Dominion University, Norfolk, Virginia and **Dave Maune**, Ph.D., Senior Project Manager, Dewberry Engineers. They joined the panel's 10 current members in January 2019.

USCG Fines Operator for Operating Illegal Passenger Vessel Service

Coast Guard Marine Safety Unit Chicago announced that the owner of two recreational pleasure boats has been fined $80,000 for operating as an illegal passenger vessel business on Lake Michigan for at least the past two years. Robert Glick of Chicago, owner of the 35-foot boats Allora and Fun, was charged with violating three separate federal regulations for each boat while operating a business that involved transporting paying passengers. The fine represents the largest civil penalty ever handed down by the Coast Guard to a recreational boat owner for operating as an illegal commercial passenger vessel business.

White House Issues EO on Transitioning of Veterans into Merchant Marine

The Executive Order, signed by President Trump, announces that it is the policy of the United States to support practices and programs that ensure that members of the United States Armed Forces receive appropriate credit for their military training and experience, upon request, toward credentialing requirements as a merchant mariner. It is further the policy of the United States to establish and maintain an effective merchant marine program by providing sufficient support and resources to active duty and separating service members who pursue or possess merchant mariner credentials.

Metal Shark Expands Again ... Across the Big Pond

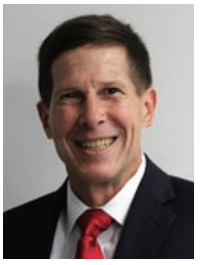
Shipbuilder Metal Shark has established a foothold across the Atlantic with the opening of a dedicated European engineering office. Metal Shark's first location outside of the United States, "Metal Shark Croatia" is a new engineering facility recently opened in the city of Rijeka on Croatia's northern Adriatic coast. The facility currently employs nearly 20 naval architects and maritime engineers, machinery systems engineers, and electrical engineers who collaborate with Metal Shark's domestic engineering team in support of shipbuilding operations at three facilities in Alabama and Louisiana. Efforts by Metal Shark are underway to expand in Croatia, with the goal of a 40-person full-time staff by year's end. "Metal Shark's success is driven by our ongoing commitment to in-house engineering, which allows us to quickly and capably design complex, custom, high quality vessels," said company CEO **Chris Allard**.

Ecochlor Announces BWMS Contract with ATC

Alaskan Tanker Company (ATC) will retrofit the Ecochlor ballast water management system (BWMS) on board their fleet including three VLCC crude oil tankers and an option for one additional vessel. Each of these vessels are U.S. flag tankers. The Ecochlor® BWMS is approved for installation in both US Flag and International vessels in hazardous areas rated Zone 1 or Zone 0 through their U.S. Coast Guard Type Approval certification. The installations will start in the fall of 2019. **Steve Candito**, CEO at Ecochlor said, "I look forward to our ongoing relationship – providing BWMS and after sales service with the excellence in performance that they demand."


Allard


Candito


Baczkowski

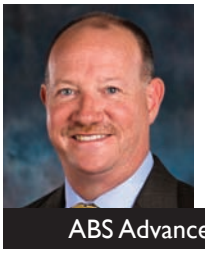
VT Halter Wins Phase 1 Design Contract NOAA Project

VT Halter Marine announced that they have been selected for Phase 1 Preliminary/Contract design for the National Oceanic and Atmospheric Administration (NOAA) AGOR Variant (NAV). Initial contract award for VT Halter Marine Phase I is US$1.465M. If successful with detailed design, and best value in Phase II, the value could amount to an additional estimated US$150M. VT Halter Marine has teamed with Gibbs & Cox to provide NAVSEA and NOAA a design approach that will deliver efficient and multi-mission effective NOAA AGOR Variant (NAV) Ships. "For this design we are leading a team of experts in the mission systems required for this platform and we have every confidence that our team will produce the platform to most effectively implement NOAA's current mission and missions of the future." said **Ronald Baczkowski**, Chief Executive Officer of VT Halter Marine.

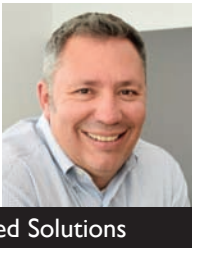
Marad Announces Small Shipyard Grant Program Deadlines

Under the Small Shipyard Grant Program, $19,600,000 is currently available for grants for capital and related improvements to qualified shipyard facilities that will be effective in fostering efficiency, competitive operations, and quality ship construction, repair, and reconfiguration. Marad also said that it is expected that the aggregate amount of requested funding among all appli-


Ørbeck-Nilssen



Nichols


Medeiros


Motive Power Marine's E-Port Shipyard


Binion

cants will exceed available funds and that only a small percentage of applications will be funded. Applications must be submitted within 60 days of the Consolidated Appropriations Act, 2019 (Pub. L. 116–6), and be received by the Maritime Administration by 5:00 p.m. EDT on April 16, 2019.

DNV GL Rolls Out Remote Vessel Surveys

DNV GL announced that all DNV GL classed vessels are now able to utilize the possibility of remote surveys for some inspections through the Veracity data platform. This means that for a range of surveys, a DNV GL surveyor will not be required to travel to the vessel. Instead, by using an online connection or video streaming link, a dedicated team of remote surveyors can provide support to vessels anywhere in the world with documentation, images, video (streaming or recordings), and input provided by the customer and crew. "This is another big step forward in using the power of digitalization and increased connectivity to deliver smarter and more efficient services," said **Knut Ørbeck-Nilssen**, CEO of DNV GL – Maritime.

HII Celebrates 157 Graduates of The Apprentice School

Huntington Ingalls Industries hosted commencement exercises in March for 157 graduates of The Apprentice School at Newport News Shipbuilding. The ringing of a ceremonial bell by each of the 2018 graduates represented the completion of their apprenticeship, a rigorous four- to eight-year program designed to develop the next generation of shipyard leaders. The Apprentice School, which first opened in 1919 with 126 apprentices, is celebrating its centennial anniversary this year. Over the last 100 years, the school has produced more than 10,800 graduates. **Jill Biden,** the former Second Lady of the United States, delivered the commencement address. **Kevin McNeill** of Greensboro, NC, received the Homer L. Ferguson Award, which recognizes the apprentice graduating with the highest honors.

ABS Answers Call Port Cyber Security

ABS Advanced Solutions announced a cyber security solution to aid regulated maritime facilities in complying with US Coast Guard (USCG) guidance. The suite of services provides a turnkey solution for port and terminal facility operators responsible for maintaining USCG regulated Facility Security Plans (FSPs). "We've listened to our client partners and developed a solution that categorically addresses the Coast Guard's cyber intent—and is easily implemented and understood by facility security personnel," said **Dave Nichols**, Director of Business Development, ABS Advanced Solutions. "Our team focused on delivering a solution that not only meets the industry's needs today, but, is also designed to fulfill future requirements as operations evolve," said **Russ Medeiros**, Vice President of ABS Advanced Solutions.

Motive Power Marine joins Green Marine program

Motive Power Marine's E-Port Shipyard, Tacoma is joining the Green Marine environmental certification program for shipyards. Green Marine is a leading North American environmental certification program for the maritime industry. The program is a voluntary initiative to surpass regulatory requirements within the maritime industry. Motive Power Marine is the first shipyard in the State of Washington, and the second in the United States, to seek the Green Marine Certification.

Auxo Investment Partners Acquires Andrie LLC

Private investment firm Auxo Investment Partners announced that it is partnering with the Andrie family with an investment in Andrie LLC, a Michigan-based Jones Act bulk transporter of specialty products including liquid asphalt, cement, light oil petroleum products, and calcium chloride throughout the Great Lakes. The deal, terms of which were not disclosed, marks Auxo's sixth acquisition in 16 months, and builds on the firm's December 2017 acquisition of M/G Transport Services, a leading dry-bulk transportation and logistics company based in New Orleans. Andrie has, over time, increased its fleet to 19 vessels, its cargo capacity from 12,000 tons to over 125,000 tons and its workforce from 25 to 150. **Greg Binion**, Auxo Marine's Chairman, remarked, "The addition of Andrie is a perfect fit with our strategy of adding industry-segment leaders to build out the Auxo Marine platform."

In-Mar Solutions: Wynn Marine Type C & Type D, Heavy Duty Straight Line Wipers

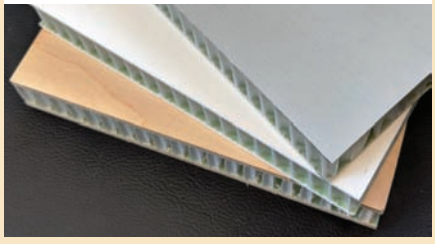
Wynn Type C (internal motor) and Type D (external motor) Straight Line Wipers offer the most advanced design of linear action window wiping systems for marine and other specialized applications. Optimum window coverage can be achieved and enhanced by utilizing a twin-bladed or dual-arm/blade design.

www.inmarsolutions.com

Panel Systems Lightens Up with 'Sandwich' Range

Panel Systems has introduced a new range of lightweight structural sandwich panels with a ThermHex core. The panels can be specified with a variety of facings, including powder coated aluminum (0.5mm-4.0mm), anodized aluminum (0.5mm-3.0mm), GRP (glass reinforced plastic) including anti-slip options, painted or coated steel, high pressure laminate such as Formica or Trespa and MDF. ThermHex-based panels have incredible strength, and 2½ times lighter.

www.panelsystems.co.uk



DuroWipers in Testing for Dutch SAR

DuroWipers has secured an order to kit out one newbuild search & rescue vessel for the Royal Netherlands Sea Rescue Institution (KNRM). The Class 60 wiper system is designed for high-speed vessels where space and weight are limited, but high performance required. It uses a 5mm frame with two main drive bearings similar to the Class 80, giving added strength for vessels combating heavy water.

www.durowipers.co.uk

PPG's ASSET Integrity Management System

PPG's new Asset Integrity Management (PPG AIM) system is software-based asset management system that assists facility managers and maintenance engineers in scheduling, budgeting and optimizing the corrosion protection of metal structures, buildings and equipment under their care for up to 20 years in the future. The PPG AIM system is based on proprietary algorithms developed by PPG from NACE 509 and ISO 12944 corrosion-forecasting standards.

www.ppgpmc.com/aim

Daniamant's Electronic Inclinometer Enhances Tugboat Safety

Daniamant's tugboat version of its Electronic Inclinometer, the DanEI-300T, an advanced heel and pitch measuring device, meets BV regulations for escort tugboats. Using complex algorithms, three rotation parameters (pitch, heel, yaw) and three acceleration parameters (surge, sway, heave) can be accurately calculated. Position to the tugboat's centerline is calculated automatically; hence the sensor does not require a special location.

www.daniamant.com

Signal Mate UL1104 Certified LED Navigation Lights

Signal Mate's US-made UL1104 certified modular navigation lights come with replaceable LED module & power supply that monitors light intensity. IMO MSC 253(83)4.3 and COLREGS compliant, it's approved for inspected vessels 20m and over, and blue water, 50m and over. Available in 120 to 240 VAC, 12-32 VDC, or both, the double head has two power inputs for redundancy. Autonomous Double heads (one power input) alternate (2x lifespan), and switch automatically to backup.

www.SignalMate.com

Caterpillar Marine to Develop EU V Inland WW Solution

Caterpillar Marine announced the development of new technology solutions for European Union (EU) inland waterway (IWW) vessels. The new solutions are designed to 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.

www.cat.com/oilandgas

Schottel's Shallow-Water Thruster SPJ 30

Schottel's new Pump Jet type SPJ 30 – a state-of-the-art shallow-water thruster – is suitable for a wide range of different vessel types, such as passenger vessels, ferries and work vessels. Available in the power class up to 150 kW, the azimuth thruster is characterized by optimal efficiency and gives the vessel maximum maneuverability. The thrust and propulsion efficiency have been further enhanced, particularly by means of CFD optimizations.

www.schottel.de

ABS Publishes Remote Inspection Tech Guidelines

ABS has published Guidance Notes on the Use of Remote Inspection Technologies, detailing best practices for their use on class surveys and non-class inspections. The Guidance Notes cover pilot-operated Unmanned Aerial Vehicles, Remotely Operated Underwater Vehicles and Robotic Crawlers, collectively known as Remote Inspection Technologies (RITs). The Guidance covers equipment specification, data management, associated management systems, standards for service providers, training and operational limitations.

www.eagle.org

Bosch Rexroth's Plug-in Hybrid Power Management Systems

Bosch Rexroth's plug-in systems significantly reduce generator running times, cutting fuel consumption up to 60% and considerably reducing emission rates. Total cost of ownership will run down. Diesel generators for new build barge can be downsized. This containerized power management system features an energy efficient plug-in solution for fish feed barges.

www.boschrexroth.com

I-Demurrage App for Oil Tankers

The oil tanker industry has an app for calculating Demurrage claims on the go. As oil tanker owners and charterers continue to face the challenge in Demurrage claims, they stand a risk of being rejected due to late submissions beyond agreement time bars. The I-Demurrage app has been created to make the time-consuming process of calculating demurrage far easier.

www.Idemurrage.com

Mobile App Brings Real time Lift Truck Data to Users

Yale Materials Handling Corporation's new mobile app for its Yale Vision telemetry solution is the first and only telemetry-focused app available from a lift truck manufacturer. The app works as a companion to the existing Yale Vision desktop portal, bringing data-driven insights and management functionality to the warehouse floor for easier, more efficient fleet management. The mobile app is compatible with both android and iOS devices.

www.yale.com

Rolls-Royce Energy Management for Offshore Vessels

Rolls-Royce Commercial Marine's Energy Management System was introduced in November 2017 as part of a suite of vessel Intelligent Asset Management (IAM) products, and has been installed on over 50 vessels, including many offshore support vessels. Data collected from sensors is then available onboard and is securely encrypted and processed. Crew can see in real-time the effect that running machinery has on fuel consumption.

www.Rolls-Royce.com

Torqeedo Powers First Solar-Electric Sewage Pump-Out Boat

Torqeedo has supplied an integrated electric propulsion system for a solar-electric sewage pump-out boat. The 25-ft. aluminum boat's propulsion consists of two Torqeedo Cruise 4.0 outboard motors, four Torqeedo Power 48 lithium-ion batteries, four chargers, as well as a cockpit control panel that gives an at-a-glance view of systems. The batteries also drive the boat's 48V 2hp pump and provide capacity for a full day's work.

www.torqeedo.com

TRU-Vu New 19" LCD Monitors

TRU-Vu Monitors has released new models in their line of 19" LCD video monitors with traditional 4:3 aspect ratio, adding digital HDMI video input capability to standard inputs. It features 1280x1024 resolution, 350 nits brightness, defect-free LCD panels, TRU-Tuff treatment for shock and vibration resistance, rear VESA mount holes and a 3-year warranty. The monitors are available in configurations including steel, waterproof and panel-mount enclosures.

www.tru-vumonitors.com

Yanmar's Auto-Nav Robotic Boat, Auto-docking System

Yanmar has undertaken development of robotic boats and auto-docking, technologies that are appropriate for service in dangerous waters, maritime surveys, or fisheries. The Robotic Boat vehicle utilizes Yanmar's expertise in Fiber Reinforced Plastic (FRP) to realize a compact, low cost manufacturing processes. Future activities will involve further marine testing with universities and research institutes, and expansion of the program to commercial use by industry.

www.yanmar.com

SP's Bluetooth Alternative to Mechanical Load Cells

Straightpoint's new single capacity Bluelink load cell introduces Bluetooth technology to existing and prospective customers still utilizing outdated mechanical force measurement products. Bluelink is a 6.5 ton capacity load cell, targeted at users remaining loyal to traditional equipment but who might be receptive to enhanced technology and the advantages of data on an iOS or Android smartphone installed with SP's free HHP app.

www.straightpoint.com

RH Marine Helping Naval Vessels Navigate Accurately

By adding new technology and features and integrating them with the navigation systems on the bridge, RH Marine enables naval vessels to navigate more and more accurately. In order to give naval vessels more opportunities to fix their position, the system integrator has integrated an optical bearing device (OBD) in WECDIS, RH Marine's digital chart system for military purposes.

www.rhmarine.com

VESSELS FOR SALE / BARGES FOR RENT

ASSISTANT STOREKEEPER

Military Sealift Command
Salary: $ $33,295 Per Annum, Full Time
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Announcement #: 19-852-02EXOC Title, Series, Grade (Code) Assistant Storekeeper, WM 9994-15 (852) Base Salary: $33,295 Per Annum Type of ***Appointment:*** Excepted Service Career-Conditional Opening Date: February 11, 2019 Closing Date Open Continuously With Periodic Cutoffs Location: Military Sealift Command (MSC) Vessels Worldwide Who May ***Apply:*** All United States citizens and current Military Sealift Command Civil Service Mariner (CIVMAR) eligible to apply under the Veterans Employment Opportunities Act (VEOA). Active Duty Service Members (ADSMs) must submit a certification (i.e., statement of service) at the time of application which certifies that the service member is expected to be discharged or released from active duty service under honorable conditions not later than 120 days after the date the certification is submitted. Relocation expenses are not authorized for this position.
Duties: The Assistant Storekeeper is a Civil Service Mariner (CIVMAR) employed by the Navy to serve the Military Sealift Command (MSC) onboard naval auxiliaries and hybrid-manned warships worldwide, in peace and war. MSC exists to support the joint warfighter across the full spectrum of military operations. MSC provides on-time logistics, strategic sealift, as well as specialized missions anywhere in the world, in contested or uncontested environments.
The Assistant Storekeeper is responsible to the Supply Officer/Junior Supply Officer for performing Supply Department functions assigned in accordance with COMSCINST 3120 and 4000.2 series directives and Program Specific Directives. Follows procurement, receipt, storage, Quality Assurance (QA) and expenditure procedures for all types of material. This includes proper material identification, handling, inventory management, warehousing, packaging, and transportation. Procures all shipboard requirements using Government/Commercial sources. Assists with configuration validations; processes and updates Allowance Change Requests (ACRs), Fleet COSAL Feedback Reports (FCFBRs) and Configuration Change Reports (CCRs) as directed. Assists with handling of Hazardous Material (HAZMAT) as directed. Also assists in the Supply Department requirement of monthly Financial Improvement and Audit Readiness (FIAR) inventories and their submission to Global Stock Control(GSC). Assists in the proper use of Supply automated programs.

Everything in this Position Description is considered to be an essential function of this position. Performs other duties as assigned.
Minimum Eligibility Requirements: Must be a United States citizen of at least 18 years of age and possess and maintain a valid:
1. U.S. Passport with a minimum of seven (7) months remaining of expiration date.
2. Transportation Worker Identification Credential (TWIC) and/or Department of Defense (DOD) Common Access Card (CAC) with a minimum of ten (10) months remaining of expiration.
3. United States Coast Guard (USCG) Merchant Mariner's Credential (MMC), with a minimum of ten (10) months remaining of expiration date with the following endorsement(s): Ordinary Seaman, Wiper, Steward Department (FH).

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C2	Aqseptence Group, Inc.	www.aqseptence.com	(574) 223-3980
27	Bay Shipbuilding/Fincantieri	www.bayshipbuildingcompany.com	(920) 746-3403
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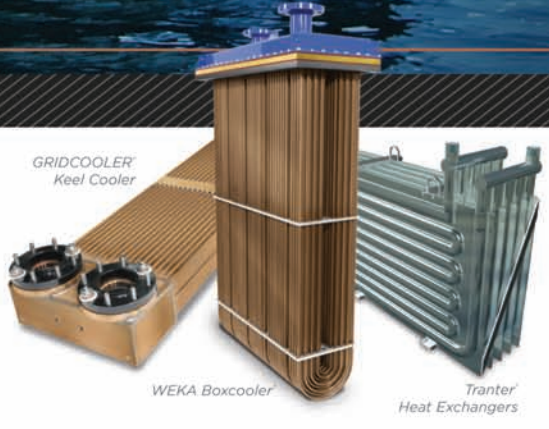

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