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

Marine News

Volume 31 • Number 4

APRIL 2020

www.marinelink.com

Autonomous Workboats

Technology is put to the test

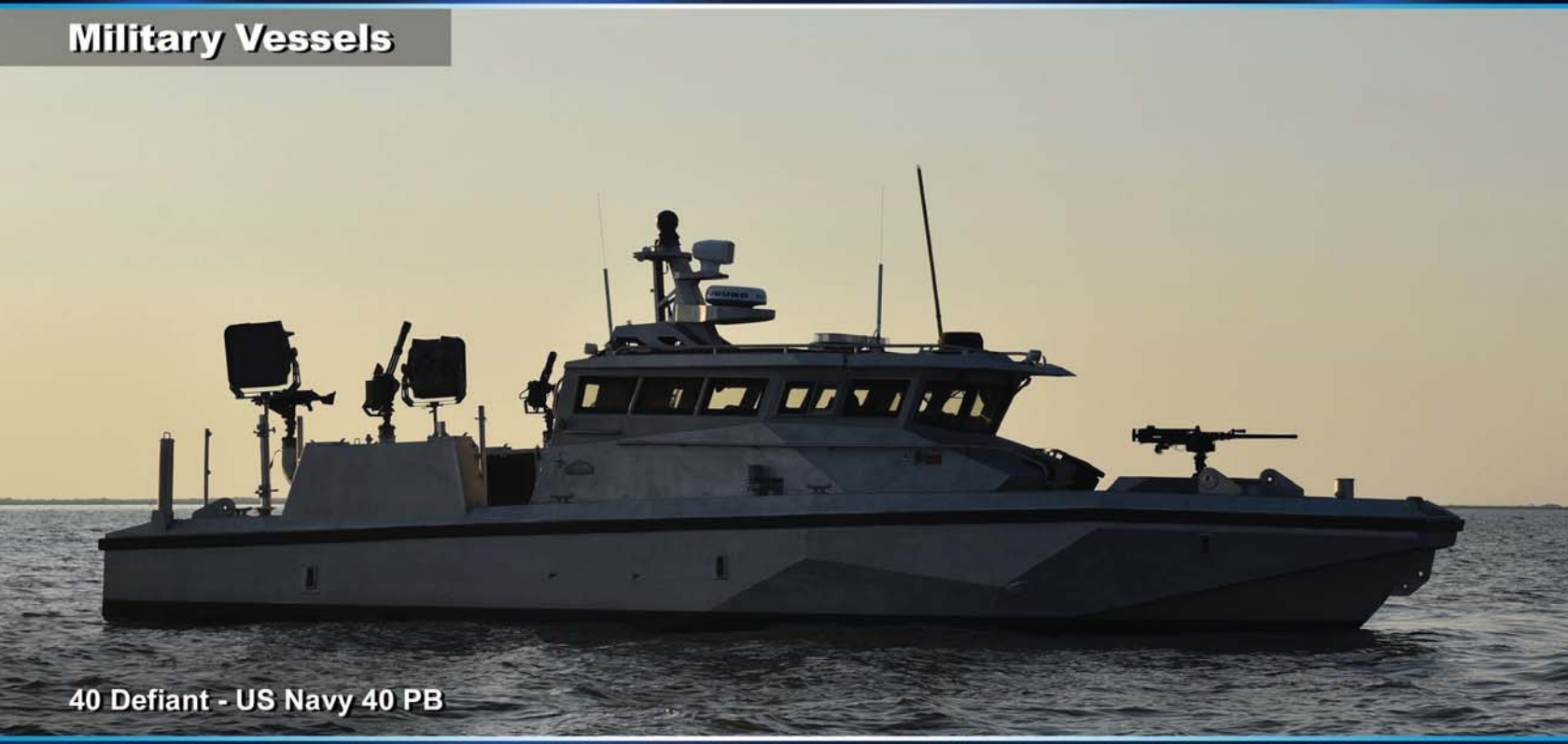
2020 Shipbuilding Report
U.S. shipyards forge ahead through the COVID-19 pandemic

Fireboats
New answers to port safety and emergency response questions

METAL SHARK

METALSHARKBOATS.COM

Military Vessels



40 Defiant - US Navy 40 PB

Designed for the Future. Delivered Today.

Fireboats

70 Defiant - Canaveral Fire Rescue

Pilot Boats

64 Defiant - Brazos Pilots Association

Operators across a wide range of markets are discovering the many benefits of Metal Shark. Our advanced, modern designs offer crew-friendly features and globally-proven hull forms. Meanwhile, our military-honed serialized construction methods and stock boats program assure high-quality builds with significantly reduced lead times.
See what you've been missing. Move up to Metal Shark.

+1.337.364.0777 • sales@metalsharkboats.com • Shipyards in Alabama and Louisiana, USA

AVAILABLE NOW

Autonomous Command & Control

Survey | Spill Response | Search-and-Rescue | Fire | Security | Offshore Wind | Aquaculture

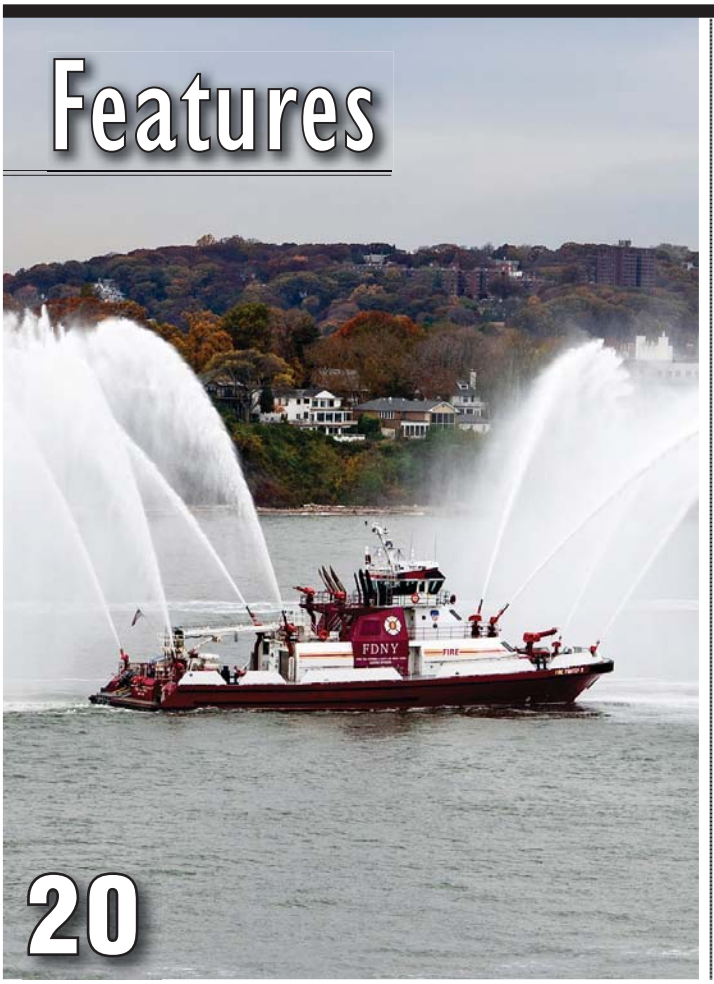
Sea Machines' innovation and advanced technology gives vessel owners an operational advantage. Our systems increase productivity and predictability, while reducing manual operations and fatigue-related incidents. Contact us to learn how Sea Machines can solve your most persistent challenges on the water.

Sea Machines

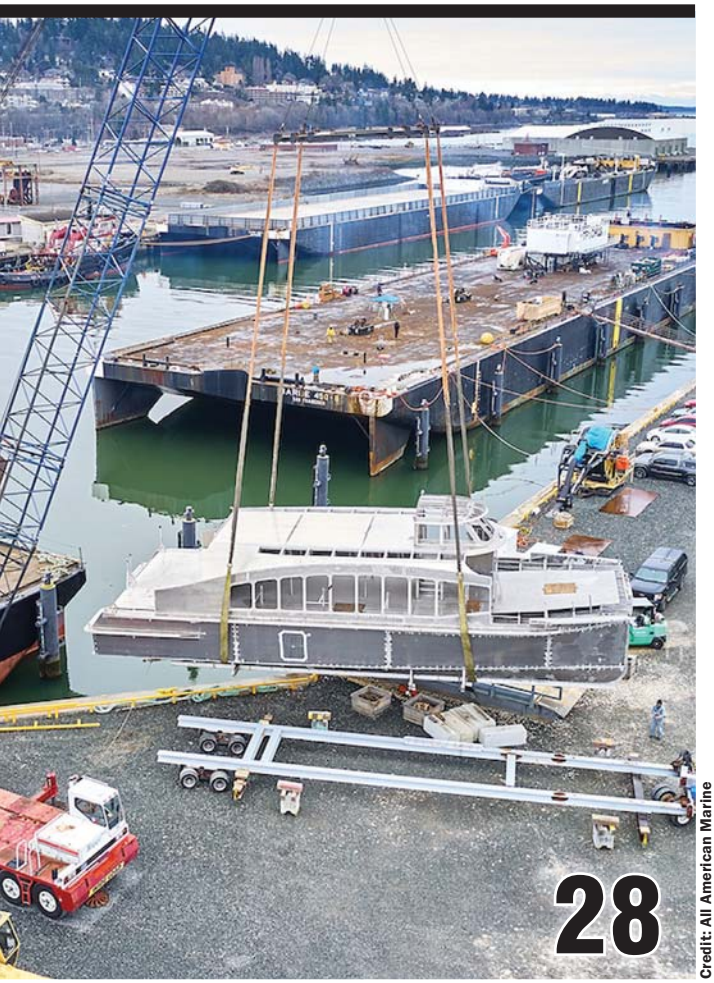
VIRTUAL DEMOS AVAILABLE

No travel needed, stream live from your desk.
sea-machines.com/virtualdemo

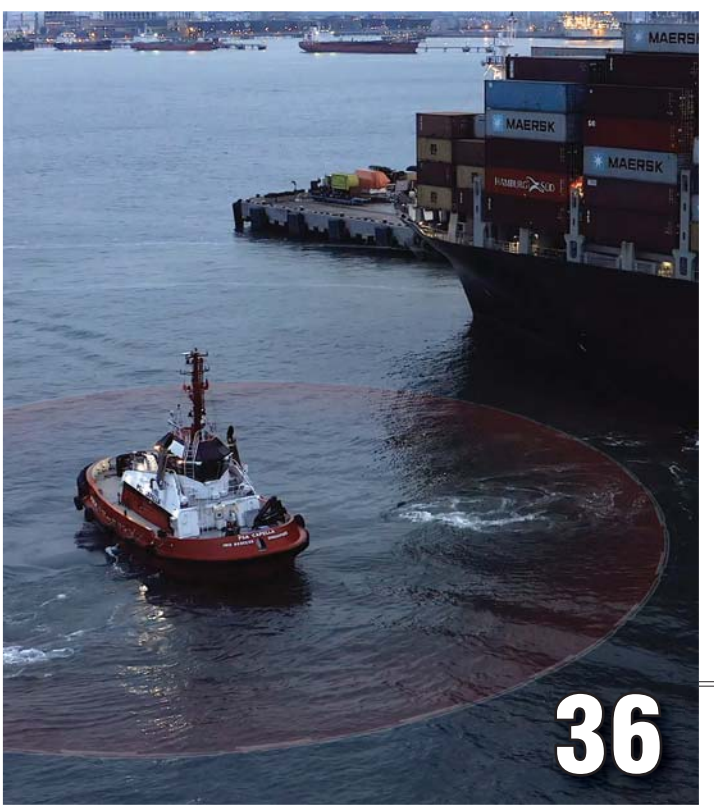
Features



Credit: Trey Hutcheson, U.S. Navy



Credit: All American Marine



Credit: Wärtsilä

On the Cover

Singapore has become a hotbed for autonomous vessel testing. A 27-meter harbor tug equipped with autonomous navigation capabilities was recently trialed as part of the IntelliTug project.

INLAND MARINE EXPO

IMX2020

MAY 18-20, 2020 | ST. LOUIS, MO

/ EDUCATION *sessions*

Curated by ***The Waterways Journal***, Led by Industry Experts.

The Inland Marine Expo is focused on providing the modern workforce with the tools, education, and inspiration it needs to propel forward. The editors at ***The Waterways Journal*** has curated a collection of **education sessions** to address current and near-future industry challenges. Topics include:

Updates From the Hill • 2019 Historic Flooding • Adding Tonnage to the System
Diving, Underwater Welding and Inspection of Waterfront Facilities • Reducing Risk
Tier 4, Supply Chain and What's Next • Hybrid Engines and Diesel Electric Technology
Vessel and Facility Cyber Security • Innovations in Vessel Design and Construction
Finding Talent & Continued Education • Subchapter M • Marine Equipment Financing

IMX is produced by

the WATERWAYS JOURNAL Weekly

Follow **@InlandMarineExpo** for event updates.

Learn more at **inlandmarineexpo.com** ▶

Marine News

(ISSN#1087-3864) (USPS#013-952)
Florida: 215 NW 3rd St., Boynton Beach, FL 33435
tel: (561) 732-4368; fax: (561) 732-6984
New York: 118 E. 25th St., New York, NY 10010
tel: (212) 477-6700; fax: (212) 254-6271
www.marinelink.com

PUBLISHER
John C. O'Malley • *jomalley@marinelink.com*

Associate Publisher & Editorial Director
Greg Trauthwein • *trauthwein@marinelink.com*

Editor
Eric Haun • *haun@marinelink.com*
Tel: 212-477-6700

Contributing Writers
Lawrence R. DeMarcay, III • Tom Ewing • Rick Eyerdam
Randy O'Neill • Barry Parker

PRODUCTION
Production & Graphics Manager
Nicole Ventimiglia • *nicole@marinelink.com*

SALES
Vice President, Sales & Marketing
Rob Howard • *howard@marinelink.com*

Advertising Sales Managers
National Sales Manager
Terry Breese • ***breese@marinelink.com***
Tel: 561-732-1185 Fax: 561-732-8414

Lucia Annunziata • ***annunziata@marinelink.com***
Tel: 212-477-6700 **ext 6240** Fax: 212-254-6271
John Cagni • ***cagni@marinelink.com***
Tel: 631-472-2715 Fax: 561-732-8063
Frank Covella • ***covella@marinelink.com***
Tel: 561-732-1659 Fax: 561-732-8063
Mike Kozlowski • ***kozlowski@marinelink.com***
Tel: 561-733-2477 Fax: 561-732-9670

Managing Director, Intl. Sales
Paul Barrett • *ieaco@aol.com*
Tel: +44 1268 711560 Fax: +44 1268 711567

CORPORATE STAFF
Manager, Marketing
Mark O'Malley • *momalley@marinelink.com*

Accounting
Esther Rothenberger • *rothenberger@marinelink.com*
Tel: 212-477-6700 **ext 6810**

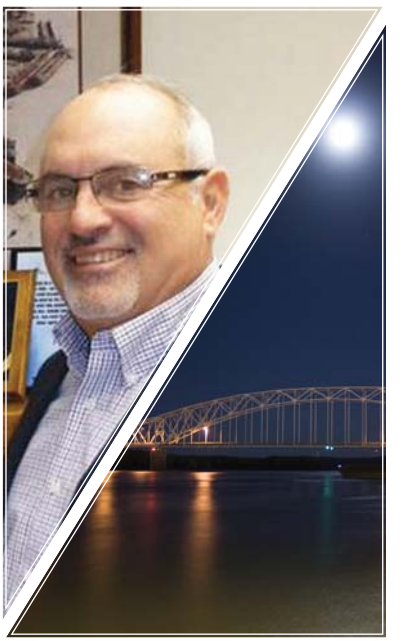
Manager, Info Tech Services
Vladimir Bibik

CIRCULATION
Kathleen Hickey • *k.hickey@marinelink.com*
Tel: 212-477-6700 **ext 6320**

TO SUBSCRIBE:
Subscriptions to ***Marine News*** (12 issues per year) for one year are available for $60.00; Two years (24 issues) for $95.00.
Send your check payable to:
MarineNews, 118 E. 25th St., New York, NY 10010

Member
BPA WORLDWIDE BRAND REPORT
Business Publications Audit of Circulation, Inc.

Departments & Analysis



Marine News (ISSN# 1087-3864) is published monthly (twelve issues) by Maritime Activity Reports Inc. 118 E 25th St. New York, NY 10010-1062. Periodicals Postage Paid at New York, NY and additional mailing offices. POSTMASTER: Send all UAA to CFS. NON-POSTAL AND MILITARY FACILITIES send address corrections to Marine News 850 Montauk Hwy, #867 Bayport, NY 11705.

J A MOODY

MARINE SALES & SERVICE

ISO 9001:2015 CERTIFIED

AN AMERICAN VETERAN OWNED COMPANY

Your One Stop Shop for All Your Commercial & Mil-Spec Flow Control Products and Service Needs

You can rely on JA Moody to do the research to provide the parts and services that you need. We have a wide range of product lines available in addition to those listed here. Let us know how we can help—**HARD TO FIND PRODUCTS ARE OUR SPECIALTY!**

- Valves
- Actuators
- Flanges
- Gears
- Couplings
- Hand Wheels
- Repair Kits

ABS TYPE APPROVALS ON SELECTED PRODUCTS

PROUD TO OFFER THE FOLLOWING HIGH QUALITY PRODUCT LINES

EMERSON
tyco
KEYSTONE
VANESSA
Nu-Torque
CURTISS-WRIGHT
PIMA VALVE, LLC.
ANDERSON GREENWOOD CROSBY
KUNKLE
MONTREAL BRONZE
HUNT VALVE
HAYS FLUID CONTROLS
WILLIAMS
PBM VALVE SOLUTIONS
straub the right connection
rotork
BNL INDUSTRIES INC.

CONTACT SALES@JAMOODY.COM OR CALL 610 647-3810 FOR A QUOTE

JAMOODY.COM

Cage Code: 3B558

EDITOR'S NOTE

The world has seemingly turned on its head in the month since I sat to write the editor's note for the March issue. But even in times of uncertainty, some things never change.

Last month I wrote in this space that the maritime industry is adept at buckling down to tackle any new challenge that comes along. This notion has been on full display in recent week as mariners, port personnel, shipbuilders and others deemed essential critical infrastructure workers as defined by the Department of Homeland Security continue to work relentlessly to keep critical maritime commerce moving.

The opening paragraph of a U.S. Coast Guard Marine Safety Information Bulletin neatly summarizes the importance of the U.S. marine transportation system:

"The uninterrupted flow of commerce on our marine transportation system (MTS) is critical to both national security and economic vitality. During the ongoing national emergency, it is paramount that we safeguard the continued operation of the MTS in the face of the acute and evolving threats posed by the COVID-19 pandemic. The MTS, which provides more than 90% of the domestic supply chain, is dependent on an extensive support network comprised of workers from both the private and public sectors."

Looking at U.S. shipbuilders, the focus of a report starting on page 36, "hectic", "fluid" and "crazy" are among words used by shipyard representatives to describe the work situation at their facilities. Nevertheless, most continue to build despite unprecedented and extraordinary challenges.

What will the future hold? Only time will tell. Look to *Marine News* magazine and *MarineLink.com* for insight as we continue to deliver reports on the critical marine transportation system and the vital industries that support it.

I hope you and your family, friends and colleagues are safe and healthy. Stay well.

Eric Haun, Editor, haun@marinelink.com

Sea. Worthy.

View Video

Workboat-Ready Digital Communication System Solutions.

Contact David Clark for rugged, reliable and proven workboat communication solutions. Our Digital Communication Systems enhance the situational awareness, efficiency and safety of crew members on board off-shore service vessels, interceptors/patrol boats, fire boats, tug and salvage boats and more. Call **800-900-3434** (508-751-5800 Outside the USA) to **arrange a system demo** or visit **www.davidclark.com** for more information.

Scalability

Versatility

Simplicity

David Clark

WWW.DAVIDCLARK.COM

An Employee Owned American Company

Small Shipyard Grants

Small shipyards in the U.S. are a critical to the nation's maritime operations and economic security. Typically family-owned and employing less than 1,200 workers, America's small shipyards support more than 400,000 jobs, employ more than 100,000 Americans directly and contribute tens of billions in gross domestic product, according to the U.S. Department of Transportation's Maritime Administration (MARAD).

In an effort to help support these vital assets, MARAD's Small Shipyard Grant Program provides funds to help drive efficiency, competitive operations and quality ship construction, repair and reconfiguration across the industry.

The Consolidated Appropriations Act, 2020, appropriated $20 million to the Small Shipyard Grant Program. With 2% of the funds may be set aside for grant administration per 46 U.S.C. 54101, the total amount available for grant awards this year is $19.6 million.

Applications were due to the Maritime Administration by February 18, 2020, and grant awards will be announced in the coming months.

According to MARAD, the grants are available to qualified shipyard facilities to (1) make capital and related improvements that will be effective in fostering efficiency, competitive operations and quality ship construction, repair and reconfiguration, and (2) provide training for workers in shipbuilding, ship repair and associated industries. Grants are capped at 75% of the project's estimated cost and are available to facilities with fewer than 1,200 production employees. They may not be used to construct buildings or other physical facilities or to acquire land.

Since its inception in 2008, the Small Shipyard Grant Program has awarded more than $223 million through 244 grants that have helped to fund upgrades and expansions that often lead to more competitive operations, quality ship construction and improved employee skill. In 2019, MARAD awarded $19.6 million in small shipyard grants, spread out across 28 U.S. shipyards.

As we await the 2020 grant awards announcement, a complete list of 2019 grant recipients is below:

All American Marine, located in Bellingham, Wash. was awarded $397,725 toward painting area improvements that will allow them to accommodate the building of larger and multiple vessels while also meeting environmental requirements.

Biblia, Inc., located in Savannah, Ga., received $1,319,414 in funding to support the construction of a 500-ton floating drydock which will, in turn, directly support DOT's Safety Objective.

Detyens Shipyards, Inc., of Charleston, S.C., was awarded $781,315 to support the electrical upgrades for mobile equipment, a 130-ton rough terrain crane and additional forklifts. These additions will enhance the quality of ship repair and reconfiguration offered to the yard's customers.

East Coast Repair & Fabrication, LLC, located in Norfolk, Va., received $860,000 in funding toward the purchase of a new Link-Belt HTT-86110 110-ton Telescopic Boom Hydraulic Truck Crane which will enable the yard to directly pursue wok on government-owned, government-operated ships.

Eastern Shipbuilding Group, Inc. (Nelson Street), located in Panama City, Fla., received $640,618 in funding. The grant award went toward several pieces of equipment that will increase overall shipyard productivity.

Heartland Fabrication, LLC, located in Brownsville, Penn., was awarded $1,008,000 in funding to allow the shipyard to acquire and install an automated coating application system and conveyor line to support the Heartland Fabrication Structural Steel Coatings Improvement Project. This project will foster efficiency, competitive operations and high-quality ship construction and repair.

Hughes Bros., Inc., located in Edison, N.J., received $363,957 in funding toward the partial funding of equipment in support of an abrasive blasting operation. This equipment will increase project efficiency, enhance production rates and enable cost-competitiveness with local shipyards.

J. Goodison Company, Inc., located in Kingstown, R.I., received $518,538 to support the upgrade of equipment used in accessing elevated workstations and mobile equipment. This will reduce the shipyard's reliance on rental equipment and increase its efficiency.

JAG Alaska, Inc. Seward Shipyard, located in Seward, Alaska, was awarded $976,298 toward the improvement of the shipyard's Water Wash-Down/Recovery System and upgrades for its Vessel Transport System. These upgrades will allow the facility to increase the utilization of its existing berthing areas and improve its overall efficiency.

LaShip, located in Houma, La., received a $402,900 grant to support the acquisition and integration of an advanced

The Maritime Industry's Largest Social Media Presence

Maritime Reporter is a member of the Maritime Media Network of websites, publications, and social media sources for news, editorial and information including the Maritime Network, the commercial marine industry's largest dedicated Linkedin group.

61,049
Facebook Page Likes

137,725
Linkedin Group Members
(Industry's Largest)

39,243
Twitter Followers

MARITIME REPORTER AND ENGINEERING NEWS

THE MARITIME NETWORK

@ShipNews

All stats from 01/31/2020

Also part of the Maritime Media Network:

Page	Likes
Marine Electronics	31,944
Marine Technology Reporter	52,612
Maritime Global News	24,857
Maritime Jobs	44,532
Maritime Logistics Professional	29,548
Maritime Propulsion	21,298
Maritime Reporter & Engineering News	61,049
World Energy News	47,050

technology piece of equipment that will allow the organization to efficiently manufacture metal and metal alloy parts.

Marinette Marine Corporation, located in Marinette, Wisc., received an award of $1,100,000 to support the Marinette Marine Additional Cranes Project by allowing for the acquisition and installation of three 100-ton bridge cranes. The installation of these cranes will increase the facility's construction capacity and productivity.

MBLH Marine LLC dba Vessel Repair, located in Port Arthur, Texas, received $1,360,531 in funding toward the acquisition and construction of a new dry dock. The new dry dock will allow the facility to promote more efficient and competitive shipyard services.

Mike's Inc., located in South Roxana, Ill. received a $709,405 grant to assist in the acquisition of a 110-ton lattice boom crawler crane. The purchase of this crane will decrease the shipyard's need to hire a third-party crane service, therefore increasing its production capability and efficiency.

Moose Boats, located in Vallejo, Calif., received $555,429 in funding toward the purchase of a Travelift Transporter and a computer numerical control (CNC) router table. This equipment will greatly improve the shipyard's efficiency.

Moran Iron Works, Inc., located in Onaway, Mich. received $564,300 in funding to support the purchase of a PythonX CNC Fabricating System that will replace three outdated and inefficient machines. The acquisition of this fabricating system is expected to increase the facility's efficiency, accuracy, quality and profitability.

Norseman Shipbuilding and Boatyard, LLC., located in Miami, Fla. received $255,131 in funding to enable the shipyard to improve its operational efficiency and address long-deferred repairs through the acquisition of three major pieces of equipment.

Northern Enterprises Boat Yard, Inc., located in Homer, Alaska, received $604,053 in grant funding to support the purchase of a new 150-metric ton Travelift, enabling the shipyard to increase its project efficiency, enhance production rates and become more cost-competitive.

Paducah Barge, LLC, of Paducah, Kent., was awarded $700,570 in funding to support the acquisition and construction of a new dry dock. This new dry dock will enable the yard to start hauling barges for vessel repairs, providing additional scheduling flexibility and reliability and increasing the entire facility's efficiency.

Port Bolivar Marine Service, Inc., located in Port Bolivar, Texas, received $390,451 in funding toward the purchase of several pieces of equipment that will significantly improve the efficiency of ship construction and repair activities at their facility.

Port of Toledo, of Toledo, Ore., receive $261,285 in grants to be used to provide welding career training in a credited college program.

Rhoads Industries, Inc., located in Philadelphia, Penn., received $999,250 in awards. This funding will go the purchase of a new mobile crane which will significantly improve the efficiency of ship repair activities and the competitiveness of their facility.

Rockland Marine Corporation, located in Rockland, Maine, received $351,956 in funding to allow the yard to purchase new equipment that will further increase production and efficiency to enhance the new marine railway years ahead of schedule.

Shark Tech, LLC, of Bayou la Batre, Ala., receive $511,671 in funding toward the purchase of welding enhancements and material handling equipment. This equipment will contribute to the significant improvement of the efficiency of ship repair and new construction activities at the facility.

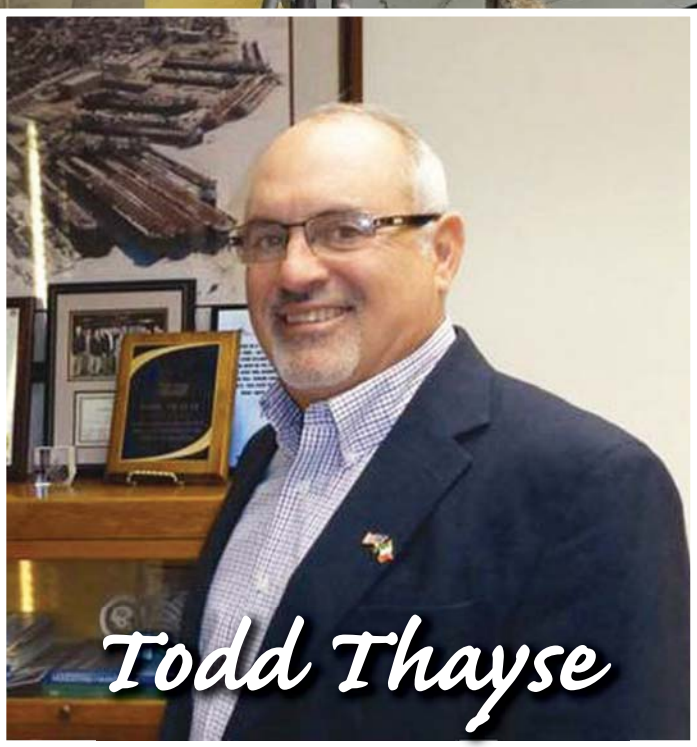
St. John's Ship Building Inc., located in Palatka, Fla., received $800,000 in funding to the purchase of new metal working equipment, yard process improvements and material handling upgrades. These projects will significantly improve the efficiency of ship construction and repair activities at the shipyard.

Thoma-Sea Marine Constructors, LLC, located in Lockport, La., received $738,645 in funding to be used to purchase three overhead cranes which will serve as the primary lifting capacity at the facility, increasing project process efficiency and dropping construction costs.

TPG Chicago Dry Dock LLC, located in Chicago, Ill., received $1,200,000 funding toward the purchase of a dry dock and the support of a welder training program. These two additions will increase the efficiency of shipyard operations as well as improve the competitive shipyard services for the facility's customers.

VT Halter Marine, located in Pascagoula, Miss., received $536,000 in funding to support the purchase of several pieces of equipment that will improve the efficiency of ship construction and repair activities at the facility.

Yank Marine Services, LLC, located in Dorchester, N.J., will receive $692,558 in funding to support the Yank Marine Services Facility Modernization Project, a long-term plan to revitalize the facility. The current phase will include the acquisition and installation of temporary shelters that will allow for greater control over atmospheric conditions in vessel work spaces.



All photos: Fincantieri Bay Shipbuilding

Todd Thayse

Vice President & General Manager, Fincantieri Bay Shipbuilding

Vice President and General Manager of Fincantieri Bay Shipbuilding, Todd Thayse, has 34 years of experience in the maritime construction and repair industry, working with clients from all over the world as well as vendors and suppliers from the Great Lakes region and beyond. He has an extensive background in manufacturing production, material procurement, strategic planning, estimating, budgeting, labor negotiations, mergers and acquisitions as well as scheduling for both the commercial and governmental shipbuilding industries. He has overseen projects that have produced U.S. Coast Guard icebreakers, articulated tugs and barges (ATBs), offshore support vessels (OSVs), dredges, passenger ferries and, most recently, modular construction for the U.S. Navy's Littoral Combat Ship (LCS) program.

Thayse began his career with Peterson Builders in Sturgeon Bay, Wis. building military vessels for the U.S. government including wooden minesweepers, aluminum gun boats and yard patrol boats.

Thayse has since spent the last 33 years working in a wide variety of capacities across multiple disciplines at Bay Ship-

building, now known as Fincantieri Bay Shipbuilding. His experience began as a light metal production boilermaker, where he advanced to become Foreman and the head of the light metal and insulating department. He then became Assistant Manager and Manager of Commercial Ship Repair Services until 2001 when he was named Director of Ship Repair Services and Major Conversion. In 2012, he was named Vice President and General Manager, the role he continues to serve in to this day.

Thayse received his initial training at Northeast Wisconsin Technical Colleague in metals fabrication and layout. He is a state certified trainer and former project manager in asbestos abatement. Todd received additional leadership training through the University of Kansas, UW-Madison Extension and Manitowoc Company.

Please give a by-the-numbers rundown of Fincantieri Bay Shipbuilding today.

We are hovering right around 1,000 employees right now. Some of that total is seasonal help brought on to complete the annual winter repair work. We have 12 repair vessels in the yard this year with four of those vessels having been cycled through the drydock for surveys.

What portion of your business is new build vs. repair?

Our yearly sales volume (repair vs. new construction) fluctuates year over year depending on where we may be with new build deliveries, and of course, the cyclicality of the Great Lakes repair business. Generally 30-40% of annual sales are repair driven.

Much of your repair work is done during the winter months. What are some of the keys to being able to work through the elements?

Midwest folks are a hearty bunch, and we have been working outside in the elements for years. Our industry expects it, and we are smart about scheduling our work. For the most part, a large percentage of the repair work is inside these vessels. That inherently provides an element of protection for harsh winter weather, and the majority of these ships heat the aft end rooms. In this industry, depending on where you are located, you either battle intense heat and humidity or cool days during the winter months.

When you look at all of the tools and the tech at your disposal, what do you count as contributing most to running a safe, efficient operation?

Running a safe operation is at the top of our list for all of the Fincantieri operations. We believe in a commitment at all

levels to a safety-driven culture, education and utilizing new personal protective equipment (PPE) technology. We take nothing for granted. That is the key to running safe operations at our facilities. We've witnessed that working to keep our operations safe also keeps them efficient.

On the newbuild side, you're currently building a new vessel for Interlake Steamship, the first new laker to be built in many years. Compared to the decades-old lakers sailing today, what type of tech updates can we expect to see aboard this noteworthy newbuild?

Certainly this new vessel will be equipped with a modern propulsion plant, environmentally improved. Control and operations of the plant will be highly automated. Cabins and living spaces are being modernized for today's culture and creature comfort needs. In addition, improved coating systems twill protect the vessel from corrosion.

The LNG barge you're building for NorthStar Midstream is also noteworthy. What's unique about this build, and

what are the project's top challenges?

The maturity of this product's use and understanding of the product's bunkering and transporting are fascinating, and we're learning fast. LNG has been more widely used in European countries for many years, but is relatively new in the U.S. as it pertains to marine use. Regulatory approvals and equipment lead times have also been challenging.

Do you expect to win more LNG-related projects in the future?

We do expect to be in the mix for future LNG projects. And as a matter of fact, several projects are now being contemplated as the industry and distribution avenues mature in the U.S.

Looking ahead, by market niche, where do you see opportunity?

The industry is showing opportunity in LNG and dredge equipment, along with the offshore wind possibilities.

What is your number one most pressing challenge at the moment, and what's being done to address it?

With labor markets tight all over the country, the shipbuilding industry is facing the same pressures as all of manufacturing: skilled workforce. We are investing in training programs, youth apprenticeship programs and advertising our positive image in the marketplace.

How else is Fincantieri Bay Shipbuilding investing today?

We are always looking to invest in our facility and people to improve our operations. Like most other manufacturing operations, automated welding and steel manufacturing processes are always near the top of the list. We have invested heavily in equipment, facility footprint expansion, and brick and mortar over the past 10 years. Near-term, we look to install new lift capacity as well as plate blast and prime equipment.

Fast Water Imperils Tricky Night Move

By Randy O'Neill


O'Neill

In late Spring at about 0300 local time, an aging towboat (#1) was pushing two loaded barges upbound on a swollen and fast-moving northwestern U.S. river. It was a moonless night and, while certainly not unusual conditions for the veteran captain and his longtime deckhand, it didn't diminish the added challenges of the short but tricky nocturnal run. And, as towboat pilots know, activities and hazards that are literally clear in daytime hours, take on a decidedly different complexion after the sun sets and inky darkness envelops the river and shrouds its banks. Add potential fatigue, mix in an ill-timed cell phone distraction and some questionable pre-trip and mid-trip decisions by the captain, and you have all the ingredients for a marine casualty that would trigger a long, stressful and humbling ordeal for the veteran pilot.

The 56-foot, 65-year-old towboat, which worked locally as a fleeting and switching vessel, was one of three similar vessels in the same service and was staffed by a captain and a deckhand who worked 14-days-on/7-days-off schedule, working days the first week and nights the second, and a deckhand. The ill-fated voyage occurred on the fourth night of the second week…only 72 hours short of the completion of their two-week shift.

At about 0300, the tow departed from the fleeting area which was about two miles downriver from a well-marked railroad bridge which crossed the waterway, and hugged the left descending bank to avoid the strong southbound currents in the middle of the river. Each of the two barges being pushed was 35'x200', loaded with 2,000 tons of crushed stone. Curiously, given the swollen and fast-moving water conditions caused by heavy spring rains in the nearby mountains, the barges were made up with only polypropylene lines on center and port, and a stationary wire to starboard. The towboat used two facing wires to make up the aft barge.

River traffic compels coordination

Meanwhile, about two miles down and on the other side of the river from towboat #1's position, a second towboat (#2) was also pushing two barges upriver, traveling at about six knots over ground. Respecting the strong mid-river current, towboat #2's pilot kept his vessel and barges as closely as safely possible to the right descending bank to take advantage of less current, and to better position his vessel to approach the railroad bridge's west span where the current was less powerful.

Towboat #1's pilot was also aware of the better water conditions to approach the bridge on the right descending bank across the river, and contacted towboat #2's captain on VHF Channel 13 to agree on a passage in which towboat #1 would cross the river and turn in front of towboat #2 and head upriver to proceed under the west span of the trestle. Unfortunately, the mutually agreed upon passing maneuver did not go off as planned.

At about 0330 and immediately after completing a poorly timed personal call on his cell phone, the captain of towboat #1 began his river crossing maneuver to position his tow ahead of towboat #2 to line his vessel and barges up for an approach to pass under the bridge. When towboat #1 reached mid-river and became perpendicular to the swift current, however, she slowed considerably and struggled to maintain headway. Meanwhile, towboat #2 maintained her course and speed and eventually passed towboat #1 still struggling in the mid-river current. Now slipping downriver and behind the other vessel and its barges, towboat #1's captain attempted to turn to starboard. Unfortunately, the current, combined with towboat #2's wheelwash, forced her to set even further downstream, moving the tow dangerously close to the right descending bank …and the commercial facilities and docked vessels jutting out into the river.

At approximately 0340, towboat #1 allided with the northernmost mooring piling of a large public marina. All lines immediately parted between her two barges, and the lead barge…and its tons of crushed stone…broke free and drifted uncontrollably downstream inside the pilings causing further damage to the facility's dolphins and several docked boats.

Towboat #2's pilot, apparently unaware of the developing mayhem literally in his wake, continued his trip upstream and under the bridge before disappearing into the darkness.

Calls for help

Due to the pre-dawn timing of the destructive allision, it wasn't until about 0400 before the captain first notified his company of the casualty, and another fifteen minutes or so after that the Coast Guard was called by company management to report the incident.

When the wayward barges were finally captured and secured and the towboat was safely docked at the marina, the pilot used his cell phone to call his license insurer to report a claim

As is the case with practically all accidents, marine or other-

wise, there was no one single cause to this casualty, but several glaring contributing factors. Fatigue and cell phone distraction were indeed possible, but the more troubling tandem: the decision to use polypropylene lines to secure the tow for the short but challenging trip; and the pilot's decision to pass ahead of an upbound tow while crossing a river in strong current during high water conditions stood out as the most egregious.

The USCG hammer comes down

Not surprisingly, Coast Guard investigators focused on those two dubious decisions made by the captain.

Understanding the pilot's real exposure to Suspension & Revocation (S&R) proceedings, his license insurer-assigned maritime attorney met at length with his client to prepare him to make an initial statement to USCG investigators and to complete and submit a CG2692 Marine Casualty Report form. Ten days later, the captain was notified by investigators to attend a formal interview to discuss the by now high-profile incident at the local USCG office. He attended that crucial interview with his maritime attorney by his side.

At that tense meeting, it became clear very quickly that investigators were very concerned about the captain's poorly timed cell phone call immediately prior to his attempt to cross a river running at over a foot above flood level, and the decision to use polypropylene line rather than steel wire and ratchets to secure his barges given the fast-moving water.

But USCG investigators saved their harshest criticism for the captain's failure to recognize the unique hazards posed by attempting to traverse the river to execute a nighttime passing maneuver in extremely high current conditions. Investigators were strongly suggesting those decisions in the aggregate warranted negligence charges and significant penalties.

Sensing what he believed was coming, the captain's veteran maritime attorney promptly met with Coast Guard investigators to see if they might be receptive to making a Settlement Offer to spare his client an Administrative Court date. After lengthy consideration, which included a thorough review of the captain's professional sailing history serving under his license, an offer was made.

The USCG offered an outright suspension of the cap-

© Jesse / Adobe Stock

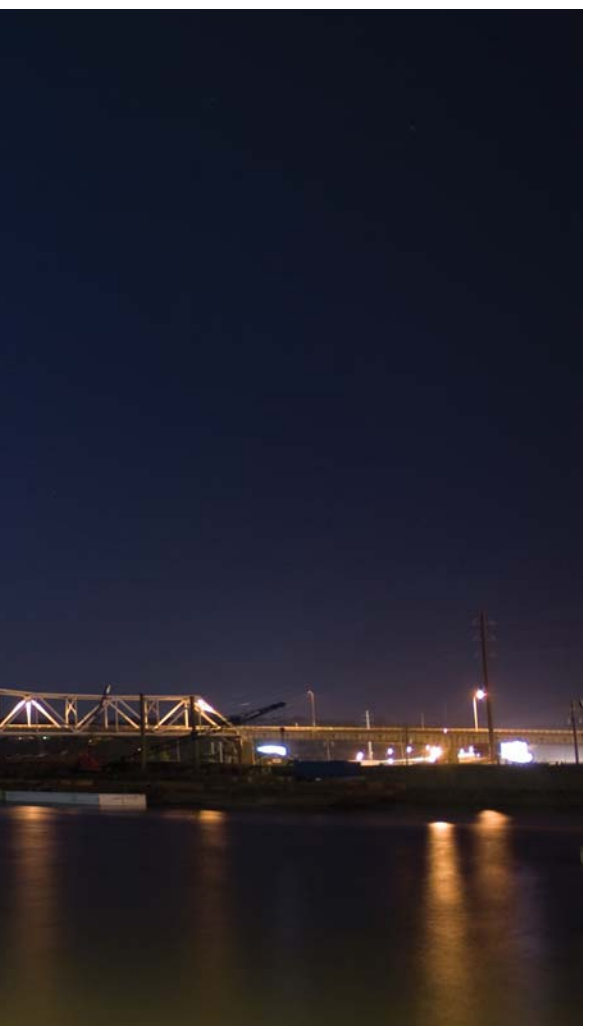
tain's license for six months, remitted to serving two months with an additional four-month probationary period. Also mandated in the offer was a requirement for the captain to enroll in and successfully complete a Bridge Team Management course of 24 hours or more in duration before his license would be returned to him

In view of the unknown consequences of an S&R proceeding (particularly in light of the severe terms of the Settlement Offer), after consulting with his attorney the captain agreed to accept the terms of the Settlement Offer and surrendered his Master's license to the Coast Guard for a minimum of 60 days.

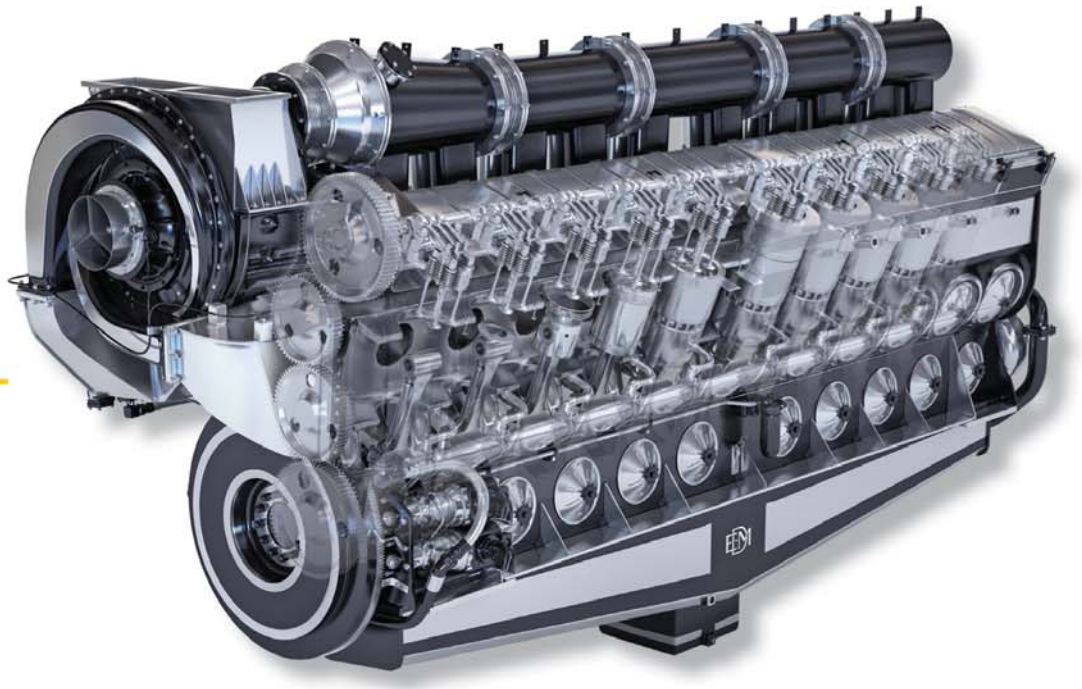
As with all compromises, neither side got everything it wanted, but the captain served his two-month penalty 'on the beach', completed the mandatory course and successfully completed his 120-day probationary period without any further reportable incidents.

As agreed upon, his Master's license was returned after two months.

Today, the chastened towboat pilot is still working the rivers, and hopefully using considerable more caution when making critical decisions that can negatively impact his license, livelihood and professional reputation.



Marine Systems, Inc.



The E 23 (IMO II-EPA T3) and E 23B (IMO III-EPA T4F) are available in 8, 12, 16 and 20 cylinder configurations with power ratings from (1675 hp) to (5500 hp).
*"Please consult MSI for specific application ratings"

ABS · Bureau Veritas · CCS · DNV·GL

TWO CYCLE ADVANTAGE

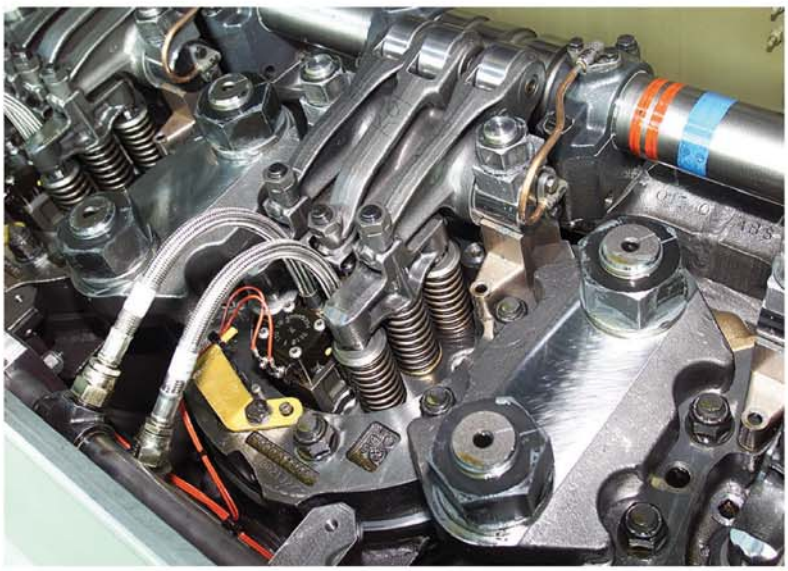
ENDURING DESIGN. LEGENDARY HERITAGE.

BEST IN-CLASS TRANSIENT RESPONSE

- E 23 offers the performance of a high speed engine with the durability advantage of a medium speed engine.
- Ample power margin throughout the entire operating speed range allows for optimized engine sizing and a single speed reduction gear.
- Avoids engine lugging under demanding vessel maneuvers.
- Accepts 100% block load in constant speed applications.

TOTAL COST OF OWNERSHIP ADVANTAGE

MAXIMUM UPTIME.



PARTS – LABOR – FLUIDS

Downtime is expensive. EMD engines are designed to minimize the amount of time needed for maintenance and repairs in order to maximize your productivity, keeping operational costs to a minimum.

- Reduced fuel consumption over previous models due to EPA T4F / IMO III technologies and low idle speed.
- Easy non-invasive inspection of cylinder components for simple predictive condition-based maintenance.
- Simple overhauls to minimize downtime – Power Assembly (head, liner, piston, rod) can be removed and replaced as one unit.
- Closed loop dosing control system optimizes (Diesel Exhaust Fluid) DEF usage.
- No oil change required between overhauls unless indicated by oil sample analysis.
- Lowest life cycle cost per horse power / hours of operation.

Ph: (985) 223-7100 • www.marinesystemsinc.com

ESI MARINE SYSTEMS, INC. MSI

BIG CITY Fireboats

By Tom Ewing

On March 3, the Coast Guard published a notice that Martin Midstream Partners (MMP), a petrochemical transport and storage company, was seeking approval to modify terminal operations in Beaumont, Texas, along the Sabine-Neches Waterway. If approved, MMP would expand its liquefied hazardous gas (LHG) operations, both in volume and products. Instead of just handling ammonia the change would allow shipments of butane, propane, ethane, ethylene and propylene.

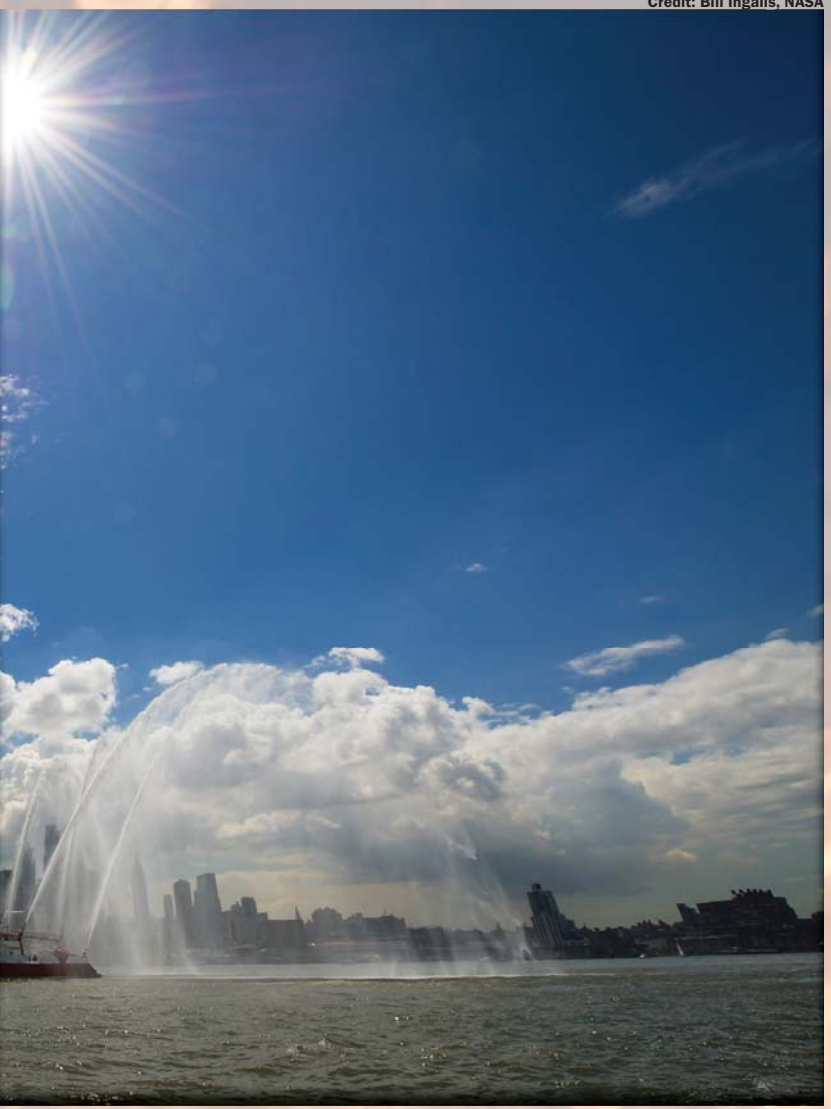
Critically, MMP's expansion would increase LHG vessel transit from 24 ships to as many as 350 per year. That's more than a 14-fold increase, for just one company. The Sabine-Neches is additionally expected to become the largest liquefied natural gas (LNG) exporter in the U.S. as American energy exports muscle up for delivery to worldwide markets.

Obviously, expansion at this scale raises questions about port safety and emergency response. Coast Guard Captains of the Port (COTP) are required to develop safety contingency plans, addressing issues from fires to hazardous materials spills. For Marine Safety Unit Port Arthur, the "Southeast Texas And Southwest Louisiana Area Contingency Plan" is a 1,000+ page document, last updated in July 2019, filled with information about municipal fire departments, hazmat first responders, staging areas and emergency response equipment.

Surprisingly, there is just one fireboat mentioned in the entire regional plan. And other than its location, in the Port of Lake Charles, the fireboat – its firefighting capabilities, for example – isn't mentioned again. The plan does tell that most local fire departments have limited response capabilities for shipboard fires, small watercraft for search and rescue and spill response.

The plan explains that "offshore ship fires are a rescue priority. Land-based fire departments will have involvement at their chief's discretion". [The Coast Guard does not take the lead in fighting port fires nor in hazmat re-

Credit: Bill Ingalls, NASA



sponse; rather, it defers to local fire departments or to private sector hazmat contractors.]

In 2003, the Department of Homeland Security issued a "Special Report: Fireboats: Then and Now." The Report has not been updated but a person familiar with the research said the report reflects trends and factors, still current today, about how or whether fireboats can fit within a fire department's fleet.

One important trend in the report: big city fire departments had scaled back on fireboats. Some boats were scrapped altogether or mothballed or placed in reserve. Fireboat costs could no longer be justified against declines in emergency runs. In many ways this was expected. After all, waterfronts were no longer dominated by old fire-prone wooden wharfs and warehouses. Absent that threat, land-based equipment was increasingly judged more valuable than fireboats.

Another trend: ships themselves, and shipping operations, had become much safer. The Oil Pollution Act of 1990, for example, requires ships entering U.S. ports to supply proof of contracts for spill response and marine firefighting.

DHS described a shifting demand for fireboats. Local officials wanted smaller boats with flexible capacities, firefighting and hazmat response, for example.

In ***Marine News***' December 2019 issue, Joe Keefe described how this shift in the fireboat market has continued and grown. The Fire Department in Rochester, N.Y., for example, after five years of analysis, contracted for a vessel to patrol a range of locales, from a Great Lakes shipping channel to private marinas to industrial sites. Similarly, fire services in Rabun County, Ga., purchased a vessel to patrol an 835-acre reservoir with 25 miles of shoreline. Again, versatile vessels to take on a range of duties.

Importantly, though, the DHS report also described two then-emerging trends in American seaports. One was the huge increase in mega-containerships and the port infrastructure

Credit: Robert Allen, LTD.

for those vessels. The second pertained to hazardous materials, from chemical cargoes to energy products newly carried as cargo, such as LNG or LHG.

DHS' report raises critical questions, particularly pressing now, and particularly relevant for decisions about fireboats. How should a port's safety analysis change to adequately measure and describe risks from LNG and LHG tankers and 1,200-foot containerships? DHS noted that on the one hand containers themselves help reduce fire risks. On the other hand, the report cites an estimate that "nearly 50% of all containers hold some hazardous material," and there have been several major fires on board containerships over the last few years – some fatal. How should these developments influence a fireboat's cost-benefit assessment? Maybe a response vessel built for a vacation marina isn't the right one to approach an emergency on a tanker barge filled with vinyl chloride.

Robert Allen LTD, based in Vancouver, B.C., is a naval design firm that has worked on some of the world's most storied fireboats, including FDNY's paired vessels, the Fireboat 343 and its sister fireboat the Fire Fighter II, both placed in service in 2010. At 140 feet, with CBRN capabilities (Chemical, Biological, Radiological, and Nuclear), a response speed of over 17 knots, and a total pumping capacity in excess of 50,000 GPM these fireboats are among the largest in the world. Each cost $27 million, covered, to a large extent, by Homeland Security grants. Each is a stand-alone battle station at the tip of the spear for confronting maritime fires and disasters.

Derek Noon, a Principal with Robert Allen, was project manager for FDNY's 343. Noon was asked about how or whether emerging port safety issues are affecting new fireboat designs and capabilities. Central to this question, of course, is that fireboats don't just roll off a production line. Each is customized to reflect a port's most likely hazards. In Chicago, for example, fireboats have ice-breaking capabilities and low draft to pass under bridges. In LA, fire officials need the ability to pump water to shoreside fire mains in case of an earthquake.

In New York, the decks of the 343 and the Fire Fighter II are at a level even with the decks of the Staten Island Ferry. That's deliberate.

Noon said the most significant change in fireboats is demand for CBRN detection and protection systems, which he called "a direct result of an increased terrorist threat and the vulnerabilities of ports." Newer boats also have infrared and night vision technologies.

Credit: FDNY

"We're looking to expand LNG training . . . We need to know its properties and what works and doesn't work in a maritime crisis."

– Frank Simpson,
Chief of Marine Operations, FDNY

Noon said, "Each fireboat is custom designed to address the mission and capability requirements of the specific port. The market does not support building fireboats for stock. Each is a custom build."

Frank Simpson is Chief of Marine Operations for FDNY. New York City has almost 600 miles of coastline. The Chief was asked about new and emerging fire and hazmat issues.

Simpson mentioned two big concerns – hazardous material spills and LNG. New York has a hazmat response program with a specific maritime, waterway component. Regarding LNG, Simpson said "there is no doubt it is coming into this port eventually." He said FDNY is in discussions with other cities' fire departments regarding how best to plan for possible LNG emergencies.

Simpson said FDNY fireboats will expand their storage and ability to use Purple K, a dry-chemical agent effective against LNG fires. Simpson said firefighters are training now for Purple K use, including using cranes to transfer supplies between vessels. "We're looking to expand LNG training," Simpson said. "We need to know its properties and what works and doesn't work in a maritime crisis." As platforms, Simpson said the 343 and FFII will be mission capable for years to come.

In Tacoma, Wash., the Tacoma Fire Department has three fireboats, although one is kept in reserve. TFD's jurisdiction includes over 12 square miles of Commencement Bay. LNG is an emerging issue in Tacoma because Puget Sound Energy is building an LNG facility to fuel ships transiting Commencement Bay and the Puget Sound. This will be a kind of marine "filling station," expected to be operational in 2021, allowing vessels to switch from diesel bunker fuel to clean natural gas.

Project permitting requires PSE to have a fire station nearby. TFD has since developed plans to open Station 5 (paid for by PSE) near the new LNG facility. Station 5 will not include a fireboat. LNG has been safely handled by ships and logistics experts for decades. An LNG "filling station," however, for ocean-going ships is not really part of that operational history. Is this the kind of new, hazardous materials activity that should force a re-look at fireboat policies?

Tom Guldner is a retired FDNY firefighter who, since 1999, runs a company called Marine Firefighting, Inc. In addition to training, e.g., teaching tugboat crews and land-based firefighters about dealing with LNG emergencies, his company also undertakes port risk assessments to determine if current dangers in a port can be handled with existing resources.

Credit: Victoria Foley, U.S. Navy

For LNG risks, it's Guldner's view that "any major port should have at least one fireboat and larger ports should have multiple boats to insure a rapid response anywhere within the port."

Guldner was asked to comment about the expense of big fireboats and specialized crews. In response he cited a National Fire Protection Association standard that specifically references ship fires and legal consequences. Here's NFPA's quote:

"An understanding of the dangers inherent in marine firefighting should include an understanding of the consequences of the failure to provide a standard of training, planning, response, and action equivalent to that which a department provides on the land-based portions of its response area."

Guldner said that vessel owners' contracts for spill response and marine firefighting is indeed important for maritime and port safety. He added, though, that in certain situations a private sector response "could take three to four hours."

A fire on a ship in the water a mile distant from a commercial or industrial shoreline presents one level of risk.

A fire on a pier where a ship is taking on LNG fuel presents far different levels of risks, a scenario that would seem to almost forcefully reset questions about port safety and fireboats. These risks aren't fading. For many, they're just starting.

Outfitting the

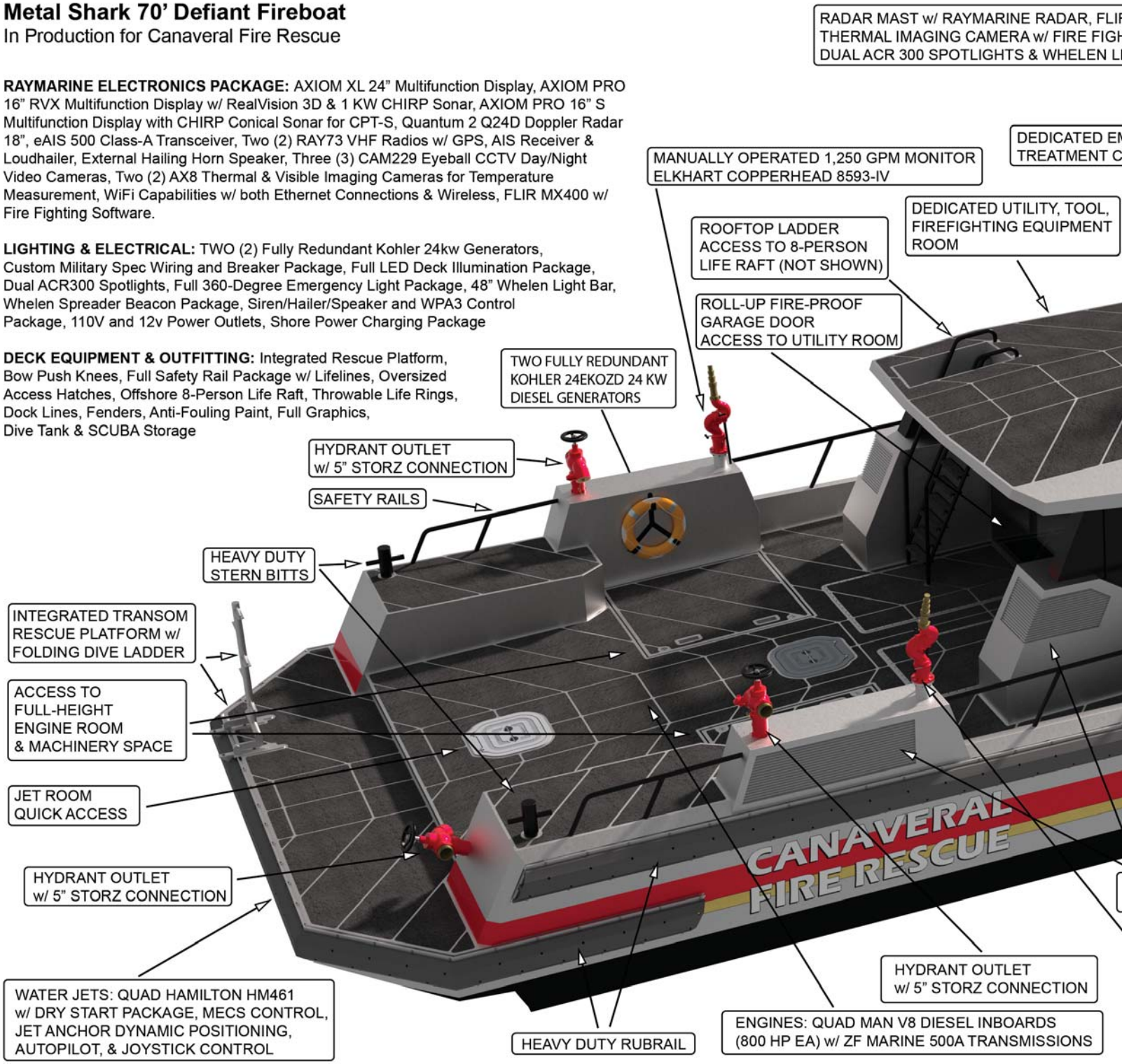
Metal Shark 70' Defiant Fireboat

In Production for Canaveral Fire Rescue

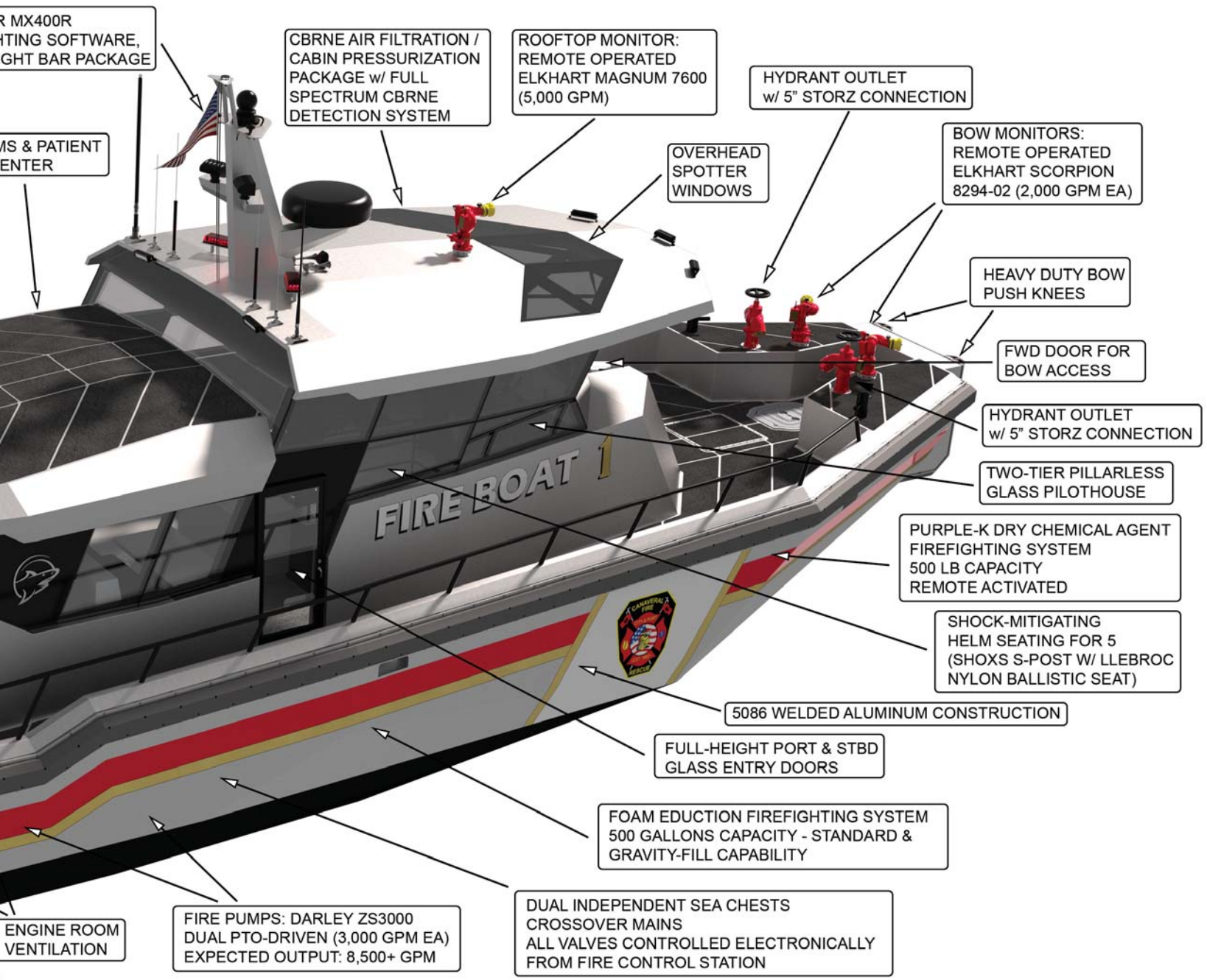
RAYMARINE ELECTRONICS PACKAGE: AXIOM XL 24" Multifunction Display, AXIOM PRO 16" RVX Multifunction Display w/ RealVision 3D & 1 KW CHIRP Sonar, AXIOM PRO 16" S Multifunction Display with CHIRP Conical Sonar for CPT-S, Quantum 2 Q24D Doppler Radar 18", eAIS 500 Class-A Transceiver, Two (2) RAY73 VHF Radios w/ GPS, AIS Receiver & Loudhailer, External Hailing Horn Speaker, Three (3) CAM229 Eyeball CCTV Day/Night Video Cameras, Two (2) AX8 Thermal & Visible Imaging Cameras for Temperature Measurement, WiFi Capabilities w/ both Ethernet Connections & Wireless, FLIR MX400 w/ Fire Fighting Software.

LIGHTING & ELECTRICAL: TWO (2) Fully Redundant Kohler 24kw Generators, Custom Military Spec Wiring and Breaker Package, Full LED Deck Illumination Package, Dual ACR300 Spotlights, Full 360-Degree Emergency Light Package, 48" Whelen Light Bar, Whelen Spreader Beacon Package, Siren/Hailer/Speaker and WPA3 Control Package, 110V and 12v Power Outlets, Shore Power Charging Package

DECK EQUIPMENT & OUTFITTING: Integrated Rescue Platform, Bow Push Knees, Full Safety Rail Package w/ Lifelines, Oversized Access Hatches, Offshore 8-Person Life Raft, Throwable Life Rings, Dock Lines, Fenders, Anti-Fouling Paint, Full Graphics, Dive Tank & SCUBA Storage



Modern Fireboat



PILOT HOUSE: Center Helm w/ Dedicated Navigator Station, Complete Fire Control Center, Officer/Command/Communications Station, and Five (5) Helm Chairs w/ SHOX X Post Shock Mitigation and Llebroc Ballistic Nylon Seats

ACCOMMODATIONS: Fire-Proof Roll-Up Garage Door to Dedicated Utility, Tool, and Fire Fighting Equipment Room; Dedicated EMS & Patient Treatment Center; Port /STBD Full-Height Glass Doors for Cabin Entry; Forward Door for Berth and Pilothouse Access from Bow; Dive Ladder; Dinette/Galley; Full Head; Escape Hatches Full Height Under-Deck Machinery Space & Engine Room; Foul Weather Gear Storage Closet; Crew Berthing; Complete Dometic HVAC Climate Control

Credit: Wärtsilä

AUTONOMY ON TRIAL

By Eric Haun

When discussing the arrival of autonomous workboats, many – especially those developing the technologies that enable them – say it's is not a matter of if, but when. In fact, autonomous harbor tugs are already being put to the test in Singapore, where authorities hope to establish the technological infrastructure to enable fully autonomous ship operations. In the U.S., an autonomous vessel was shown to be able to respond to marine oil spills.

But is autonomy really the future? Several technology leaders in this space say yes, though they point out many important questions still need to be answered, especially surrounding insurance, legal and regulatory requirements. The International Maritime Organization (IMO), U.S. Coast Guard (USCG) and other regulatory authorities globally are working with classification societies and industry partners to develop clearly defined regulations that would apply to vessels operating at various stages of autonomy, but much still needs to be done.

And then there's the questions pertaining to the future role of mariners in the dawn of marine autonomy. Will autonomous-enabled vessels put crews out of work? Not necessarily. Marine autonomy comes in many shapes and sizes, and autonomous does not necessarily mean unmanned. Autonomy can exist in different stages and degrees, from smart and automated to fully independent. In each case, crew will maintain their vital role on board, but they'll be supported by technologies that aim to help them do their jobs in a safer and more efficient manner.

CONCEPT OF OPERATIONS

Domenic Carlucci, Director - Machinery, Propulsion, Electrical & Controls, Corporate Technology, at classification society the American Bureau of Shipping (ABS), says workboats and other smaller vessels that often ply shorter, dedicated routes are most ripe for autonomous operations. In this sector, much of the technology being explored today aims to improve safety and crew assistance, with navigation being the primary function most are working on, he says. "Navigation is an area people are focusing on because the technologies have already been developed. Information and technology that has been developed in other industries like aircraft or automotive can be leveraged into the marine environment. At this point, it's not so much technology development, it's more technology application."

Carlucci adds it's important to differentiate between autonomous functionality and manning levels. "Autonomous does not mean unmanned, and unmanned does not necessarily mean autonomous. Each vessel will have a concept of opera-

In August 2019, Sea Machines demonstrated a vessel equipped for autonomous marine oil spill response .

Credit: Sea Machines

tions that will define how the vessel is managed and operated and each of the conditions and modes of operations that the vessel will be in."

A vessel works in several periods of operations – in port, maneuvering, at sea, on station, standby, etc. – and each has potential for autonomous functionality to be utilized, yet other cases might require more human direct engagement, Carlucci explains. "Right now, much of the autonomous development is focused on the crews still being there and autonomy simply aiding or augmenting the capabilities of the crew on board."

And that's where companies like Sea Machines come into play. The firm has developed advanced remote and autonomous control technologies for workboats and other commercial surface vessels. Don Black, the company's Vice President of Sales and Marketing, says, "Autonomy is not about taking people out of the

Credit: Wärtsilä

loop. It's about making them more effective and reducing risk."

Black expects humans will remain in the picture for the foreseeable future, and technology will allow them to shift into roles that are more supervisory, tapping computer vision, sensor fusion and data collection to leverage expanded situational awareness and advanced pilot capabilities. "Autonomy, at this stage in the game, is really about situational awareness and sensors use. These need to be developed completely before you're talking about true autonomy. In the meantime, there are things we can do that allow the pilot to have better situational awareness – what's going on inside and outside of their boat – that allows them to execute on a mission. They can be sitting at the helm but not necessarily driving the boat. They can watch what's going on and they can intervene."

"If you can take some of the human risk elements out of the boat, it doesn't mean you're taking the humans out of it too. What you're trying to do is make it less risk-prone," Black says. "There's no person that could possibly have 100% execution all of the time. Whereas when you look at it from a technology perspective, they're always on and they never get tired. They can feed information and alerts to the pilots."

"Look at what's going on aboard a busy vessel – whether it's a survey boat or a tug – there's a lot of activity going on. What our systems help crews to do is focus on the activity that is most important to them, whether that's external to the boat or looking off the tech, and simply managing or executing that mission," Black says.

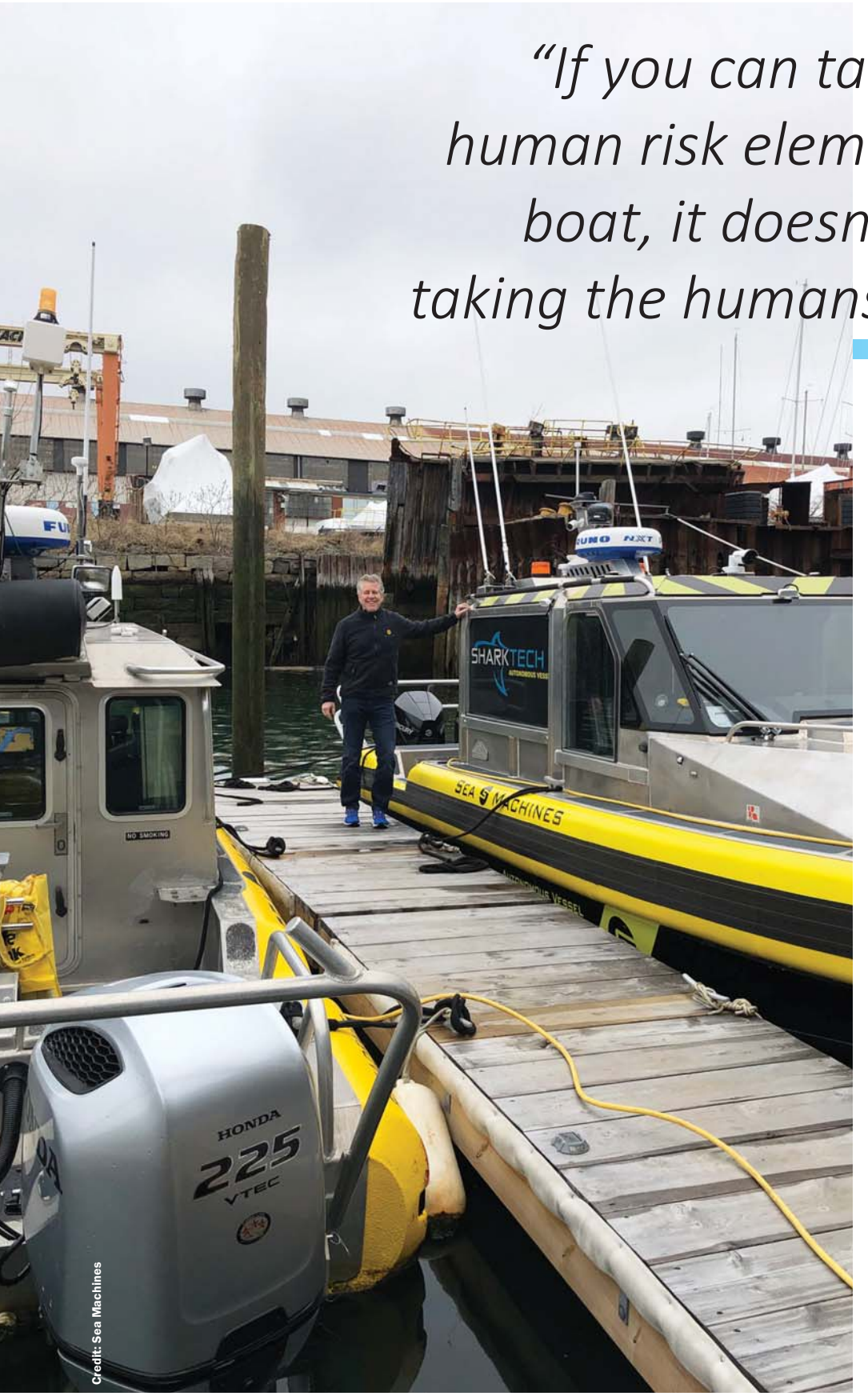
"At the end of the day, human senses have limitations. That's the reason we have a lot of devices like radar, sonar, all the rest of it, on the boat in the first place. When we look at what we do, we're bringing all that together and consolidating it and making it far more consumable via human. When you look at it from that perspective, there's no workboat or any type of vessel that can't take advantage of that."

PUTTING THE TOOLS TO USE

In August 2019, Sea Machines demonstrated its SM300 vessel intelligence systems on board a Vigor/Kvichak Marine

The 27-meter harbor tug PSA Polaris performed smart navigation and collision avoidance functions as part of real-world trials in the Port of Singapore.

Industries-built skimmer boat in Portland harbor in Maine, as part of a cooperative agreement with the U.S. Department of Transportation Maritime Administration (MARAD). The vessel, owned by Marine Spill Response Corp. (MSRC), performed both autonomous and remote-controlled functionalities, overseen by an operator on land, with crew members on board ready to take control if necessary. Sea Machines demonstrated electronic navigational chart (ENC)-based mission planning, autonomous waypoint and grid line tracking, as well as collaborative autonomy for multi-vessel operations, and wireless remote payload control to deploy onboard boom, skimmer belt and other response equipment.



Credit: Sea Machines

"If you can take some of the human risk elements out of the boat, it doesn't mean you're taking the humans out of it too."

– Don Black,
Vice President of Sales and Marketing, Sea Machines

In a similar exercise one year earlier, Sea Machines demonstrated its SM300 in Denmark, on board an autonomous-command, remote-controlled fireboat owned by Tuco Marine. For both fireboats and spill response vessels, autonomous technology can free up crews to focus primarily on the difficult and dangerous emergency response task at hand, rather than navigating and performing other basic functions. Or, depending on the situation, humans could potentially be removed from the operation entirely to prevent exposure to hazardous conditions.

Elsewhere, places like Singapore and several areas in Northern Europe are pushing their locations to be autonomous testbeds, Carluccis says.

In the bustling Port of Singapore, which sees more than 130,000 vessels calling annually, technology company Wärtsilä is working with towage and pilotage service firm PSA Marine to further advance the capabilities of a harbor tug fit with dual azimuth thruster controls as well as a sensor suite, including Wärtsilä's RS24 near-field high

"Right now, much of the autonomous development is focused on the crews still being there and autonomy simply aiding or augmenting the capabilities of the crew on board."

– Domenic Carlucci, ABS

Credit: ABS

resolution radar and Wärtsilä's dynamic positioning (DP) system, to enable autonomous capabilities. The vessel was recently put to the test as part of the IntelliTug project co-funded by the Maritime and Port Authority of Singapore's (MPA) Maritime Innovation and Technology (MINT) Fund and involving classification society Lloyd's Register and the Technology Center for Offshore and Marine Singapore (TCOMS).

The 27-meter harbor tug PSA Polaris has performed smart navigation and collision avoidance functions in real-life harbor trials, demonstrating its ability to steer clear of virtual and real-life moving vessels. Again, humans were on board and ready to take full control. The vessel's smart navigation system allows the user to easily see the routes plotted, with the avoidance of collisions, in real-time, and sends track and speed commands to the DP system, which drives the vessel along the route safely at speeds up to 10 knots.

And there's another group targeting autonomous harbor tug operations in Singapore by the end of 2020. Technology company ABB is working with Keppel Offshore & Marine's technology arm, Keppel Marine and Deepwater Technology (KMDTech), as well as MPA and TCOMS, to develop autonomous vessel technologies for retrofit onto a 32-meter harbor tug. ABS will provide the Approval in Principle for the novel features such as remote navigation control and autonomous control system.

During the initial phase of the project, the vessel, operated by Keppel O&M's joint-venture company Keppel Smit Towage, will complete a series of navigational tasks while being steered from an onshore control center. Later, during the project's second phase, the vessel will perform autonomous collision avoidance tasks while under remote supervision. Pieces of ABB's Ability Marine Pilot portfolio will provide sensor fusion from existing and new systems to generate digital situational awareness as well as execute commands.

A third collaborative project in Singapore, between ST Engineering and PACC Offshore Services Holdings

In March, Abu Dhabi Ports announced it signed a Memorandum of Understanding with naval architect Robert Allan Ltd. to develop fully unmanned autonomous commercial marine tugs. The research and development project aims to deliver remotely-controlled vessels that will be fully unmanned and be able to operate within a wide spectrum of autonomy under Abu Dhabi Ports' maritime service arm, SAFEEN. According to Abu Dhabi Ports, one of the main draws of the technology includes the capability to shift humans from on board to shore, allowing tugs to operate in far more adverse weather conditions. Autonomous vessels would also help to increase efficiency and enhance operational safety, it said.

(POSH), ABS, MPA and TCOMS, will convert an existing manned tugboat into a smart autonomous vessel equipped with ST Engineering's NERVA Ship Management System and Sensemaking System, which provides real time, centralized control and monitoring of shipboard systems, as well as condition-based maintenance.

Partners in each of the Singapore projects, like Sea Machines, stress the technology is not intended to remove crew, but to assist them. In the case of a harbor tug, for example, working vessels must sometimes make long transits to reach their destination. If a tug can perform this task autonomously, the crew on board would be able to rest before performing the hard work of pushing or towing other vessels.

REGULATORY CATCH-UP

While the technology is being proven, efforts to firm up insurance, legal and regulatory requirements are still catch-

ABB is working with Keppel Offshore & Marine to develop autonomous vessel technologies for retrofit onto a 32-meter harbor tug for operations in Singapore.

Credit: Sea Machines

ing up. Black says only modest guidelines exist today, though there has been much progress toward addressing key issues. From a technology developer's standpoint, he says, "Part of our challenges is not only to conform to what's required, but also help to work with regulatory to help define those regulatory requirements so that technology can become available."

Sea Machines is working alongside regulators and class with full confidence that acceptance and clear guideline on what is required will determined in a way that makes sense, Black says. "We look at it as a cooperative, non-antagonistic relationship. Everybody's trying to get to the same end. Everybody knows it's coming, but we all want to be prudent on how it's adopted."

Carlucci agrees progress is being made: "The regulatory landscape is changing and developing."

At an international level, the IMO is in the midst of a scoping exercise where members and working groups are evaluating existing regulations (COLREGS, SOLAS, etc.) for potential impacts on autonomy, and determine whether existing rules need to be changed, rewritten or something new must be developed. "The impact of each existing regulation is being evaluated to see how autonomy will be addressed," he says. "At a regional level, port states are evaluating how they'll manage autonomy in their specific locales."

"ABS has established rules and requirements over many years in areas like automation and software quality and cyber to build some of the foundational references and elements that will be needed to move and transition into an autonomous world," Carlucci says. "We have published the ABS Advisory on Autonomous Functionality and are continuing work on our development of requirements for autonomy. They will build upon the foundational elements that smart systems has put in place. The primary focus is to maintain the safety of the vessel as the new technologies are applied."

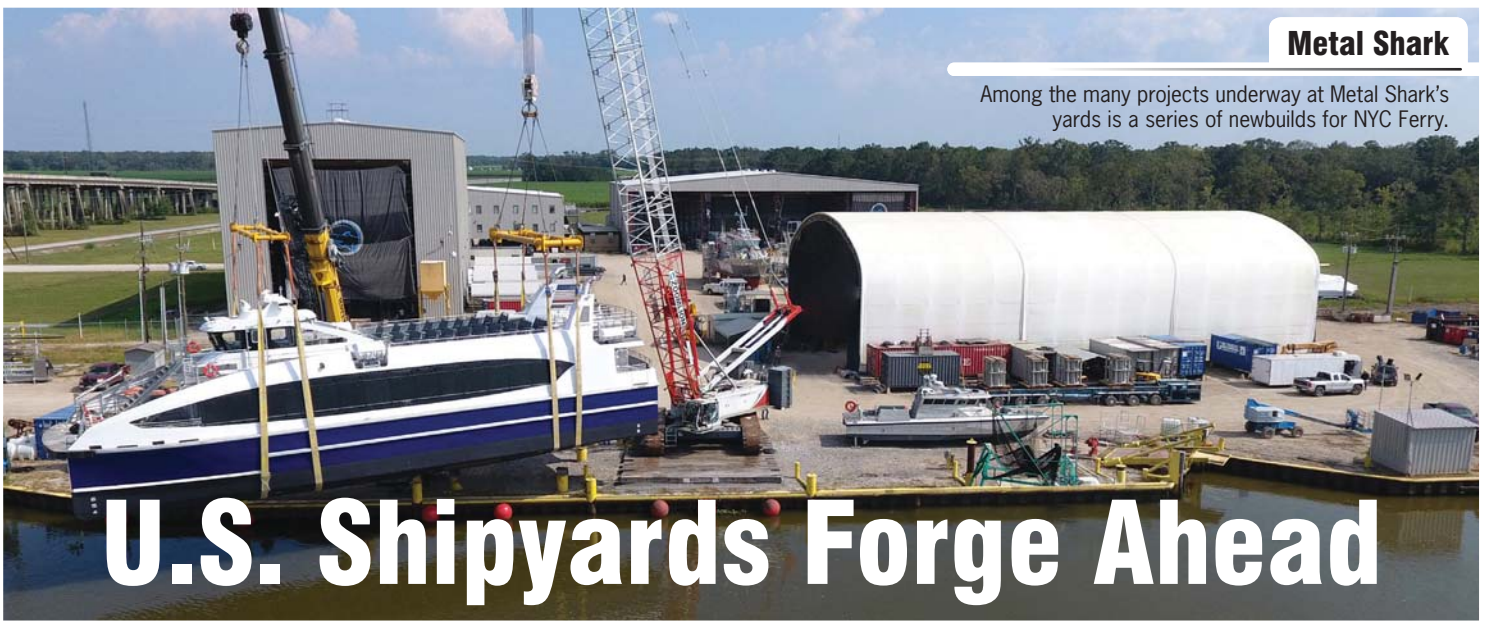
US shipbuilder Metal Shark, through a partnership with Sea Machines, has introduced a 29-foot autonomous vessel now being offered to government and commercial customers. The Sharktech 29 Defiant welded aluminum monohull pilothouse vessel features Sea Machines' SM300 system.

Credit: Sea Machines

VT Halter

VT Halter Marine was recently awarded a contract option to build the U.S. Navy's fourth Auxiliary Personnel Lighter–Small (APL(S)) 67 Class berthing and messing barge.

Photo: VT Halter



Metal Shark

Among the many projects underway at Metal Shark's yards is a series of newbuilds for NYC Ferry.

Photo: Metal Shark

U.S. Shipyards Forge Ahead Through COVID-19

By Eric Haun

As the novel coronavirus and its impacts continue to spread across America, U.S. shipbuilders, by and large, continue to build. While most yards have been deemed essential to marine transportation and/or national security and have been able to maintain operations, the situation at and around every shipyard is different, and there are several builders across the country that have had to temporarily suspend activity. In either scenario, it's far from business as usual for America's shipbuilders who will be forced to navigate new waters in the months ahead.

Full disclosure: the information in this report is subject to change as situations rapidly develop. Nearly all news surrounding the COVID-19 pandemic is fast-moving, and statuses are likely to shift – and maybe even shift again – from the time this article is being written to the time this magazine prints.

Hectic, fluid and crazy are some of the words used by shipyard representatives when asked about the work situations at their facilities amid the coronavirus outbreak. But all tell *Marine News* they are diligently monitoring the situation and will adjust as necessary to ensure workers and their communities remain safe and healthy.

Marcia Blount, president of Blount Boats in Rhode Island,

All American Marine

Once up and running again, All American Marine will take over the construction of a ferry powered by hydrogen fuel cells.

Photo: All American Marine

Blount Boats

The 56-foot icebreaking tugboat being built by Blount Boats for N.Y. Power Authority (NYPA).

Photo: Blount Boats

told *Marine News* on March 19 that construction activity is ongoing for three newbuild projects in the yard. A new ferry, Southern Cross, for South Ferry on Shelter Island, N.Y. is getting ready for sea trials ahead of scheduled delivery at the end of March 2020. Breaker II, a small tug for N.Y. Power Authority to pull boom across Niagara River to prevent ice from jamming hydroelectric equipment, is slated to be delivered in May 2020 when New York's upstate canals open. Blount is also building an offshore wind crew transfer vessel (CTV) for Rhode Island Fast Ferry, to be delivered in November 2020.

Down the East Coast, on the Gulf of Mexico side of Florida, Eastern Shipbuilding has maintained "full operations building vessels", Steve Berthold, VP of sales and marketing, told *Marine News* on March 20. Eastern is building the high-profile Offshore Patrol Cutter for the U.S. Coast Guard, with the series' lead vessel scheduled to be delivered in 2022. The shipyard is wrapping up work on A. Thomas Higgins, the second of two 80-foot 5,100-horsepower Z-drive tugs for Bisso Offshore, after delivering the first in January this year. In addition, Eastern is building three 4,500-passenger Ollis-Class ferries for New York's Staten Island Ferries. The first is scheduled to be delivered in fall 2020.

Like Eastern, other shipbuilders deemed essential to national security, including Austal USA, Ingalls Shipbuilding, Newport News Shipbuilding, General Dynamic NASSCO, General Dynamics Electric Boat, SAFE Boats, Fincantieri's Bay Shipbuilding, Marinette Marine and Ace Marine and others have remained open. Bollinger Shipyards, which operates a number of sites in Louisiana, will remain operational too. It launched Sentinel Class Fast Response Cutter USCGC Frederick Hatch (FRC-43) for the U.S. Coast Guard on March 25 at its shipyard in Lockport, La.

Activity has continued at VT Halter Marine in Pascagoula, Miss., where four U.S. Navy Auxiliary Personnel Lighter-Small berthing barges, the QLNG 4000 and its tug, the Q-Ocean Services, which together form an industry-first offshore liquefied natural gas (LNG) bunker articulated tug and barge (ATB), oceanographic research ship T-AGS67 and two LSVs for an unidentified customer are presently under construction. In the engineering stage is the long-awaited Polar Security Cutter for the U.S. Coast Guard.

"Customers are getting more cost conscious and expect to achieve lower system-lifecycle costs," VT Halter CEO Ron Baczkowski told ***Marine News*** before oil prices dropped and the coronavirus outbreak swept across the U.S., but customers' need for lower costs may become an even greater in the months ahead. "As a ship designer and builder, VT Halter Marine's focus has been on developing vessels that require less manning, consume less fuel, allow a longer mean time between repairs, better coatings and protection, and built-in diagnostic maintenance."

Conrad Shipyard, which delivered more than 60 vessels for commercial and government customers in 2019, is also up and running. The yard's current backlog includes tank and deck barges, offshore tugs and two 6,000-horsepower towboats currently under construction. Robert A. Sampey II, Vice President Business Development, Conrad Shipyard, said, "We continue to pursue the inland vessel market as evolving customer needs, and new regulations drive changes to the design of these vessels. . . Other evolving markets that we continue to pursue are the LNG bunkering market and wind farm support equipment."

Over the last six months, Metal Shark has delivered more than 100 vessels to customers in the U.S. and abroad, and the company continues to build for militaries, state and local law enforcement agencies, fire rescue operators, passenger vessel operators, pilot associations and more.

"The rapid onset of COVID-19 and the precipitous drop in the cost of oil have created question marks in many sectors," said Metal Shark Co-owner and CEO Chris Allard. "We see our government work remaining solid, and, so far, our commercial business has remained strong, with continued interest and no cancellations."

"Among our key aluminum projects currently underway are a wide range of military vessels varying in size from the mid 20-foot range up to a series of 85-foot patrol vessels. In 2020 we will announce a naval fleet order for high-speed offshore interdiction vessels larger than 50-foot. We continue to add fireboat customers at a rapid pace. Among the 15-plus fireboats currently under contract, we've got two 50-foot fireboats under construction for Miami Dade Fire Rescue, and a 70-fott fireboat being built for Canaveral Fire Rescue. We continue to build law enforcement vessels for multiple agencies, including multiple orders of our 26- and 28-foot Relentless center consoles standardized for the Florida Fish & Wildlife Conservation Commission. We will soon be announcing multiple additional law enforcement customers, we will be announcing the construction of another new pilot boat, and we will deliver a 158-foot catamaran excursion vessel to a private client.

"At our Alabama yard, which specializes in the construction of steel vessels, we will deliver the first of our series of 120- by 35-foot inland tow boats for Florida Marine Transporters, as well as an 80-foot Z-drive tugboat for North Carolina DOT."

While shipbuilding has continued at Metal Shark, Allard said, "The economic impact of the COVID-19 situation has made us acutely aware of how many of our second and third-tier suppliers are located overseas, or depend on overseas supply. Already we have seen a disruption of internationally sourced materials. However, we will continue to react quickly, to innovate, and to leverage our engineering capability, serialized production methodologies, and economies of scale to support our customers through the challenging times ahead."

"I think it would be foolish to think that, medium-term, the economic impacts of current events will not cause some level of disruption to our industry. Long term, I think the current events will drive a continued push for increased American manufacturing and supply independence." Allard added.

Great Lakes Shipyard has been able to continue building the fourth, fifth and sixth vessels in a series of Damen Stan 1907 Ice Class tugs for The Great Lakes Towing Company. Pennsylvania is in the commissioning phase and will enter service in April 2020, followed by Wisconsin slated for completion by mid-summer and the sixth, yet-to-be-named vessel scheduled to be completed in Spring 2021.

Kirsten Buccigrossi, Director, Marketing & Communications, The Great Lakes Group, said additional work looms on the horizon: "With the implementation of Subchapter M, we foresee the potential for significant tugboat construction and repair work, generally needed for operators to comply with the new regulations. Also, many government agencies (i.e., U.S. Coast Guard, Geological Survey, Army Corp of Engineers, etc) have been appropriated sizable monies for major infrastructure investments and assets renewals, which include new construction, major overhaul, and repair project for their fleets."

Master Marine has delivered two towboats in the past six months, with seven Tier 3 1,600-horsepower Subchapter M approved design towboats for towing and fleeting markets under construction. Steven Authement, Director of Business Development Inland & Gulf Region, said he expects shipyards to remain busy for a number of reasons, including operators having to meet engines emissions regulations and Subchapter

M rules. In addition, Authement said major oil companies are setting age limits for the towboats and barges that carry their products, meaning new tonnage is required to replace older assets that age out. "Shipyards should continue to stay busy with meeting the vessel demand since a lot of older towboats are still operating out three and it is only a matter of time before they must be replaced."

"A lot of larger HP Tier 3 towboats were contracted in the past year and a half and are in different stages of construction and delivery. Now that Tier 4 is required for any towboat over 1,600-horsepower, owners are deciding to replace their older vessels since it will be more beneficial to them than trying to repair their older vessels to meet Sub M compliance," he said.

Authement added, "The international trade deal being approved should help our farmers with more required production and will only strengthen the inland marine market. The fact that a lot of funding has been approved with projects underway for the inland infrastructure system with only improve matters. We must now weather the virus storm so that we can return to a healthy economy."

On the West Coast, build activity has paused at All American Marine in Bellingham, Wash. Ron Wille, Business Development Manager at AAM said the shipyard is constructing twin 78-foot passenger tour vessels for a private client in the Pacific Northwest, due to be launched in Spring and Summer 2020 respectively, as well as two wildlife tour vessels for Major Marine Tours in Seward Alaska. Once delivered in the Spring and Summer of 2021 respectively, the 83- by 32-foot vessels will carry passengers on glacier and wildlife tours to Kenai Fjords National Park and the Alaska National Maritime Wildlife refuge.

In addition, AAM recently won a contract from SWITCH Maritime to complete the aluminum construction and outfitting of a 70-foot zero-emissions, hydrogen-powered, electric drive ferry that will operate in the California Bay Area. Prior to transfer to AAM, the project had begun at Bay Ship & Yacht shipyard in Alameda, Calif. (still operational amid COVID-19) where the aluminum hull and superstructure had been started. Bronson Lamb, AAM Marketing Manager, told ***Marine News*** that a portion of the hull and super structure of the vessel has been completed, and AAM will complete all remaining aluminum fabrication and welding and then commence with outfitting all interior and propulsion aspects of the vessel, including but not limited to: the hydrogen fuel cell system, paint, electrical, control systems and seating. AAM is currently on pace to deliver the vessel in late-2020, but the timeline could potentially be impacted by current events surrounding the coronavirus outbreak, Lamb said.

Armstrong Marine in Port Angeles, Wash. has also had to temporarily suspend operations, with several projects in the works and more expected on the horizon. Its current order book includes an 11.3-meter Naiad RHIB tour boat Bay Voyager II for Bay Voyager in San Francisco; a 46-foot whale watching catamaran for Alaska Tales in Juneau, Alaska; a 46-foot luxury catamaran water taxi Liberty National I for Liberty National Golf Club in Jersey City, N.J.; a 45-foot ferry catamaran for Hat Island, Wash.; and a 45-foot transfer/pilot catamaran for National Park Service – Glacier Bay National Park & Preserve.

"The marine sector in North America is busy right now, and Armstrong Marine USA has been growing steadily over the last three years," said Cordelia Aud, Sales and Marketing. "Tour companies and ferry operators are turning to us for innovative solutions and we are growing in this market every year. We are also experiencing a growing demand for our catamaran expertise in industries like hydrographic survey and landing craft operations. We have also taken on more aluminum RIB projects in the last two years with our partner Naiad Design. Our RIBs have been delivered to both coasts in the U.S., and we recently delivered our first RIB for export as well."

All images: American Seafoods Company

Profiles in Training

***Lance Camarena**, Director Training & Organizational Development for American Seafoods Company*

By Eric Haun

Lance Camarena recognized from a young age that he wanted to work in the learning and development arena. But his plans changed while studying in college to become a public school music teacher and a job working a swing shift at Intel led to a new path of study and a career in the IT world.

Still, after graduating and securing full-time employment with another IT firm, he knew training was still his calling. "I managed to switch roles and became one of the first people in the U.S. to start training this new software package that was just hitting the market called Microsoft Word. So, I ended up spending a career in the IT world first as a trainer and then managing various aspects of the training function throughout the company."

Camarena said he eventually "hit a goldmine" when he landed a job in Seattle working for a cruise line, and from there started a second training career which lasted more than 20 years and expanded to cover every aspect of the maritime world.

Today, Camarena is Director of Training & Organizational Development for American Seafoods Company, a fishing company which runs six factory trawlers ranging from 256 to 341 feet. The company employs approximately 1,300 seafarers from 52 countries, with about a 7% turnover in our key officer positions and a 25% turnover in our entry level processor positions.

A lot has changed since Camarena first entered the maritime world, he said. "In many maritime groups, there wasn't a training professional in charge, and in many cases, training wasn't centralized at all. Each group was more or less responsible for managing its own training needs and without a single concentrated focus on training. Only the greatest training needs would get met. Generally, it was just those training needs dictated by regulation, policy and perhaps the last incident that mandated training as a part of a solution moving forward."

These days, training is recognized for what it brings to a maritime organization, training professionals are part of every maritime group, and companies are investing to ensure its employees are trained effectively. "Our senior leadership has been absolutely great in supporting training efforts without significant pushback on resources. There is no question I can bring any well-thought and planned proposal to the leadership team and I will get a fair and balanced hearing," Camarena said.

"American Seafoods is working hard to create what we call a Learning Ecosystem. Like any ecosystem, this means that training needs and training activities be clearly defined for each onboard position, easily accessible no matter whether on land or at sea and encouragement provided at each step of the career journey no matter the spot on the chain of command."

Camarena believes every company operating on the water should perform hands-on training and look for ways to make it more assessible and enjoyable, but he said the role and value of digital e-learning technologies is growing.

"We see some tremendous advancement in technology with simulators that can make you as seasick as if you were actually on a vessel," Camarena said. "These solutions give even the most experienced seafarer the chance to practice and live out simulated events that we hope we will never see."

American Seafoods has also implemented a Marine Learning Systems learning management system (LMS) e-learning solution and created the American Seafoods Knowledge Academy (ASKA), which can be accessed from almost any device

to complete mandated training.

Camarena said it is often a challenge for seafarers to find time to train while on the job, so American Seafoods pays its seagoing employees to complete mandated e-Learning training while they are at home. "This solution is a relatively simple one but clearly effective and not all that costly," Camarena said. "And since ASKA also works on board no matter the location of a vessel, we have the ability to invite our employees to complete any unfinished training while onboard and are working to establish the proper process whereby 'ASKA training' can integrate into onboard promotions and other potential training opportunities."

"In moving to this new LMS solution we also freed ourselves from having to rely on a limited number of content providers, and are now working through our content with the aim to choose best in class. While it is easy to simply license a whole host of content from a single provider or two, you tend to get the exact same look, feel and design in every course. But with the option to choose vendors entirely on the basis of content, we expect to significantly raise the quality and engagement factors in all our online learning."

"I believe another huge challenge to our efforts is how to make and keep training engaging," Camarena said, adding that innovative, entertaining and creative content like is seen in the gaming world goes a long way to improve training quality and we're waiting for it to hit the training world soon.

"I recently heard a speaker at a training conference say, 'We need to create the conditions for binge learning,'" he said. "If we start with the goal of 'effective training' it automatically implies that an online learning course would have all the elements that learners are seeking while actually learning versus clicking through screens and most commonly, multi-tasking their way through a course to the finish screen."

American Seafoods is always striving to measure training effectiveness and seek ways to improve, Camarena said. The company monitors its training efforts against a number of factors including incidents, productivity, claims, on board self-assessments, audit results and vessel visits, and then acts on the results as quickly as possible.

Camarena said it is important to speak with seafarers to learn what appears to be working or not and/or what should be done differently. "This also means getting on board to see the real life of our maritime employees and actually sailing with the vessels and really getting to see their reality when possible."

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

River Radar Display

Seatronx launched the sunlight-readable RRD-19T River Radar Display designed for river-based commercial vessels. The RRD-19T features a 19-inch display with portrait orientation that allows operators to see further down the river, while highlighting traffic, weather and markers in narrow channels. It can be installed in any panel mount or dash top configuration and is compatible with most popular black box radars such as Furuno or Koden. The full HD resolution display's LED TFT screen produces a clear and contrast-strong image both day and night, and offers wide range dimming to accommodate any lighting condition.

Waterline and Deck Floodlight

Phoenix introduced the Command Flood, a durable, marine grade, deck and waterline perimeter LED floodlight designed specifically to withstand the high corrosion and high vibration environment on board vessels. The Command Flood was engineered as a solution for shipyards and vessel operators and is suited for above deck lighting applications on tugs, barges and workboats as well as perimeter and waterline security needs onboard Naval and Coast Guard vessels. The fixture is made at the Phoenix Lighting factory in Milwaukee, Wis.

Integrated Display Solution

The new generation of NSO evo3 multifunction display systems combine a high-performance marine processor with a touchscreen display to offer fully integrated control of Simrad and third-party electronics. This all-in-one design simplifies installation, while preserving power and flexibility for use aboard workboats and other commercial vessels. NSO evo3 offers a modern, centralized "glass bridge" solution to navigation, autopilot, radar, echosounder, and other key systems aboard non-SOLAS vessels. NSO evo3 can be used to add supplementary or special-purpose capabilities to any vessel.

Solid-state Radar

Furuno introduced the new NXT Solid-State options for its commercial FAR2xx8 Radar and FAR3000 Chart Radar series, available in both X-Band and S-Band configurations. Furuno NXT Solid-State Radars rely on electronic components rather than magnetrons to generate their microwave pulse, requiring less power than traditional Radars. Features include ACE (Automatic Clutter Reduction) and FTT (Fast Target Tracking) as well as Furuno's updated antenna and gearbox.

Gyro Compass

With the Standard 22 NX, Raytheon Anschütz introduces the world's first gyro compass combining the proven sensor technology with the advantages of latest interface and networking standards. Olav Denker, Product Manager for gyro compasses at Raytheon Anschütz, said, "With the Standard 22 NX, our customers can rely on accurate heading information for safe navigation as before, but the new interface capabilities will simplify and shorten system integration, installation and commissioning, thus contribute to overall cost efficiency and an even more positive cost-lifetime performance ratio."

Tank Ullage Gauge

The tank gauge manufacturer SEMCO has developed a product called Honesty, an easy-to-use electronic smart sounding scale designed to take a tank's ullage measurement. The portable device has a sensor at the end of a measurement tape that is lowered into a tank and triggers a lamp and alarm once the liquid surface is reached. A measurement is made from the liquid's surface upward. Honesty can also measure other liquids such as ballast water and bilge.

Wireless Helm System

The USCG and ABS have approved Sea Machines' SM200 commercial wireless helm for installation aboard a class of U.S.-flag tugboats that support articulated tug-barge (ATB) sets – an industry first in wireless vessel control. An advantage of using the SM200 aboard an ATB is for connecting the tug in the barge notch. This system empowers the pilot to be in full control of the tugboat and connecting pins with a direct local view of the task, as compared to conventional methods that often rely on signals relayed from another crew member to the wheelhouse.

Generator with FP Control

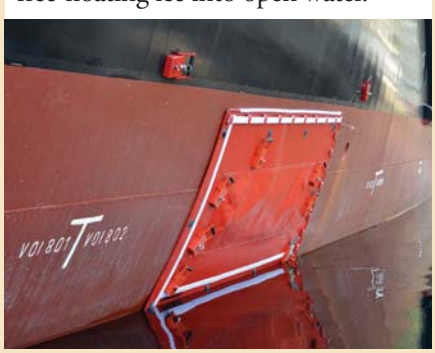
Fischer Panda UK recently launched the FP Control, offering enhanced data monitoring capabilities across its generator range. The FP Control, which allows various set-ups as well as the connection to a CAN BUS system, monitors the generator and provides up-to-date operational information via a digital display. As supplied with the newly-launched variable speed hybrid DC VS Series generators, the control system displays data on the generator, as well as the connected drive system and batteries, to update information on overall power being drawn, power supplied for battery charging and the electric drive system.

HullSkater

Jotun and Kongsberg Maritime have jointly developed a robotic hull cleaning device called the HullSkater, designed to be carried with the vessel and deployed regularly to remove early-stage fouling. The cleaning machine has been developed for proactive bio-fouling control on ships and offers the potential to reduce fuel costs by around $3.6 million and CO2 emissions by 12.5% annually, on a typical vessel, Jotun said. HullSkater can inspect a 10,000m2 hull in approximately two hours.

Hull Repair Kit

The first Miko Plaster Polar Kits have been supplied to ship operators providing passenger cruises in polar waters. Using magnetic patches and a special application technique, the kits have been developed to enable ships, for the first time, to effectively repair hull damage caused by polar ice while still at sea and without a diver. Such damage is a recognized risk, even for ice-class vessels, and is likely to increase as climate change releases more free-floating ice into open water.



Standard Duty Lifting Beam

Harrington Hoists, Inc. launched its HSDLB Standard Duty Lifting Beam designed for low headroom applications. Model HSDLB is available from 0.5- though 40-ton capacities with outside spreads from 3 to 30 feet. Additional sizes and capacities are also available. To minimize wear, the HSDLB features a precision machined bail for a good connection between the saddle of the hook and the upper radius of the bail. Three standard lift points for load adjustment are included and it is supplied with a pair of heavy-duty swivel hooks. Additional lift points and hardware are available as options.

Wortman

Kuosa

Krisanda

van Heyningen

Holm

de Gruyter

Fernback

Darley

Cordero

Seaspan Names Wortman CFO

Seaspan Marine Transportation appointed Linda Wortman as CFO. Wortman joined Seaspan in 2008 as Controller, Marine and was promoted to Vice President, Corporate Finance, Accounting in 2016. Her responsibilities were expanded to include Seaspan's Corporate Supply Chain Management and Risk and Insurance functions in 2017.

Damen Names Van Heyningen COO

As of April 1, Marc van Heyningen will become the new Chief Operations Officer (COO) of Damen Shipyards Group. This completes the Executive Board of the leading Dutch maritime solutions provider.

Changes to Wärtsilä's Board of Management

In line with its move to split its Marine Business into three independent businesses, Wärtsilä announced several board of management changes. Roger Holm, previously President of Wärtsilä Marine Business & Executive Vice President, will assume the role of President of Marine Power & Executive Vice President. Tamara de Gruyter has been appointed President of Marine Systems & Executive Vice President. Sean Fernback has been appointed President of Marine Voyage & Executive Vice President.

Darley Named COO, LR Marine and Offshore

Lloyd's Register named Mark Darley as Marine & Offshore COO. Darley, who joined LR on graduation as a marine surveyor 20 years ago, is currently M&O President for North Asia and has held leadership positions in the UK, South Asia and the Americas. He will continue to be based out of Shanghai, close to the heart of LR's core new construction business in North Asia.

AAPA Elects Cordero as Board Chairman

The American Association of Port Authorities elected Mario Cordero, executive director of California's Port of Long Beach, to serve as the association's next Chairman of the Board. Cordero will be installed as Chairman on the final day of AAPA's 2020 Annual Convention, set for September 13-16, in Québec City, QC, Canada. He will assume the AAPA chairmanship from Gary G. Nelson, executive director of Washington State's Port of Grays Harbor, who began his term on October 15, 2019.

NAPA Taps Kuosa as CEO

Maritime software, services and data analysis provider NAPA announced the appointment of Mikko Kuosa as Chief Executive Officer. Kuosa, who joined NAPA in 1999, assumes the position from Ilmo Kuutti, who served as CEO of NAPA Group for three years. Kuutti continues as an Advisor and a member of the NAPA Board of Directors.

Survitec Names Krisanda Executive Chairman

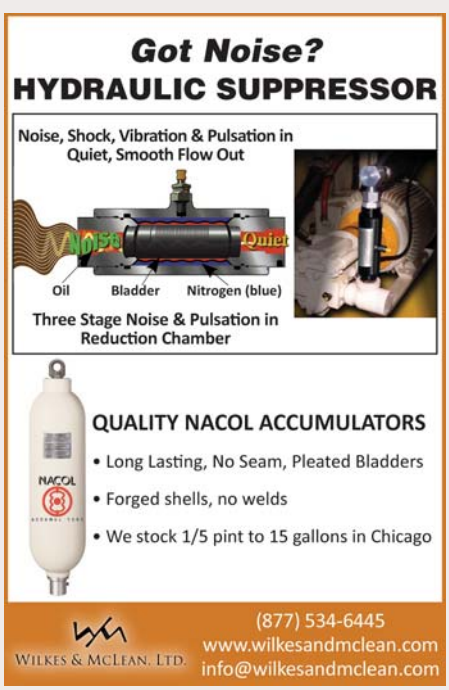
Survitec appointed Ron Krisanda as Executive Chairman for its worldwide life-saving equipment business. In this newly created role, he will lead both the Survitec Board of Directors and the Executive Management Team.

Marine Marketplace

VESSELS FOR SALE / BARGES FOR RENT

NEW PRODUCTS

NEW PRODUCTS



Marine Marketplace

NEW PRODUCTS

Marine Marketplace

NEW PRODUCTS

PROFESSIONALS

ADVERTISER INDEX

Page	Company	Website	Phone#
25	Ahead Sanitation	www.aheadsanitationsystems.com	(337) 330-4407
17	Bay Shipbuilding/Fincantieri	www.fincantieribayshipbuilding.com	(715) 587-6960
39	Boschert Precision Machinery, Inc.	www.boschertusa.com	(800) 354-3737
33	Creative Systems	www.ghsport.com	(360) 385-6212
7	David Clark Company	www.davidclark.com	(508) 751-5888
31	Environmental Marine, Inc.	www.envmar.com	(606) 271-2711
23	GP Link	www.gplink.com	(252) 504-5113
3	Inland Marine Expo	www.inlandmarineexpo.com	Please visit our website
42	In-Mar Solutions	www.inmarsolutions.com	(225) 644-7063
5	J.A. Moody Inc.	www.jamoody.com	(610) 647-3810
18,19	Marine Systems, Inc	www.marinesystemsinc.com	(985) 223-7100
41	McDonough Marine Services	www.mcdonoughmarine.com	(504) 780-8100
C2	Metal Shark Boats	www.metalsharkboats.com	(337) 364-0777
35	Metals USA	www.metalsusa.com	(800) 523-3340
C4	R.W. Fernstrum & Company	www.fernstrum.com	(906) 863-5553
29	Ribcraft USA LLC.	www.ribcraftusa.com	(781) 639-9065
1	Sea Machines	www.sea-machines.com/virtualdemo	Visit us online
C3	SMM 2020	www.smm-hamburg.com/trailer	Please visit our website
25	Society of Accredited Marine Surveyors	www.marinesurvey.org	(800) 344-9077

The listings above are an editorial service provided for the convenience of our readers.
If you are an advertiser and would like to update or modify any of the above information, please contact: nicole@marinelink.com


smm-hamburg.com /trailer
the leading international maritime trade fair
SMM
driving the maritime transition
8 – 11 sept 2020
hamburg
SMM fuels change in the maritime industry by bringing together its most influential players and presenting solutions that make shipping greener, smarter and safer. Be part of it and see what's technologically possible, connect with peers and get fresh impetus for your business:
• 2,200+ exhibitors from the entire maritime value chain
• 50,000 industry professionals from 120+ countries
• Top-notch conferences and first-class networking events
buy eTicket and save up to 25% or redeem invitation
smm-hamburg.com/ticket
eTicket = easy access
Hamburg Messe + Congress
smm-hamburg.com/news
linkedin.com/company/smmfair
twitter.com/SMMfair
#SMMfair
facebook.com/SMMfair
youtube.com/SMMfair

We take the heat, so you don't have to.

Cool. Because you need it.

We deliver cool based on your reality. So no matter where you operate, hot days and heavy loads will never slow you down.

GRIDCOOLER® Keel Cooler

- **One Piece Head Design** maintains greater structural integrity.
- **Higher Silver Content Braze Joints** resist fatigue and maintain the strength of surrounding material.
- **Better Penetration at Braze Joints** places more braze material with less heat, making joints stronger.
- **2-Year Warranty on Copper Nickel GRIDCOOLER Keel Coolers:** Industry-leading design, craftsmanship and materials create industry-leading products.
- **70 Years of Experience with Fully Assembled Packaged Keel Coolers:** Our focus is and always has been heat exchangers.

WEKA Boxcooler®

- **Over 20 Years of Experience with Copper Nickel Boxcoolers** offering longer product life cycle than standard coated tube units.
- **Manufactured in the USA and The Netherlands:** provides the greatest product availability.
- **Weka Guard and Protector** eliminate the need for bulky and costly copper sacrificial anodes.

Tranter® Heat Exchangers

- **Tranter Heat Exchangers** product offerings make Fernstrum your single source for multiple stage cooling systems.
- **Tranter Superchanger** plate and frame heat exchanger provides a range of options in pattern, size and material for a wide variety of applications.
- **Tranter Platecoil** provides an efficient and cost effective alternative to traditional pipe coil heating for bulk cargo, ballast and other applications.

FERNSTRUM®
R.W. Fernstrum & Company

fernstrum.com | 1.906.863.5553 | sales@fernstrum.com | ISO 9001:2015