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MARITIME REPORTER AND ENGINEERING NEWS

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January 2017

NEW YORK State of Mind

Cameron Clark & the CityWide Ferry by Hornblower team help reinvent waterborne commuter transport in New York City

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THE COVER

New York, New York
Cameron Clark and the CityWide Ferry by Hornblower team have embarked on a historic project to revitalize commuter water transport in the 'City the Never Sleeps.' Story starts on pg. 30.

(Photo: CityWide Ferry by Hornblower)

On the Cover

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CITYWIDE FERRY

Cameron Clark is at the helm of the Citywide Ferry by Hornblower operation, a project to build a new network of up to 20 commuter ferries for the City of New York.

By Greg Trauthwein

VOICES

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GREG TRAUTHWEIN, EDITOR & ASSOCIATE PUBLISHER

Closing in on a quarter century in this seat, I can count on two hands (perhaps throw in one foot) the number of times I've actually stopped and said *'wow'* in regards to a work-related story. One of those moments came in early 2016 when the City of New York announced that it had enterered into a deal with Hornblower to build up to 20 ferries to literally reinvent the waterborne commuter connections linking the city's five boroughs. The intitial intrigue was spurred first and foremost by the fact that this is literally happening in *Maritime Reporter & Engineering News'* own backyard, as we have been a fixture in Manhattan for nearly 80 years. Discussion of the exploitation of our waterways utilizing clean, efficient maritime transporation as a means to reduce roads and rails choked with traffic is a regular theme in our pages, print and electronic.

My excitement for the project grew quickly when details started to emerge, chiefly that the company would employ two U.S. boatbuilders – Horizon Shipbuilding and Metal Shark – to build the series of boats, and the time between dried ink on the contract with the city and the start of construction was about four months.

I became completely engrossed in the project when I had the opporutnity to interview **Cameron Clark**, our January 2017 cover subject. Clark is the Hornblower executive who was selected to lead the CityWide Ferry by Hornblower endeavor, and he and his burgeoning team are taking the project from conception to delivery in just over a year. To put it simply, Clark's enthusiasm for the project, and seemingly all matters maritime, is infectious.

There are several things that set Clark and his team apart, the first being that they are communicative and eager to get the story out; a rarity in maritime circles. This demand on communication skills extended directly to the contracts signed with the shipyards to build the fleet. Early on his team determined that the scope and rapidity of the project meant that no single shipyard could deliver. So at the outset it decided to contract with two yards, and the yards' willingness and ability to communicate was mandatory. In this case, Clark found in its designer, Incat Crowther, a perfect conduit to facilitate.

While Clark has his eyes firmly on the ball of delivering for New York City, in the bigger picture he and the company are hoping to use this as a proving ground of sorts. He is aiming to show to other municipalities that may be mulling an investment in similar waterborne fleet infrastructure that Hornblower can provide a turnkey service – from finance to design to project manage to build to develop app technology to market to millions of people – all the while hiring a team of operational and guest services people, working it through city politics and doing it all in 18 months. Time will ultimately tell if Hornblower is successful or not, but in the words of the late, great **Frank Sinatra** ... *"If I can make it there, I'll make it anywhere, It's up to you ... New York, New York."*

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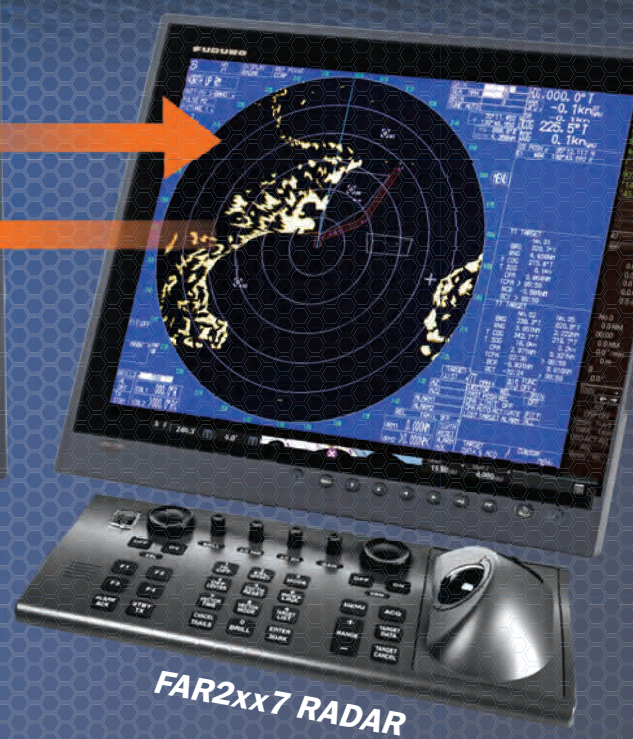

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"Dear President Trump"

Ideal Intermodal Advice for President-Elect Trump

Let's finish 2016 by offering a simple piece of advice to our incoming President. And, if you were looking for fireworks, I'm afraid it just isn't all that complicated – or at least, it shouldn't be.

Image: © panimoni Adobe Stock

Wisdom from Canada

It is a crying shame that I had to travel all the way to Hong Kong to get this sort of information, but you don't have to. Or, maybe you can call one of all those folks who threatened to move to Canada during our recent elections to get the 'skinny' on what it takes to run a real intermodal supply chain.

But, just in case nobody really did flee the country, I've got the lowdown right here on Maritime Logistics Professional's web site. Chill the New Year's champagne a little early – victory for the domestic U.S. waterfront is right around the corner.

At a logistics trade event in Hong Kong over Thanksgiving week (after all, good logistics waits for no man and if we expect our mariners to operate 24/7/365, then we should do the same), I listened in on as many good presentations and panel discussions as I have heard at ANY trade show, in any place, in all the time I've been covering the waterfront. Right up there vying for first prize was a delegation from Canada that included five stakeholders representing the full spectrum of the intermodal equation. Logistics, terminals, ports authorities, rail – you name it – they were all there. And they spoke eloquently in sequence, with one voice, about what comprises the ideal supply chain.

More significant was what they did not talk about. There was no infighting about which mode of transportation was better, which one was greener, which one was less expensive and all the rest of it. In other words, it was a discussion that you rarely hear in the lower 48. That's because the overriding message that all five speakers brought on their 16.5 hour flight from this side of the pond was that each and every one of them was only as good as the part of the supply chain that followed them. Let me say it again: Any mode of transportation is only as good as the one that follows it in the supply chain.

As their cogent discussions played out, I couldn't help but wonder what might happen in the United States if we followed the same sort of business plan. Or, maybe I was just punchy from the 12 hour time change. You see, back at home, we spend more time trying to defeat the other mode of transportation than we do trying to seamlessly weave the trucks, ships, barges, railroads and pipelines into a single, enormously efficient supply chain. And if they can do it up in Prince Rupert Sound, so too can we.

Infrastructure 101

Safely back home in the United States, I hit the road again. This time it was on that magnificent supply chain choker known simply as I-95. There I had the opportunity to spend more than two hours stuck underneath Baltimore Harbor in the 1.7 mile, eight-lane Fort McHenry Tunnel. If you've never done it, I don't recommend it. But if you do, it is a wonderful place (107 feet below sea level) to conjure up your next article while inhaling the rich aroma of a couple thousand idling vehicles. It is a decidedly Tier ZERO environment. And, let me just add here – a big 'shout out' to the Maryland DOT for their efficient handling of the crisis. But, I'm drifting off course.

Also following that Asian trade show (and my I-95 follies), I returned to bravely face the holidays with the in-laws. It is harder than it sounds. We fired up the aging family SUV and roared up to Cleveland where one of my wife's family members spoke excitedly of "the promise of infrastructure spending, tax relief and all the rest of it, once we got by the inauguration." It all certainly sounds good, doesn't it? But, we've been down that road before and indeed; we've spent the last eight years pouring concrete to the detriment of the nation's harbors, ports and waterways. Sure, the latest WRDA language promises a more streamlined allocation of funding for all the right places, but the devil is always in the details.

Simple Solutions

Actually, I have a better idea. It isn't a new one, by any stretch of the imagination. Wrapped loosely around that crazy Canadian idea that we all ought to work together, I can think of no less expensive, more impactful action for these United States than the elimination of the

About the Author

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Wrapped loosely around that crazy Canadian idea that we all ought to work together, I can think of no less expensive, more impactful action for these United States than the elimination of the shortsea leg of the Harbor Maintenance Tax (HMT). In simple terms, no one in their right mind is going to pay that tax twice to move a cargo domestically by water.

shortsea leg of the Harbor Maintenance Tax (HMT). In simple terms, no one in their right mind is going to pay that tax twice to move a cargo domestically by water. That ad valorum tax based on the value of the cargo and paid by the shipper makes it uneconomical to ship the cargo coastwise – something that would greatly reduce the congestion that crowds our highways. It always has – much to the delight of long haul truckers and the railroads that actively fight to keep it in place – and it always will. Unless it is repealed.

But, the long term benefits of a vibrant shortsea shipping program go far beyond a revived 'niche' Jones Act shipping trade (where smaller boxships collect cargo from deep draft harbors and shuttle it to shallow draft ports), or the robust shipbuilding boom that would naturally follow, to satisfy that need. Circling back to infrastructure, the effort is all about reducing the wear and tear on our roadways and bridges. That's because the less we need to spend on repairing the roads, the more we'll have to upgrade our ports. It is simple math. And the beauty is that it doesn't cost the taxpayer a penny to repeal the shortsea HMT, because we are getting next to nothing in terms of financial reward from it in the first place.

Under my Utopian intermodal supply chain, truckers and shortsea shipping would peacefully coexist in a mutually beneficial world where niche-class Jones Act boxships take pressure off the long haul routes, produce short haul trucking jobs aplenty at the cargo's ultimate destination, the truckers can go home every night, and the nation's highway grid requires far less in way of maintenance dollars. On the rail side, we already see ports like Charleston, SC recognizing the value of inland rail ports to do the very same thing.

A Little Advice for Mr. Trump

The Canadians have it right. Our supply chain will never be any better than the least efficient mode in the equation. And here in the States, that paints (at the moment) a pretty grim picture. Whether you are looking at trains moving at an average speed of nine MPH through the rail yards of Chicago, huge barge tows delayed by failing 50-year old locks, or an idling trailer truck stuck in the Fort McHenry Tunnel, you don't have to look very far to confirm that reality.

The new President can achieve his lofty infrastructure goals, mostly without spending another penny above and beyond what is already being allocated. But not unless the shortsea HMT is repealed and simultaneously all transport modes – rail, pipeline, barges and ships and trucking, too – come to realize that we're all in this together. Until then (and in the immortal words of then-Presidential candidate Ross Perot), that "giant sucking noise that you hear" is the sound of 40-foot containers (that should be going though U.S. ports) sliding smoothly through Canadian ports in the Pacific Northwest.

Further south, the same calculus – with a slightly different twist – is also in play. In the port of Freeport, Bahamas, a natural deep draft port and box terminal is already gearing up to be the region's post-Panamax port of choice. That's not because they'll be any more efficient or better at what they do than any of our U.S. East Coast ports. They probably won't be. But, what they will have is a foreign port – minutes from our East and Gulf Coast shores, and no shortsea HMT tax to hinder a robust coastwise niche trade. They are already efficiently scanning each and every container that crosses the docks (in less than two minutes each). I am a proud and vociferous Jones Act supporter, but it is fair to point out that a Bahamas shortsea shipment also won't have to use more expensive Jones Act tonnage to do it. Let's not make it any easier for them.

Instead, let's keep it simple: repeal the shortsea HMT. Then, let's recalibrate the intermodal abacus. I'll bet you 'dollars to donuts' that it looks a whole lot better. It is worth a try. This is a good time to remember yet another presidential candidate's recent words, when he simply asked, "What do you have to lose?"

– MarPro.

Salvage and Marine Firefighting Verification

About the Author

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The U.S. Coast Guard regulations regarding salvage and marine firefighting (SMFF) as elements of vessel response plans (VRPs) for tank vessels have been in place since 31 December 2008. On 30 September 2013, these regulations were expanded to include non-tank vessels with a capacity of 2,500 barrels or greater of fuel oil.

The VRP requirement was established by the Oil Pollution Act of 1990 (OPA 90). The statute provides, in pertinent part, that the VRP shall:

(1) be consistent with the National Contingency Plan and the Area Contingency Plans;

(2) identify the qualified individual having full authority to implement the plan;

(3) identify and ensure by contract or other approved means the availability of private personnel and equipment necessary to respond to the maximum extent practicable a worse case discharge (including a discharge resulting from fire or explosion);

(4) describe the training, equipment testing, periodic unannounced drills, and response actions of persons on the vessel;

(5) be updated periodically; and

(6) be resubmitted for approval of each significant change.

The salvage and marine firefighting requirement was addressed in a vague provision in the original VRP interim rule issued in 1993 requiring only that the oil spill response plan identify a salvage company with expertise and equipment and a company with vessel firefighting capability that agree to be so listed as available resources. The interim rulemaking assumed a then current shortage of sufficient SMFF assets nationwide and included a provision encouraging the response industry to enhance such resources to meet the anticipated need. That vague provision was replaced by the 2008 rulemaking.

A major point to be noted in this rulemaking is that it establishes planning criteria, not performance standards. The rule specifically states that it is based on assumptions that may not exist during an actual incident, while requiring that a primary response provider is obligated to respond when called. Compliance with the regulations is based upon whether a covered response plan ensures that adequate resources are available, not on whether the actual performance of those response resources after an incident meets specified arrival times or other planning criteria. Failure to meet specified criteria during an actual salvage or marine firefighting response does not necessarily mean that the planning requirements of the statute or regulations were not met. The Coast Guard will exercise its enforcement discretion in light of all facts and circumstances. This policy is not new. It was first articulated (in fewer words) in the 1993 interim rule.

The specific salvage and marine firefighting regulations apply only to those tank vessels that carry Group I-IV oils and are required by 33 CFR § 155.1015 to have a VRP and to non-tank vessels carrying Group I-IV oil with a capacity of 2,500 barrels or greater. Thus, exempted from this planning requirement are:

(1) tank vessels that carry Group V oils;

(2) tank vessels that carry animal fats and vegetable oils as a primary cargo;

(3) tank vessels carrying other non-petroleum oils as a primary cargo; and

(4) non-tank vessels with a capacity of less than 2,500 barrels as a fuel (bunkers).

The salvage and marine firefighting regulation has adopted a methodology for determining the adequacy of identified resources that differs from that utilized in the other portions of the VRP regulations. The usual method relates to what are referred to as oil spill removal organizations (OSROs). If the VRP utilizes an OSRO that has been classified by the Coast Guard as capable of responding to that particular type of oil spill in that Captain of the Port (COTP) zone, then the vessel owner/operator is not required to verify or document the adequacy of the OSRO. If a response resource that is not a classified OSRO is utilized, then the vessel owner/operator has the burden of showing the adequacy of the identified responder.

The salvage and marine firefighting regulation, on the other hand, includes a list of 15 selection criteria that must be utilized by the vessel owner/operator in selecting a salvage resource provider and a list of four selection criteria that must be utilized in selecting a marine firefighting resource provider. These include, but are not limited to, whether the resource provider is currently working in the response service needed; whether it has a documented history of participation in successful salvage and/or marine firefighting; whether it owns or has contracts for the needed equipment; and whether it has personnel with documented training certification and degree experience. The owner or operator must certify that all 15 selection criteria and all relevant factors were considered when the resource provider was chosen. The owner or operator should ensure that, if

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the Coast Guard or an aggrieved third party takes action against it for an inadequate SMFF response, it is in a position to hold the response contractor liable.

The rulemaking adopts a varying incident response timeframe, depending on the particular salvage or marine firefighting service involved. The majority of the services must be capable of responding within 18 or 24 hours, but some response times vary from one (1) hour for remote salvage assessment and consultation to 84 hours for subsurface product removal operations in offshore areas. The timeframe for on-site salvage assessment is six hours in continental US waters, as it is for on-site fire assessment.

A significant term in the statutory and regulatory VRP requirements is that the availability of response resources, including SMFF resources, be 'ensured by contract or other approved means'. Questions have been raised as to whether the availability of salvage and marine fighting companies and their subcontractors meet that requirement, as many of the contracts are effectively letters of intent with broad contingency clauses. In its preamble to the SMFF regulations, the Coast Guard noted that the rulemaking requires a contract, an enforceable written agreement that expressly provides that a resource provider is capable of and committed to meeting the VRP requirements. The Coast Guard recognizes that the response resources created by the VRP requirements may be put to other uses when not utilized in a SMFF response. However, the owner of those resources must be under a contractual arrangement to ensure these services and that equipment are available to respond in the required timeframes.

The U.S. Coast Guard is in the process of developing a verification program to test the SMFF response system. The verification concept was first floated in March 2016. In November, the Coast Guard announced that the program would start in December. While some details remain in flux, it appears that the Coast Guard will utilize a variant of its current Government Initiated Unannounced Exercise (GIUE) program. This would involve notifying an incoming vessel that it is to activate (as a drill) its tank vessel or non-tank vessel response plan for a given scenario that concerns elements of salvage and/or marine firefighting. During this drill, no equipment or personnel need be actually deployed, but the equipment and personnel that would have been utilized if this were a real situation must be identified and their capability to deploy must be fully documented. A full report on the simulated response effort must then be submitted to the Coast Guard for evaluation. A gradual rollout of the verification program seems to have been delayed until January 2017. Plans call for the eventual testing of all four identified SMFF response resource providers in all 41 USCG Captain of the Port (COTP) zones.

Hopefully, this verification program will constitute a robust audit of all essential elements, including capabilities and resources and will find that the salvage and marine firefighting companies are able to fully meet the timeframes provided for in the regulations. If shortcomings are identified, adjustments will be instituted as necessary.

The salvage and marine firefighting regulations are a vital part of the U.S. commitment to minimizing the impact of oil spills into the waters of the United States. There can be no argument to the statement that the best way to protect the environment is to ensure that the pollutant never escapes in the first place. Further, in the event of a casualty that impacts a navigable waterway of the United States, it is a proven fact that time saved in the response equates to dollars saved in damages. With a strong U.S. salvage and marine firefighting presence, the United States will be in a position to properly protect the maritime environment. A program to verify that the salvage and marine firefighting industry can meet its obligations will be a major step in the right direction.

(Photo: Feuerwehr Hamburg)

Firefighting onboard any ship is one of the most serious situations facing onboard personnel and responders. The containership CCNI Arauco caught fire in the aft container hold on September 1. After four intense weeks, Ardent safely returned the vessel to the owners. Ardent discharged the damaged containers out of the vessels cargo hold. These containers were declared as dangerous waste and required special treatment.

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Rudy Teichman

A U.S. marine salvage legend founded T&T in 1957

Rudy Teichman, a legend in the U.S. marine salvage industry, founded T&T in 1957, now one of the world's largest international salvage companies. In a sense, Rudy was larger than life and one who was often referred to as a "force of nature." He was an entrepreneur, inventor, salvor, deep sea diver, airplane pilot, licensed mariner, restaurateur, musician, philanthropist, mechanic, machinist, politician, and husband, father and grandfather. And, in spite all of his accomplishments, he was more importantly a man of character, hard work and integrity, in a time when your word was your contract. As a leader, he was loved by his crew and, even five years after his passing, there is not a day that goes by at T&T that a story is not told of Rudy's many adventures (and misadventures). Rudy was drafted in the Army during the Korean War, ultimately serving in Germany. After returning to his home on Galveston Island and working at a ship yard for a few years, he established his own small shipyard and quickly discovered his calling and passion for marine salvage.

Photos: T&T Salvage

Despite difficult setbacks, including Hurricane Carla that destroyed his shipyard, Rudy always came back with more determination and a keen eye toward seizing new opportunities. For example, in the wake of Exxon Valdez, he founded his own oil spill removal company, and as the U.S. developed salvage regulations, he positioned his company to be one of the first salvage companies that could meet these stringent rules. To accomplish this, he invested tens of millions of dollars in pre-positioned salvage, marine firefighting and oil spill response equipment and recruited highly trained personnel. Never afraid to make a decision during time-critical operations, as Deepwater Horizon sank and the Macondo well continued to release oil, Rudy contracted the world's largest aircraft to carry needed oil spill recovery equipment from Europe.

Rudy was known for wearing his blue work coveralls just about every day, often even at "coat and tie" meetings. Everyone knew his priority was successfully getting the project completed as soon as possible and that – in his coveralls – he was always ready to immediately get back to the real work at hand. While he often advised Admirals and Senators, he was most at home on the deck of the derrick barge "BIG T" that he built working side-by-side with his crew or in his fabrication shop designing a new piece of equipment well before daybreak.

As a testament to his vision, leadership and determination, his "Teichman Group" of companies continues to expand around the world with offices in Europe – including Germany where he served in the Army – and in Asia and South America. The company's list of marine services also continues to expand. Today, T&T conducts large-scale commercial salvage and wreck removal projects, heavy lift, towing, offshore supply, diving, hydrographic survey and manage one of the largest oil spill cooperatives in the US. While the company he founded continues to expand worldwide, T&T remains a family-owned business that retains Rudy's core values of honesty, integrity and hard work as its foundation.

T&T Subsea: A Veteran's Day Mission

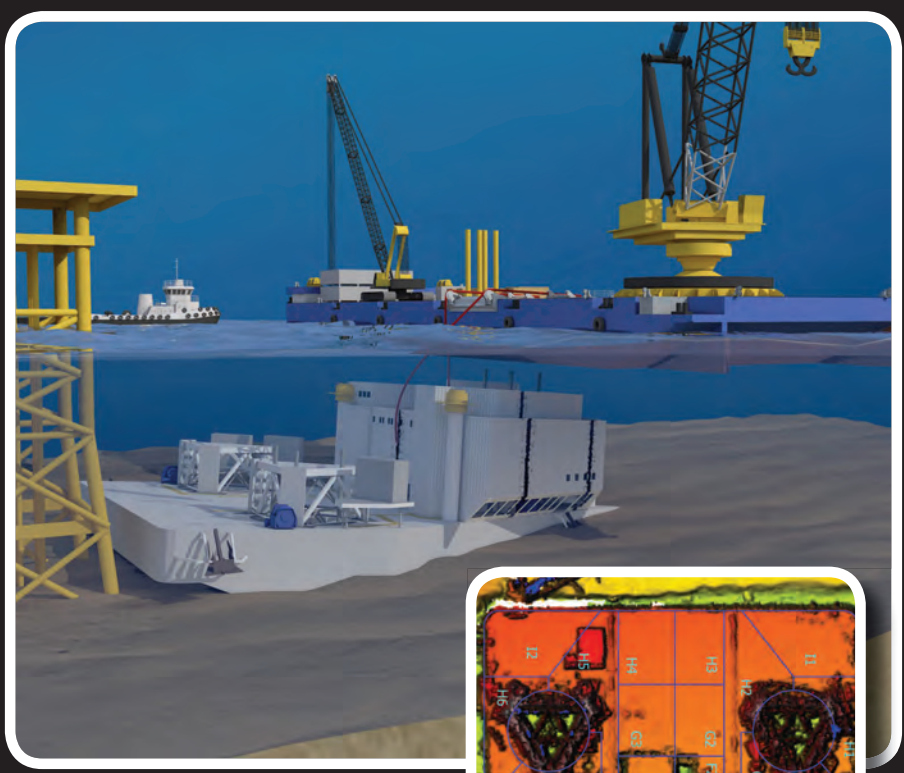
On Veteran's Day 2016, T&T Subsea divers worked to help save the Battleship Texas, the over 100-year-old U.S. naval vessel and historic landmark ship of Texas launched in 1912 that fought in both World Wars. T&T Subsea was selected by the State of Texas to salvage, repair and maintain the historic battleship and, on Veteran's Day, T&T Subsea divers quickly and effectively patched the ship's fragile hull to allow dewatering operations and then completed permanent repairs. Based on T&T Subsea's performance, the Texas Parks and Wildlife Commission awarded T&T a commendation that stated the company "provided a rapid and skilled response involving specialized equipment and staff that were invaluable in preserving the historic fabric of the ship."

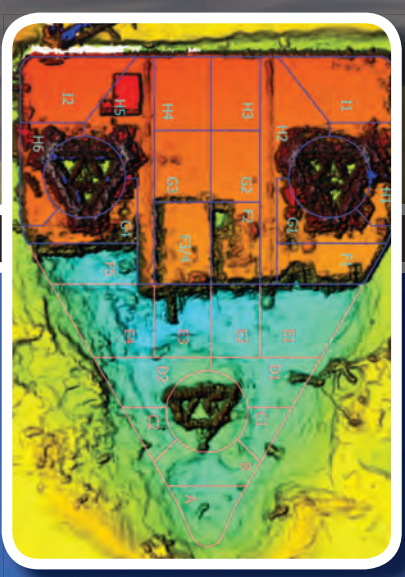
Photos: Rudy Teichman Army Photo; Inset: Rudy Teichman on the deck of his crane barge.

About the Author

Jim Elliott is Vice President, T&T Marine Salvage, Inc.

Ardent: Cutting Up Troll Solution





Images, starting top left and proceeding clockwise:

Ardent completed removing the Troll Solution jack-up in November, 2016. Ardent deployed assets from several countries, including the crane barge Conquest MB-1, and a 1,000-ton hydraulic wreck grab from the Netherlands. Further support vessels were deployed from the U.S. and Mexico.

A computer generated image illustrates how Ardent planned to dismantle and dispose of the Troll Solution next to the active CAAN-A wellhead platform.

A survey print-out shows removed sections of the Troll Solution jack-up as the wreck removal case was ongoing.

Ardent naval architect Roland De Marco walks in front of the bow piece of the Troll Solution after the salvage team cut and lifted it from the seabed.

Ardent reports that its biggest wreck removal of the past year allowed it to demonstrate an innovative new cutting technology designed to make operations more safe and efficient. This specific project centered on a collapsed jack-up which needed to be removed from the Mexican seabed, a salvage in close proximity to a well head platform. Weighing approximately 7,000 tons, the jack-up Troll Solution, contracted to operate in Pemex's Abkatun-Pol-Chuc shallow water oil field, experienced a debilitating accident while carrying out maintenance work on the wellhead platform CAAN-A in May 2015.

The offshore rig was positioning itself to carry out maintenance on wells linked to the Caan Alf platform in the southern Bay of Campeche when it listed, killing two workers.

Initial efforts were made to refloat and salvage the jack-up, though the Troll Solution collapsed and sank into the seabed in approximately 30 meters water depth, coming to rest within two meters from the active CAAN-A platform.

Ardent was called in for the job, deploying assets from several countries, including the Conquest MB-1 crane barge, and a 1,000-ton hydraulic wreck grab from the Netherlands, as well as support vessels deployed from the U.S. and Mexico.

Conquest MB-1 has a of 1,400 tons lifting capacity, which notably had been used under Titan (Ardent's premerger company) on the infamous Costa Concordia cruise ship wreck removal off of Italy.

Cool Cutting

The operation to remove the jack-up Troll Solution utilized Ardent's newly designed Guided Guillotine to dismember the jack-up, instead of cutting with more conventional methods.

Ardent naval architect Roland De Marco explains: "Traditional methods require either a push or pull-cut with chains or diamond wire. Pull-cuts require tunnels to be bored into the seabed, whereas push-cuts require a large framework to be built around.

"The main hurdles to overcome were, how to best cut the jack-up into sections without fabricating an elaborate structure, and boring holes underneath the jack-up through the seabed was improbable due to obstructions," said Shelby Harris, Ardent Americas operations director.

"We had to apply ingenuity to use our chain cutting techniques on the deck house in a less than conventional method, and the Ardent Guided Guillotine sectioned the hull."

The Ardent salvage team cut the deck house into six pieces with Ardent Chain Pullers, and the vessel's hull into 31 pieces with the Ardent Guided Guillotine and subsequently lifted these from the seabed with the Conquest MB-1 crane barge. The project to remove that jack-up was completed in November, 2016.

BWMS

What does it mean for onboard operations?

About the Author

Matthew Bonvento is the Senior Manager for Safety, Security, Regulatory, and Quality Compliance for Vanuatu Maritime Services Ltd. Additionally he is a licensing instructor in Long Island. He holds a Masters in International Transportation Management, and an Unlimited Chief Officers License as well as a 1600-ton Master license.

As of September 8, 2016 the Ballast Water Convention officially was ratified by the International Maritime Organization (IMO), crossing the necessary threshold of 35% of world tonnage signed on courtesy of the ratification by Finland. Subsequently, at press time, the United States Coast Guard was moving rapidly to confirm type approval of BWMS systems, to date confirming the approval of three systems from Alfa Laval, Oceansaver and Optimarin.

In this edition we delve into the Ballast Water Convention, United States Coast Guard Regulations, and what this all means as far as onboard operations.

First, let us be clear: The ballast water that the convention concerns itself with is the water that is taken onboard a vessel in one port and transits with the vessel to another port, where it is subsequently discharged. In the past this practice has transported a diversity of organisms into environments where they have no natural predator, enabling the organisms to flourish and create potential destruction to the local environment.

For many years anti-fouling paint was used in conjunction with ballast water management plans to deter organisms from attaching to a vessel's hull or the inside of a ballast tank for transport. The problem, however, was that many of these paints turned out to be just as harmful to the environment as the organisms themselves being transported on the ship's hull, while ballast water management plans did not completely prevent the spread of invasive species.

In regards to ballast water technology, there are a host of system types, most which fall under two general umbrellas: physical solid-liquid separation and disinfection. From these broad generalizations, the differing types of ballast water systems branch off dramatically in type and methodology used to kill organisms.

There are even specific guidelines for vessels that will discharge its ballast water to an off-vessel treatment facility. Procedures for the approval of Ballast water Management systems falls under MEPC.174 (58) and they are detailed regarding the type of results should be shown from a system seeking approval. What is not shown is which testing methods are to be used, a serious problem facing the industry.

Overcoming Implementation Problems

When dealing with an international convention such as this, the Flag State must develop the rules specific for that registry for the ship owners to follow. However Port State Control interprets the rules as well and may have a different interpretation than the Flag or the Recognized Organization. This can lead to years of confusion until all involved parties become more familiar with the application of the convention.

The IMO has specified testing standards under MEPC.173(58). These guidelines specify the maximum amount of viable organisms allowed in treated ballast water; as well as the format for recording the sampling (but not the actual operation itself). There are even instructions on how to obtain samples, and how sampling points are to be installed on board a vessel. However, the IMO states "At present time, there are no specific sampling or analysis protocols that can be recommended for Administrations to use."

The circular goes on to state "To aid this process, Administrations are requested to supply information on any scientifically validated sampling and analysis techniques to the organization, as soon as possible."

So that leaves the Administration, Recognized Organization, and the Port State Control Officer with the burden of figuring out how to actually sample the ballast water in an agreed method, with results coming in a range from a few hours to a few weeks, at which point a vessel is usually long gone.

However, without testing how can PSC verify that the Ballast Treatment System is actually working and in compliance?

Normally the answer to that question is the use of a log book. However, unlike the Garbage Record Book or Oil Record Book as specified under MARPOL, the Ballast Water Convention does not have a specific form for a log book, thus leaving Flag and Owner alike in the dark as to what the independent and sometimes conflicting MOU regimes, with their various PSC's, are going to expect in the way of record keeping. Most of the reviewed Ballast Treatment Systems log information such as flow rate, length of time run, and other such information. There is no guarantee though that this is what will actually be required to be kept on board. And if the system data is to suffice, how long must the system maintain the record?

This all must be determined before an amendment to STCW can be made in include the training of key shipboard personnel in this environmentally critical system. Manufacturers are developing instructional data for individual units. Most manufacturers only intend to visit the vessel upon installation to train the crew on board, leaving it to those crews to train their reliefs.

Although this is industry standard, we have seen with other critical systems – such as the Oily Water Separator – that this tradition of training via relief may not be the best practice for critical systems such as a Ballast Water Treatment System.

The Ballast Water Convention, although seriously needed, is a prime example of a Convention being pushed on industry without a well thought out plan on implementation. One could argue that without the plan, the technology never would have developed. However, a thorough analysis by the IMO would have shown that the technology may not be ready for the intended use. The industry as a whole needs to be more involved in the Codes and Conventions proposed by the IMO; involvement not to inhibit progress, but to make it manageable and allow the industry proper time to develop the technology and practices needed.

BWMS: USCG Type Approval Update

To date, three systems have been granted type approval by the U.S. Coast Guard, a key accomplishment sought by more than two dozen manufacturers as the world fleet moves toward September 8, 2017, the global compliance deadline as determined by the Internatinoal Maritime Organization (IMO).

For updates visit www.marinelink.com

Alfa Laval

On December 23 Alfa Laval received U.S. Coast Guard (USCG) type approval for the third generation of its ballast water treatment system, PureBallast. The USCG based its type approval of PureBallast on CMFDA/FDA testing conducted at DHI in Denmark. This testing was performed using the same hardware, power consumption and flow as the IMO-certified version of the PureBallast 3 family. Outside the United States, where PureBallast has been type approved using the MPN method, the USCG-certified system will operate in IMO mode and be able to treat water with UV transmittance as low as 42%.

PureBallast has a flexible construction based on four different UV reactor sizes. This allows for optimized sizing and competitive solutions over a wide flow range. The current type approval covers flows of 150-3000 cu. m./hr. based on the 300 and 1000 cu. m./hr. reactor sizes, while type approval for systems based on 170 and 600 cu. m./hr. reactors is expected soon.

OceanSaver

OceanSaver received the final type approval certificate from U.S. Coast Guard as the first ballast water treatment system (BWTS) supplier using electrochlorination, meaning a USCG type approved system is now available for medium and large vessels. OceanSaver is partly owned by BW Group. “The OceanSaver system is a perfect match for medium to large vessels with a system capacity of 1,500 to 7,000 cu. m./hr., meaning that owners now have USCG certified systems available for small, medium and large vessels,” said said Alan Linderoth, VP, OceanSaver. The USCG testing has been carried out with OceanSaver’s existing MKII system (IMO type approved in 2011) without significant modifications. Overall the MKII system has been through more than 60 tests over the past years as part of development of the system, class certification, IMO- and USCG approval processes.

Optimarin

Optimarin was first system supplier to gain full USCG type approval. The Optimarin Ballast System (OBS) uses a combination of filtration and 35kW UV lamps to treat ballast water without the need for chemicals. DNV GL tested the system to USCG standards for fresh, brackish and marine water at the NIVA test facility in Norway.

Optimarin’s technology is certified by a comprehensive range of classification organizations, including DNV GL, Lloyd’s, Bureau Veritas, MLIT Japan, and American Bureau of Shipping.

Last Port of Call for the U.S. Merchant Marine?

About the Author

Charlie Papavizas is a partner in the international law firm of Winston & Strawn LLP and the chair of its maritime practice group.

The privately owned U.S.-flag foreign trading fleet, which is an essential component of U.S. sealift capability, stands on the edge of a precipice. The fleet – roughly stable in terms of cargo carrying capacity from 2000 to 2012 – has declined from 106 vessels in 2012 to 78 vessels at October 30, 2016 primarily because of a substantial decline in available U.S. Government-reserved cargo. The size of the fleet has reached a point where the viability of the U.S.-flag industry involved in foreign trade – including its trained mariners, maritime academies and schools, and experienced back office personnel – is in danger of disappearing. As the cargo decline is not likely to be reversed any time soon, the fleet will likely only survive into the future if there is a substantial, renewed national commitment to sustain it.

(Photo: © Lefteris Papaulakis / Adobe Stock)

This alarm bell has been rung before. In fact, it has been wrung over and over ever since the foreign trading fleet began to decline at about the time of the Civil War. For example, the U.S. Naval Institute Proceedings published an article in 1882 by Lt. Cmdr. F.E. Chadwick, USN, entitled "Our Merchant Marine: The Causes of Its Decline, And the Means to Be Taken For Its Revival." Scientific American devoted its entire July 15, 1911 issue to the question "Shall We Have a Merchant Marine?" (answered by all the authors including the U.S. Secretary of Commerce and Labor in the affirmative). Prof. Andrew E. Gibson, of the Naval War College and the former Assistant Secretary of Commerce for Maritime Affairs in the Nixon Administration, wrung the alarm bell on numerous occasions including "So Long, American Flag – It Was So Nice to Fly You" in the Naval War College Review in 1993. These are but a small sample of the pleas for help.

Dire State of the Fleet

What is different today is that the foreign trading U.S.-flag fleet has shrunk to the point that any further substantial decline is likely to make the situation irretrievable. As Vice Admiral William A. Brown, Deputy Commander of the U.S. Transportation Command, testified before Congress on July 30, 2014: "we are concerned that we may be coming closer to a tipping point where our ability to man some of the surge fleet would be at risk ...." At that point in time, the U.S.-flag foreign trading fleet was 83 vessels – it declined another five vessels by the end of October 2016. When Prof. Gibson wrote that we were saying goodbye to the U.S.-flag flying on vessels in foreign trade there were 176 such vessels.

Capt. Paul N. Jaenichen, Sr., USN (retired), the outgoing U.S. Maritime Administrator, has testified before Congress on several occasions to the effect that the fleet decline is endangering the U.S. ability to meet its sealift requirements. For example, he stated in a Congressional hearing on November 17, 2015 that we are already "on the very hairy edge" of lacking the manpower to man reserve defense sealift vessels (which only have partial crews until activation).

What is particularly alarming is that it is not at all clear that the manpower pool can be readily redirected from existing commercial employment to manning reserve vessels. There are a number of historical examples when the pool size appeared more than adequate but it was still difficult to draw on the pool in an emergency sufficient to meet all vessel activation needs. For example, personnel shortages caused delays in about 40 percent of scheduled sailings during the Korean War when the manpower pool reserve was substantial. In 1990, when the privately owned fleet was much larger than it is today, putting half the reserve fleet in operation exhausted the supply of mariners. The existing pool is also likely to be negatively impacted by the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1987 (STCW) which imposes new, stringent marine credentialing requirements effective January 1, 2017.

Private Merchant Marine

The situation may be more dire than at any other time since the end of World War II, but the reasons for having a privately owned U.S.-flag merchant marine are long-established and the alternatives no better than they ever have been.

The Nation's long-standing objective is to have a privately owned U.S.-flag merchant marine both for economic and national security reasons. This objective is reflected in every major piece of maritime legislation since the Merchant Marine Act, 1920 and is enshrined in more than one place in the U.S. Code. It is also reflected in the National Security Directive on Sealift (No. 28 issued October 5, 1989).

The reasons for this objective have remained constant. As set forth by Admiral R. E. Coontz, Chief of Naval Operations, before the U.S. Senate Committee on Commerce on February 7, 1920 – "In my opinion the Navy is vitally interested in the establishment of an American merchant marine for the reasons, first, that it is an indispensable arm of service in time of war; second, it enables the United States to take her proper place in diplomatic and trade relations with the world; and, third, it is the nursery of seamen." Similar words have been spoken by every recent U.S. Transportation Command Commander.

Although the objective is clear and the reasons for the objective border on the axiomatic, the U.S. merchant marine has struggled in times of relative peace. The U.S.-flag fleet was carrying about 60 percent of U.S. foreign commerce in 1947 which fell to about 40 percent by 1951 as the world economy recovered and the U.S. Government sold much of its World War II fleet. By 1980, the U.S.-flag fleet was carrying only about five percent of U.S. foreign commerce – about the same amount as it carried before World War I. Today it is less than two percent.

The underlying reason for this reversion to type is that the U.S.-flag fleet cannot compete on a cost basis with open registry or "flag of convenience" vessels. Open registries, such as Panama, Liberia and the Marshall Islands, are open to anyone – not just citizens of those countries – and offer vessel owners a unique form of economic freedom among service providers. Owners need not comply with any U.S. tax, labor or similar economic laws yet can freely sell ocean services to and from the United States. U.S.-flag vessel owners, like owners of other national registries, have to comply with all of those laws because of the very essence of a national registry – which is that the vessel owner must be domiciled in the flag state in a meaningful way. So, by the very nature of these national connections, U.S. costs are higher than open registry costs no matter the level of U.S. owner efficiency.

This cost difference between open registries and national registries can be addressed and reduced, but it cannot be eliminated without eliminating the essence of a national registry. No amount of efficiency is going to reduce the wages of qualified U.S. citizen mariners to a world scale level in the present day economy. U.S. Government support is therefore a necessity for the maintenance of a privately owned U.S.-flag commercial fleet. The only alternatives are reliance on the foreign market or a U.S. Government-owned fleet.

Foreign Market Alternative

Although the context has changed over time, the question about whether to have an intrinsic American commercial capability or to rely on the vessels having no loyalty to the United States has not changed. The question was posed by John Jay in 1785 when he was Secretary of Foreign Affairs in the Confederation federal government: "Whether it would be more wise in the United States to withdraw their Attention from the Sea, and Permit Foreigners to fetch and Carry for them; or to persevere in concerting and pursuing such Measures as may conduce to render them a maritime Power?" The United States learned hard lessons in the late 19th and early 20th centuries about what it meant for the projection of sea power to rely on foreigners to "fetch and carry" for the U.S. Government. Admiral Dewey almost missed his appointment with history because of a late foreign supply vessel, the United States barely scrounged together enough cargo vessels to invade Cuba in the Spanish American War, and Teddy Roosevelt's Great White Fleet depended almost to the point of national embarrassment on foreign colliers to circumnavigate the globe.

Then, in the lead up to U.S. involvement in World War I, the U.S. economy suffered greatly because of a lack of available tonnage to carry U.S. products. This occurred because the Allies chartered every vessel they could, the Germans sank as many Allied vessels as they could and war risk insurance rates skyrocketed even for neutral vessels. Half measures (such as permitting foreign-built vessels to come under the U.S. flag during a time when only U.S.-built vessels could be registered in the U.S.) proved insufficient. This led eventually to the Shipping Act, 1916 and a crash U.S. Government program to build vessels to support the economy and for the war effort.

This may all seem like ancient history, and in many ways it is, but there are plenty of modern examples of situations where an extension of national power was thwarted or delayed because of reliance on vessels without loyalty to the government charterer. There are many instances, for example, that occurred in the Vietnam War during the height of its international unpopularity where foreign ships balked at carrying U.S. military cargo. The sealift operations during Operations Desert Shield/Desert Storm succeeded in large measure because of the broad international coalition supporting the effort and even then certain allies were slow to commit vessels.

Future scenarios where the United States might have to go it alone, for example in its support of Israel, can easily be conjured where open registry vessels may refuse to participate regardless of the charter rates. In support of Operations Desert Shield/Desert Storm, the U.S. Government was forced to charter "virtually every available vessel in the world capable of moving heavy equipment." The United States was fortunate that the world was united in support of those operations and that the vessels were available for charter.

That might not be the case the next time. For example, more of the world's commercial fleet has come under the control of Chinese interests since the early 1990s. The fleet under Chinese flag (including Hong Kong) comprised approximately nine percent of the world's fleet in terms of deadweight tonnage (a measure of carrying capacity) as of December 31, 1991 and about 13 percent as of January 1, 2015.

U.S.-owned vessels registered under foreign flag consisted of about three percent of the world's fleet by the same measure as of January 1, 2015. These vessels offer some comfort since many, if not most, of these vessels are registered in countries, such as the Marshall Islands, which have agreed not to interfere with the requisitioning of such vessels by the U.S. Government in the event of a national emergency – referred to as the "Effective U.S.-Controlled Shipping Fleet." Although potentially useful in the event of a worldwide embargo or other economic emergency, these vessels are all manned by non-U.S. citizens and therefore their reliability is suspect even with U.S. ownership and, in any event, do not provide employment for U.S. citizen mariners needed to man Government-owned vessels.

This is Part 1 of a two part series.
Part 2 will appear in the February 2017 edition.

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Kunkel

President, Alternative Marine Technologies

If you have a question on ship construction and marine propulsion, Bob Kunkel, President of Alternative Marine Technologies, likely has the answer. Kunkel is a graduate of the Massachusetts Maritime Academy, first sailing as a licensed engineer and eventually continued his career in ship construction at NASSCO, and yards in South Korea and Mainland China. He is a senior member of the Special Committee on Ship Operation with ABS and an elected member of the National Cargo Bureau. As the head of AMT, he spends much of his time dealing with and improving engine emissions on all manners of tonnage.

The IMO and EPA both have their own version of emission regulations. Which is more aggressive, and when (if ever) will they merge.

In my opinion we need to define "aggressive" when it is applied to the discussion of environmental compliance. Give the ship owner credit when he stands behind "zero tolerance" when it comes to many forms of pollution. Should the determination of who is aggressive be how each Agency developed their set of rules or should we gauge the aggressiveness on how they apply penalties and enforce those regulations to those that let the "zero" slip a little. In either case these emissions regulations were tied to distinct worldwide health benefits. One report we ran across defined the diesel emission reductions by infant deaths within a measured area of the U.S. East Coast major container ports.

Legally enforceable regional emission and fuel quality standards for ships were introduced in August 2012 and January 2014, for ships operating in the waters off North American coasts and the U.S. Virgin Islands. The International Maritime Organization (IMO) designated the areas as the North American and U.S. Caribbean "Emission Control Areas". Very few of us understood at the time that the EPA was the instrumental agency that forced the designation of these control areas after successfully demonstrating that the "global" IMO emission standards established by MARPOL Annex VI were insufficient for American waters. The EPA applied Clean Air Act standards to the Annex Vi international convention and was instrumental in regulating Annex Vi by introducing The Act to Prevent Pollution from Ships (APPS) as a U.S. law last amended in 2008. From that perspective the EPA looked to have achieved an unapproachable environmental standard above and beyond the IMO.

As Annex VI further developed and IMO implemented the "tiered" approach to diesel engine and ship emissions, EPA, influenced by a "clear directive from Congress" exercised an economic hardship relief provision for vessels operating diesel engines on the Great Lakes and U.S. flag steamships that demonstrated serious economic hardship when shouldering the burden of compliance. IMO had no such hardship provision when addressing the age or propulsion of foreign tonnage. Score one on the aggressive score card for IMO.

The comparison is a good example of what is now recognized as disruptive sustainability. Economics will always play a part in the application of any bureaucratic regulation. Environmental compliance disrupts most normal business models and because of that a merging of the two regulatory bodies is highly unlikely.

Compliance with emissions regulations is one thing; reporting and proving compliance another. OEM's have acquired monitoring technologies, and there are myriad choices out there touting consumption reporting, geofencing and other recordable metrics. When will this sort of thing become mandatory?

A quick stroll around the Workboat show or the Connecticut Maritime Association conference will show that most if not all of the major engine manufacturers pitch a sophisticated engine monitoring system monitoring fuel efficiency, consumption or operating parameters. The actual compliance of the engine is based upon its ability to meet the IMO or EPA standards on the test bed. Daily

compliance within a specific voyage or operating area is dependent on fuel and for now fuel alone. The EPA and USCG Penalty Policy was developed primarily to address violations of the fuel sulfur standard contained in Regulation 14.4 of Annex VI as it applies to the U.S. portion of the ECAs, but a ship burning non-compliant fuel may also be in violation of other requirements of MARPOL Annex VI. There are many examples, as ships are required to maintain a written procedure showing how the fuel oil change-over is to be done (Regulation 14.6,), and maintain a log recording change-over details. The vessel is required to record certain ullages or measurements in fuel tanks prior to entering an ECA or again after exiting. Any ship that does not use compliant fuel in an ECA may have also failed to establish and/or follow a change-over procedure, and/or make and record measurements required by Regulation 14.6 all of which carry a separate penalty. Regulation 18.6 requires ships to receive and maintain bunker delivery notes for a period of three years after the fuel oil has been delivered onboard. Regulation 18.8.1 requires ships to maintain a representative sample of the fuel oil, collected by drip method at the bunker line when delivered to the ship for a period of twelve months from the time of delivery. Each failure, on each day it occurs, is a separate violation. The EPA may calculate penalties for violations of MARPOL Annex VI, APPS, and regulations other than those covered by this Penalty Policy on a case-by-case basis, may amend their Penalty Policy, and/or may create a separate penalty policy at any time. Any single violation can reach levels of $25,000 or more depending on the incident. To answer where it will happen first? In the ECA's and in many cases it already has. What will be come more significant and also require new monitoring methods is when the global sulfur content is reduced in 2020.

Bunker Quality has become a huge issue, especially for operators crossing in and out of ECA's. Are port state control groups now sampling for sulfur content compliance? Have there been penalties issued? How can operators protect themselves?

The ISO 8217:2012 standard for marine distillate and marine residual fuels includes a set of key tests and that ISO standard is reviewed and updated on a yearly basis. Most diligent owners use a fuel quality-screening program within their fleet that provide tests needed to help identify potential fuel issues before serious damage is caused to a ship's engine or a question of emission compliance violation occurs. Many demand that standard is noted in their charter parties and have ship specific procedures that require a positive analysis report prior to burning the fuel supplied at a bunker port. Few if any comingling of fuel occurs in this day and age as each fuel supply is maintained in separate tanks spaces. In our fleet management we have seen worldwide Port State inspectors and major oil vetting inspectors request to see bunker invoices, fuel samples and change over procedures. There are two sources of protection a) follow the Annex VI regulations and b) if at any time there is a question that a certain fuel type is not available on board or is insufficient in quantity to meet ECA requirements immediately contact the governing regulatory body and request a waiver. In most cases we have seen reasonable responses and no application of penalties.

LNG, billed as the 'white knight' fuel, has its advantages, but also its shortcomings. Clean, but containing less BTU's per volumetric measure, the differences in cost are hard to calculate. What's the real bottom line?

LNG is by no means a temporary "stop gap" to meet current emission regulations or for that matter future requirements. The commitment to develop and employ natural gas as a propulsion fuel is an enormous undertaking that not only takes into account ship design and operation but also shore side infrastructure development. It is a serious commitment and a huge cryogenic education and training evolution for everyone involved. LNG is a large investment that comes with the decision to embrace natural gas as a permanent fuel change. We have not seen the reduction in BTU being a show stopper nor has it resulted in any drastic change in power.

Imagine your "white knight" going into battle without his horse and that is where LNG stands at the moment. The bunkering infrastructure needs to be built around the trade routes and historical bunker ports currently in use by the owners that are looking to make the change. We are currently handling construction supervision for the Tote LNG bunker barge at Conrad Shipyard in Orange, Texas which will receive LNG from a newly constructed liquefaction plant under construction with Clean Ma-

> "Tier IV (EPA) is no longer knocking on the door. It is here, it has arrived and it is already **sitting at your dinner table waiting for a cocktail.**"

"The engine manufacturers spent a small fortune developing large two stroke and four stroke engines capable of burning heavy fuels and fuel costs alone spurred the recent move to "ECO" designs. **Its hard to believe that shipping is ready to turn its back on that work and simply bite the bullet and pay for high priced distillates.**"

rine Energy built to supply the recently delivered Tote Marlin Class container ships entering the Puerto Rico domestic trade. Imagine the environmental and economic commitment from Tote to put hose three pieces of the puzzle together. It's a long term commitment to cleaner energy and in my opinion others will follow.

Tier IV (EPA): when does it arrive, and when is it mandatory for everyone?

Tier IV (EPA) is no longer knocking on the door. It is here, it has arrived and it is already sitting at your dinner table waiting for a cocktail. Tier IV has not been invited to dinner while you operate your existing fleet is all about new construction. The revised Annex VI has introduced the prospect of retrospective NOx certification, regulation 13.7, in the case of diesel engines of more than 5,000 kW power output and a per cylinder displacement of 90 liters and above installed on ships constructed between 1 January 1990 and 31 December 1999. For these engines if a Party, not necessarily the ship's flag State, has certified an "Approved Method" which results in an emission value no higher than the relevant Tier I level and has advised that certification to IMO then that Approved Method must be applied no later than the first renewal survey which occurs more than 12 months after IMO was advised. However, if the ship owner can demonstrate that the Approved Method is not commercially available at that time then it is to be installed no later than the next annual survey after when it becomes available. In new construction the regulation is clear – January 2016 was the compliance date. The retroactive emission compliance date is still grey and you can imagine the debate at the dinner table when we revert back to the previous discussion of "economic hardship".

Tier "beaters" – the so-called practice of using multiple smaller engines to produce the desired power but staying under the HP of a higher tier engine – is gaining wide acceptance. You've called it "simply good design" and you've said it will continue. That said; does it further the cause of lower emissions? If so, how?

Most of this argument is based upon the company's environmental ethics. It is no secret that good design can circumvent a regulation or provide a path around it. We have seen IMO Tier 3 blocks go into contract after the January 1, 2016 date and we have seen engine manufacturers struggle with meeting Tier IV compliance that has pushed them aside in a competitive bid for new builds. The regulations do not address the collective emissions from each engine on board a vessel only the emission of a specific engine installed. During previous discussions we spoke about the regulatory bodies at some time looking to measure emissions at the funnel or stack. When that comes into play the multiple engine work around may become and issue.

What is the future of traditional bunker fuel, heavy fuel oil? Does it have a future in a Tier IV world?

Most `of the major oil companies are working on a low sulfur heavy fuel for the market. The IMO's Marine Environment Protection Committee has now agreed to reduce the global sulfur emissions limit to 0.5 percent in 2020. The agreement not to delay the new limit until 2025 was reached at an MEPC session in October of this year. Distillates can meet the demand of the ECAs but it will be difficult to continue that into a low sulfur environment that includes a full ocean passage now that IMO has ratified the regulation. It is hard for us to believe that heavy fuels will disappear for two reasons; the refineries need to have an outlet to sell residuals to remain profitable and the rise in cost for low sulfur distillates will have a major affect in shipping. The engine manufacturers spent a small fortune developing large two stroke and four stroke engines capable of burning heavy fuels and fuel costs alone spurred the recent move to "ECO" designs. Its hard to believe that shipping is ready to turn its back on that work and simply bite the bullet and pay for high priced distillates.

ECA incidents: Starting in California waters and now expanding, one of the most prominent bi-products of this practice of switching to low sulfur distillates once inside the ECA is the unintended consequence of 'loss of propulsion' incidents. What's the primary cause and what can be done about it?

The problem is due to the temperature differential between heated heavy oil and a marine distillate that in turn creates a thermal shock in the fuel system. That shock experienced when changing to low-sulfur distillates having reduced lubricity and as a result can cause sticking/scuffing of the fuel valves, fuel suction valves and fuel pump plungers, which can lead to a failure of the main engine. In most cases a little practice makes perfect. Temperatures are adjusted and the changeover completed in safe zones that would not affect maneuverability of the vessel.

> We are watching technology development outside of the historical maritime platform. After all **Tesla** didn't not grow out of Detriot, **Uber** did not develop from New York City cab drivers and **Netflix** wasn't introduced by NBC or CBS ... **We may be painting Google, Facebook or Apple logos on our stacks in the near future and those companies will embrace environmental compliance.**

The introduction of Low Sulfur Diesel to the marine propulsion world has both good and bad consequences. How does the marine industry cope and what's the long term downside for engine OEM's, maintenance, etc?

The fuel change will result in the major oil companies developing lube oils and additives that correct the oil TBN and the lubrication for each fuel utilized. It is too early to trend the long term affect. That said, the manufacturers will find a way to correct it. There are still plenty of U.S built muscle cars running around that changed for leaded to unleaded without seizing an engine. The chemists in the back room labs will solve the problem.

SCR After Treatment: it's been proven to work, produce tier IV results, and it fits into a tight space. Is its cost the main reason more operators and OEM's haven't adopted the technology?

In my opinion the first reaction was to build around these regulations. On the foreign side you saw a large build out of contracts placed before the IMO Tier III regulations took effect as the estimated cost to move to Tier III was an added three to four million dollars in construction costs. The second reason is the lack of historical data to prove all of these systems work. Its new technology for most of us and very few marine operators has jumped at the chance to embrace it. You had the issue of providing Urea, the decision to uses caustic soda or build open or closed loop. SCR and Low Sulfur fuels will prove to be the simplest answer for many operators as the regulations progress.

Methanol, or "liquid gas" is another option being discussed. Why hasn't it taken off faster and with more stakeholders?

We have been aboard several new builds at our Hyundai South Korea office that are working towards the use of methanol as a fuel. The vessels are tankers trading methanol and the theory is similar to the early LNG ships burning boil off gas as a way to work around the missing bunkering infrastructure. Methanol is an easier fuel to carry and store as a liquid and it removes the costs and application of cryogenics to transport and store LNG. As such the fuel makes sense and the theory is that existing fuel tanks can be utilized to carry it. That said the applications we are familiar with required the fuel tank to be positioned above deck. It is too early to predict "widespread" use but we do know that the major engine manufacturers have methanol engines on the test beds and we have seen an attempt to enter the commercial market.

Is there any way to calculate the financial impact of tighter emissions regulations on the global maritime industry? In terms of dollars or percentage increases in propulsion-related issues?

In new construction the answer is yes. I think the impact can be calculated simply by looking at the cost of equipment and its installation requirements. Those numbers relate to an estimated rise of new construction ship costs at three to four million dollars for bluewater tonnage. How long that cost lasts depends on how many vessels are built moving past the regulation IMO Tier II period and how builders or owners decide to solve their emission problems. At this point in Korea there are very few IMO Tier III engines on the test stand or under contract. The locomotive market estimated the reduction of NOx at $730/ton and particulate matter controls at roughly $7500 per ton of PM reduced. From an operating perspective I don't think we have enough historical data to give your readers a solid number. That said, you will see an increase in fuel consumption along with higher fuel costs. Couple that with added maintenance costs to keep all of this new equipment running and you have a major affect in all marine markets.

GE's latest engine meets both EPA Tier 4 and IMO Tier III emissions standards without the need for exhaust after-treatment by SCR. NOx emissions have been reduced by 70% compared to EPA Tier 4 and IMO III emissions limits. Does anyone else out there have something equally promising?

All of the engine manufacturers will have a horse in the race now that the

regulations are in affect. And each horse will be a different color. I don't want to take away their thunder at this point, but expect announcements. Owners and operators will be looking for a solution or be forced to scrap and start new.

Is the use of so-called 'Carbon Credits' impacting the marine industry yet?

The European front is adapting the industry carbon credit economics to meet maritime requirements. One credit is received for every one ton of CO2 emissions removed. International Paint / AkzoNobel was one on the first corporations to apply the credits based upon fuel savings achieved with the use of its hull coatings. The trading in the United States has not been significant to date but we see other opportunities developing where offsets could be applied.

Hybrid energy and batteries have come a long way for marine applications. Do you foresee a time when this will become common on myriad workboat platforms, or is it an application destined to fit niche applications only?

Hybrid Energy has grown beyond niche applications. The ability to store energy in the new world of alternative fuels is paramount and battery technology will work towards allowing us to push fuel cell, solar and wind power forward into commercial marine applications. Weight and size is fast becoming a problem of the past and Tesla is patenting removable batteries for their automobiles and your car will soon be as simple as changing batteries in your flashlight. We have several Hybrid projects we are working on with MARAD Marine Highway applications and the development of wind farm maintenance vessels all of which need to address sustainability and the reduction to near zero tolerance emissions. Despite these innovations redundancy in a marine application is beyond important and the "hybrid" allows both a parallel application of diesel electric along with a stand-alone battery operation.

What emissions reduction efforts haven't yet been mentioned? Which ones show the best promise?

The best answer to that question was provided by a major engine manufacturer during a past industry conference. If you want to save fuel and reduce emissions then don't run your engine. We are watching technology development outside of the historical maritime platform. After all Tesla didn't not grow out of Detriot, Uber did not develop from New York City cab drivers and Netflix wasn't introduced by NBC or CBS. Over the past decade private equity entered our industry and that new flow of funds also sparked a new business model -some successful, many not. With discussions of autonomous ships we see innovative technology leading the new business sustainability model. Ask yourself – would you feel comfortable with an unmanned ship employing large rotating machinery fueled by petroleum products stored in its hull or a solar powered hybrid that is moving silently through the water without the capability of major environmental damage if it failed or the necessity of daily mechanical maintenance? We may be painting Google, Facebook or Apple logos on our stacks in the near future and those companies will embrace environmental compliance.

IBIA in Attack Mode

IBIA Attacks IMO Low-Sulfur Fuel Proposals; Association says 2020 decision may be based on overly optimistic fuel availability forecast

By Tom Mulligan

The IMO's MEPC 70 proposals for a marine fuels sulfur cap of 0.5% to be in place by 2020 have attracted severe criticism from several major stakeholders in the maritime sector, including the International Bunker Industry Association, the organization that defends the interests of bunker fuel suppliers. The IBIA has stated that several unknowns remain about the proposed limit and has asked whether assumed global capacity will translate into actual marine market supply in 2020: "Will refiners produce suitable fuels, and what will these fuels look like? Can the powers that be ensure compliance, and how will the IMO tackle transitional issues? We also don't know to what extent the uptake of scrubbers and alternatives will impact overall demand," stated the Association.

Such questions and comments add to the disquiet over the issue expressed by the Baltic and International Maritime Council (BIMCO), as reported in Maritime Reporter and Engineering News last month (December 2016 issue, page 24).

Unworkable Proposals

Several aspects of the proposals are seen by the IBIA as being unworkable, the Association stating that the IMO's 2020 decision may be based on an overly optimistic initial availability forecast:

"The official availability study undertaken for the International Maritime Organization by CE Delft concluded that there will be sufficient low-sulfur fuel available to introduce the 0.5% global marine fuel sulfur limit on 1 January 2020," it said. "The 70th session of IMO's Marine Environment Protection Committee also had before it a supplemental marine fuel availability study undertaken by EnSys/Navigistics, which concluded that implementing the 0.5% sulfur limit in 2020 looks unworkable."

IBIA said that the CE Delft study's assertion that there will be enough 0.5% fuels to meet global demand in 2020 was based on the assumption that bunker fuels between 0.1% and 0.5% sulfur content will consist of a wide range of blends as opposed to traditional marine distillates, and that the study's modelling suggests that these blends will contain various residuals, treated light cycle oils, treated light distillates and kerosene, straight-run atmospheric gasoil and unspecified cutter stocks:

"The alternative study from Ensys, meanwhile, used two scenarios assuming the 0.5% limit would be met – at least initially – by either 90% or 50% traditional marine diesel oil (MDO) as defined in ISO 8217. How could MEPC 70 make a well informed decision on such opposing evidence?" it asked, and went on to state that it would appear that the studies had limited impact on already cemented political positions:

"Signals in advance that the entire European Union bloc wanted 2020, combined with the release of a new study suggesting delaying the sulfur cap to 2025 would cause more than 570,000 additional premature deaths globally, made it politically very difficult to ask for a delay. Even so, several countries did say 2020 would be too soon and wanted a 2025 implementation date, while some supported a phased introduction as proposed by IBIA," its statement said.

Unprecedented Change

As MEPC 70 debated the implementation date, the IBIA told the Committee that going from global consumption and supply of chiefly residual heavy fuel oil products meeting the current 3.5% global sulfur limit to a 0.5% limit is change on a completely unprecedented scale for the refinery industry, as well as a major logistical undertaking for all links in the supply chain:

"Although the compliance date itself will be known well in advance, simple

Bunker fuel company staff supervising supply operations at port.

[Photo courtesy of ©2016 Patrick King Photo for GAC]

market economics leads us to believe that owners will not switch to far more expensive lower-sulfur fuels before they have to, resulting in a virtual overnight shift," the IBIA's IMO representative, Unni Einemo, told the Committee. The IBIA had therefore suggested a phased approach, bringing in the global sulfur limit over a period rather than on a specific date.

The US Energy Information Administration has also commented on the implications of the new limit, noting in its publication This Week in Petroleum that ships also have the option of switching to new lower-sulfur blends or to nonpetroleum-based fuels. The Administration stated that vessel operators and shippers will likely be faced with higher costs as the sulfur content in marine fuels decreases and the role of distillate in the bunker fuel market increases. It quoted as an example of the kind of price difference between fuels that may be observed recent figures released by the Amsterdam-Rotterdam-Antwerp refining and trading hub in Northwest Europe, with 2016 prices for low-sulfur gasoil, a type of distillate, having averaged more than $20 per barrel above prices for residual high-sulfur fuel oil. The EIA concluded that fuel blends used to meet the new IMO regulations were likely to be priced somewhere between these two fuels.

The Refiners

The IBIA also noted that when the emission control area (ECA) limit fell to 0.1% in 2015, the introduction of a range of novel fuel formulations that cost less than marine gas oil (MGO) was seen, pointing to a future where the global 0.5% cap would not rely on a wholesale switch to distillates, and stated that it is indeed likely that professional blenders and refineries will supply many new types of fuel blends to meet the 0.5% limit, including more widespread use of vacuum gas oil and the use of very-low-sulfur heavy fuel oil (HFO) where available with low levels of low-sulfur blend stock added. It also observed that some refineries were exploring opportunities to produce specific 0.5% marine fuels from existing product streams and that some refineries may desulfurise HFO, with a number of independent innovators looking to get into the marine fuel market through this route.

The IBIA reminded the MEPC that while experience with these fuels had largely been positive, their use to date had not been entirely problem-free, a number of difficulties with new ECA fuels (NEFs) having been reported both in 2015 and very recently.

Global Enforcement

Another issue is the enforcement of the regulations. Will enforcement be possible when ships are sailing on the high seas and will the IMO be able to ensure that it actually happens? The IBIA has stated that the current enforcement powers are not strong enough and that low levels of policing will enable some operators to avoid complying simply because they will not be prosecuted. This will distort the competition landscape with an uneven playing field between compliant and non-compliant operators.

"Port state control (PSC) authorities can only enforce against foreign flag vessels for sulfur limit breaches occurring within their own waters," said the IBIA in its statement. "If they see evidence that a ship did not comply prior to entering the waters they have legal authority over, all PSC officers can do is to notify the ship's flag state. The question then becomes what flag states will do about vessels not following the rules."

To address these issues, the IBIA co-sponsored MEPC 70/5/2 calling for the IMO to consider how PSC officers can detect and take action against ships using fuel oil that exceeds the 0.5% limit unless that ship is equipped and certified to operate an approved alternative compliance system, for example a scrubber. The Association also said that there was no reason why ships without alternative compliance methods should have high-sulfur fuel in their tanks and that if it were an offence to do so then PSCs would have to be able to take direct action such as detaining vessels until they debunker the non-compliant fuel and insisting that compliant fuel is bunkered.

"This would be a very powerful deterrent," said the IBIA, noting that MEPC 70 agreed to have the subject examined by its Sub-Committee on Pollution Prevention and Response (PPR) when it meets in January 2017 as part of a plan for effective implementation of the global cap.

Alternative Fuels

The CE Delft study commissioned by the IMO predicted that by 2020 ships equipped with scrubbers will consume about 11% of total global demand for HFO and that liquefied natural gas (LNG) will account for about 4% of total global marine fuel consumption. Several of the major oil suppliers are now seriously considering expanding their LNG supply activities in response to noticeable interest from shipping companies in adopting LNG as a marine fuel. It is also likely that the expected price difference between compliant fuel and HFO (for which demand is expected to drop dramatically in 2020) will lead to more ships installing scrubbers prior to the implementation date.

However, IBIA has questioned to what extent physical bunker suppliers will continue to offer HFO after 2020 when it looks set to become a relatively niche product and said that this may cause some of the HFO supply infrastructure to disappear by that time, creating a HFO supply/demand mismatch if scrubber uptake increases sharply from 2020 onwards. The Association has therefore suggested that the IMO consider allowing ships that have confirmed contracts to install a scrubber before 2020 but were unable to complete this in time due to installation bottlenecks to be allowed to continue to use HFO until the scrubber is in place, providing this period is strictly specified and limited:

"This could serve to reduce the initial sharp drop-off in HFO demand and help ease a subsequent supply/demand mismatch. It remains to be seen if this proposal will be heeded as part of the effort to make the transition to the new global low-sulfur regime a bit smoother," the IBIA concluded.

The IMO has yet to respond (as of December 14, 2016) to the various reservations that have been expressed about its proposals.

For further information visit:
www.imo.org
www.ibia.net
www.eia.gov/todayinenergy/archive

Hornblower #2, fully welded and entering final assembly at Metal Shark Marine in mid-December 2016.

(Photo: Metal Shark Marine)

Citywide Ferry by Hornblower takes center stage in

A New York Minute

The construction of up to 20 new ferries for New York City is arguably the most exciting maritime new construction project in the U.S. this year. Last month we visited with Cameron Clark, Corporate Vice President, Development and Special Projects, Hornblower, the project manager for the new Citywide Ferry by Hornblower fleet, who discussed the challenges and opportunities ahead.

By Greg Trauthwein

Hornblower has, in the span of 36 years, become the force in the U.S. ferry market, with more than 2,000 employees and 20 million passenger trips annually, including a cumulative staff of 700 in the New York City area. Most recently Hornblower struck a deal with the City of New York to build and manage a fleet of up to 20 new ferries serving six routes connecting the city's five boroughs, estimated to generate 4.6 million passenger trips per annum. While the creation of Citywide Ferry by Hornblower is impressive and generating considerable buzz in U.S. maritime circles, it is the proverbial tip of the iceberg according to Clark. He views the concept as applicable to many locales with the need for water transport. "We are aiming to show not only the industry but other municipalities that Hornblower can provide a turnkey solution," said Clark. "To design, build and finance" a fleet of ferries, a turnkey solution in rapid fashion.

The Citywide Ferry by Hornblower project is impressive for many reasons, including:

- **Speed:** The contract was announced in March 2016, construction on the ferries started in July 2016, and ferry operations – specifically the first three of six routes total – will start in the Summer of 2017;
- **Size:** The new service will include up to 20 boats serving six routes with 21 landings, covering more than 60 miles, projected to carry 4.6 million passenger trips per year.
- **Collaboration:** Two shipyards, Horizon Shipbuilding and Metal Shark, were jointly contracted to build the Incat Crowther designed boats. It is rare in U.S. circles for shipyards to collaborate in such a manner, sharing production and scheduling information, but as Clark explained, it was necessary to win this contract. In total more than 20 shipyards expressed interest in the project; 12 received bid packages; 10 returned bids and two were awarded newbuild contracts;
- **Staffing:** In step with the Hornblower way, Citywide Ferry by Hornblower is an affiliated company that started at zero and will have a staff of 150 plus … including more than 100 mariners … by the time operations start in 2017. To date Clark manages a team of about 26 at a shared workspace on Wall Street in Manhattan, a prime location with a nice view of a Hornblower terminal. "Hornblower corporate is helping from a strategic standpoint on the marketing; and (the employees of) Citywide Ferry by Hornblower are going to wake up every day with people thinking, living and breathing Citywide Ferry," said Clark.

Cameron Clark Takes the Helm

Cameron Clark is a graduate of the California Maritime Academy with more than 14 years of experience with Hornblower. He started with Hornblower, while in college, working part time on the San Francisco Belle. Four years ago Hornblower saw New York as an emerging market for its cruise, excursion, event and site-seeing brands, so Clark accepted the challenge and switched coasts, eventually selected to lead one of the most exciting ferry projects in the United States in a generation.

Clark is humble in approach, and he is quick to credit his team … both Hornblower corporate and direct Citywide Ferry employees … as essential to im-

(Photo: Hornblower)

Cameron Clark, Corporate VP, Development and Special Projects, Hornblower

mediate and long-term success. In explaining the multiple layers that make up Hornblower, he said "These are a series of companies and business units that operate independently, with common ownership. We come together when we need to work together. For example at Citywide Ferry, HMS Consulting is helping us in a program management capacity with the shipyards. HMS Ferries is supporting the transition of East River Ferry."

Similarly, Clark is open to looking outside of the maritime box when selecting the best talent for the project, noting that the new company's 'head of customer success' came from JetBlue.

"Passengers – no matter where the ferry is going – have expectations," said Clark. Getting passengers from 'point A to point B' safely and on time is the base expectation; performing safe and reliable transportation with clean boats and a friendly attitude is the Hornblower way. "We can be safe, reliable, on time in a hospitable manner; and, oh, the ride is only $2.75 (on the new ferry service). This is the attitude and approach that we apply to any of our businesses across the country."

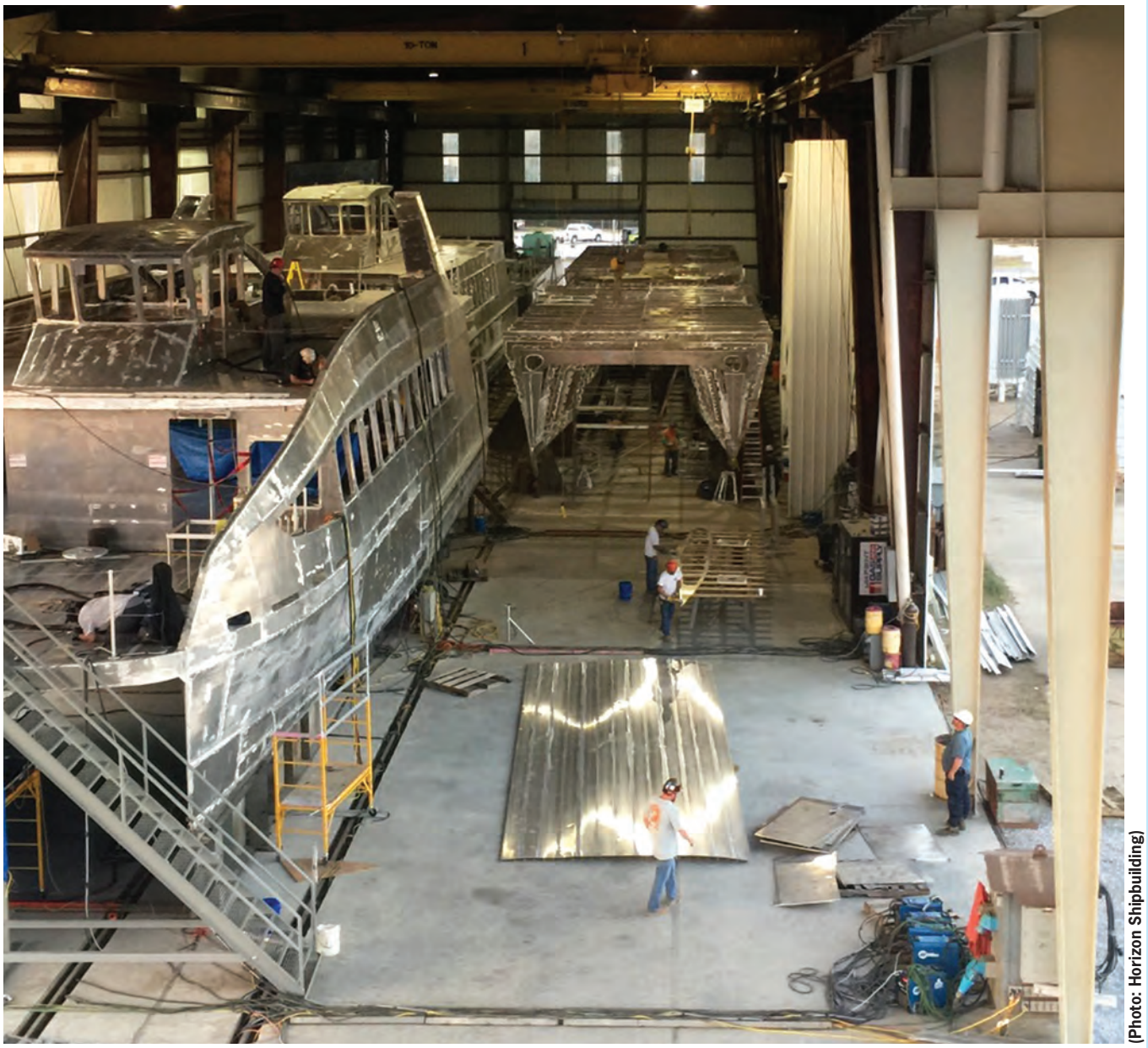
Building the Boats

With a budget of $80 million for the boats and a mandate to deliver up to 20 ferries in less than two years, from the outset the project required an innovative mindset. Perhaps nothing better embodies this than the decision to employ two shipyards to construct the new fleet.

The tight timeline to deliver ferry service to the five boroughs of New York was the primary driver for the selection of two shipyards to fulfill the contract. The contract was announced in March 2016, vessel construction commencing in July 2016, and first ferry service scheduled to begin in the summer of 2017.

"No single shipyard would agree to build 19 boats in such a short timeframe, so we decided to break it up to be in more than one shipyard," said Sarah McDonald, Special Projects Coordinator- Citywide Ferry Service, "but we also wanted to minimize the total number of shipyards, because the objective is to have 19 exact vessels across the fleet."

This type of collaboration is far from common, particularly in the U.S. boatbuilding market where production and



(Photo: Horizon Shipbuilding)

The ferries taking shape in the produciton hall at Horizon Shipbuilding.

scheduling details are trade secrets of the first order, so according to McDonald, "the biggest challenge is the communication across the two yards, as yards traditionally don't work together. But these two yards (Horizon Shipbuilding of Bayou La Batre, AL and Metal Shark of Franklin, La.) decided to work together, using the Gordhead software program."

The two yards are building identical Incat Crowther designed, 26-meter, 149-passenger aluminum high-speed ferries, though it was not announced exactly how many boats each yard will build. By late autumn 2016 both yards were busy building the hulls totally under cover and expanding local workspaces to make sure that remained the case. Horizon, which has expanded its facilities and production capabilities in recent years, will build the ferries using an assembly-line type roll-out with the first boat ready for delivery in the first quarter of 2017. Metal Shark's newbuild program is also full steam ahead. In advance of the contract award, Metal Shark won a MARAD grant and will complete a 150 x 80-ft. auxiliary structure for final assembly, which was partially funded by the MARAD grant. A new 160-ton Marine Lift transporter arrives in January and will significantly facilitate the movement of boats around the yard and to the water for launch.

While the arrangement is unique he contends that it has proven beneficial to the yards themselves in some regards, as the strong cooperation and communication has helped the shipyards to reduce the design and production costs, as they learn each other's capabilities and strengths, and divvy out the assignment responsibilities so there is not a duplication of effort. "I think it goes to show that you can be open and transparent, and still be competitive," said Cameron. "I credit the shipyards and their attitude. Part of our decision on these two shipyards was seeing their willingness to break down that traditional barrier and work together, with Incat helping to mediate. We want to know that these ships will be exactly alike. I think we will be able to accomplish that due to this collaborative effort."

The Project

A project of this magnitude, particularly one involving a major municipality, is sure to generate much attention, and Citywide Ferry by Hornblower has been planning to ensure the boats and operations are delivered above expectation. In particular, energy efficiency and the environment has been a mantra from the outset.

"Energy reduction on the vessel overall was important, so we have LED lighting throughout, for example," said Clark. "(Another example can be seen) in the materials that we use; we are wrapping the vessels with vinyl as opposed to painting them, to help reduce VOCs as well as to minimize sanding in the future."

Clark said that the efficiency focus started in the initial design phase, and "A lot of energy was put into hull form. We wanted a vessel with the best wake/wash performance of any hull in New York harbor," helping on everything from fuel consumption to the reduction of shoreline erosion.

In selecting the power to propel the

Main Particulars

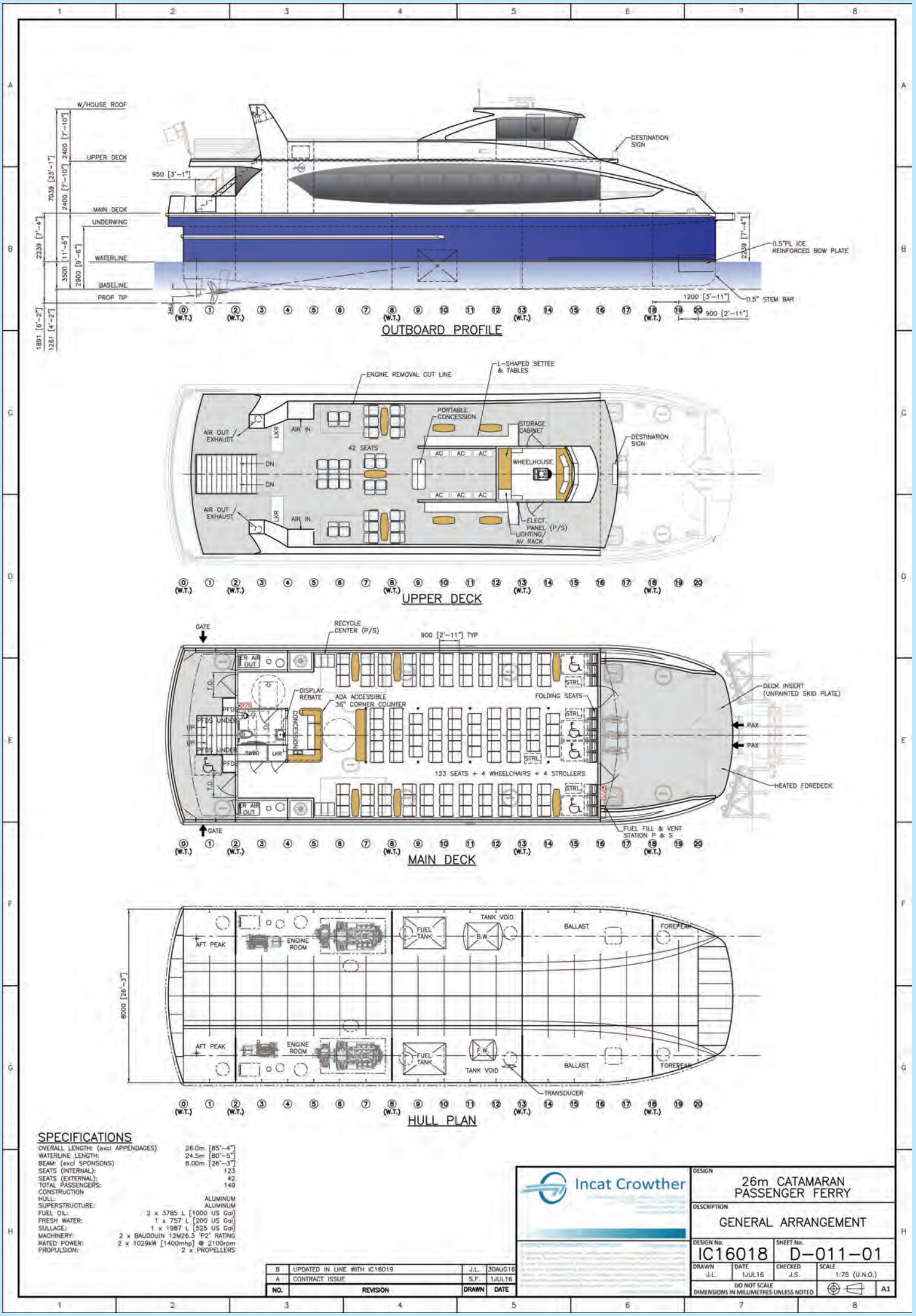
Citywide Ferry by Hornblower

Owner	Hornblower
Shipbuilders	Horizon Shipbuilding & Metal Shark
Designer	Incat Crowther
Software	Gordhead software (used by Horizon)
Material	Marine grade aluminum
Hull form	Round chine catamaran
Length o.a.	85.4 ft. (26 m)
Length Hull	80.5 ft. (24.5 m)
Length on design w.l.	80.5 ft. (24.5 m)
Beam (not including sponsons)	26.3 ft. (8 m)
Draft (hull only – approx.)	3.4 ft. (1)
Draft (max – prop tip)	6.1 ft. (1.85 m)
Depth of hull	8.8 ft. (2.7 m)
Freeboard (stern)	5.5 ft. (1.68 m)
Freeboard (bow)	5.5 ft. (1.68 m)
Estimated Weight:	
Aluminum Structure	50,706 lbs (23,000 kg)
Lightship	103,617lbs (47,000 kg)
Tank Capacities:	
Fuel (Ships Tank)	2 x 750 gal. (2 x 2,840 l)
Fresh water	1 x 200 gal. (1 x 757 l)
Black / Grey Water	1 x 500 gal. (1 x 1,900 l)
Flag State:	United States
Survey:	USCG
Main Engines (River Design)	2 x Baudouin 6M26.3 'P3 Rated'
Output	815mph @ 2100rpm
Main Engines (Rockaway Design)	2 x Baudouin 12M26.3 'P2 Rated'
Output	1400 mph @ 2100 rpm
Gearbox	ZF2050
Ratio	2.519:1
Operating Speed.25 knots, max deadweight, 90% MCR	
Fuel Consumption Main	34.5 gal./hr. at 90% MCR
Fuel Consumption Gens	4 gal./hr. (nominal)
Range	400 nm at 90% MCR at Max Deadweight with 10% reserve
Generator	John Deere Model 4045T
Struts	Michigan Wheel – single strut casting
Propellers (River Design)	2 x Michigan Wheel, 5 Blades, 38-in. diameter
Propellers (Rockaway Design)	2 x Michigan Wheel, 5 Blades, 42-in. diameter
Keel Coolers	Fernstrum Grid Coolers
M.E. Exhaust System	Delta-T / Dinak GE50+
Generator Exhaust	Delta T / Dinak GE50+ DN80/180
Fuel Service System	Murphy EL150 Level Switches
	Racor 500MA fuel filter
	LK quick closing valves
	TM Aluminum Electronic Flow Meter
Batteries	24 V Odyssey PC1800-FT
Automatic Battery Charger	Newmar PTMS-24-67
Power Outlets	Leviton T5632 USB
Main Switchboard	Power Panels LLC
Lighting	Low Voltage LED Lights
Navigation Lights	Perko 1379001BLK
Searchlight	Golight 2020
Radar, Fish Finder, GPS, AIS	Furuno System
Acoustical	Kahlenberg KB-30 horn
Audio System	RANE
Captain's Mic	Shure 514B
Media Player	Brightsign HD1022
Headphone Jacks	RDL D-HA1A
Radio Systems	Icom IC-M424G VHF radios
Fire Detection System	Sea-Fire FireStop
Ventilation System	Delta T
Air Conditioning System	Daikin Mini-Split A/C Units
Bilge Pump	Goulds Model LSP0711F
Deck Heating	Integral underdeck box tubing circulating system
	Mach 5 M5-115 Pumps
	Rheem RTE tankless electric water heaters
Steering System	Jastram electro-hydraulic
Interceptor	Humphree HE950 interceptors
Anchor	Fortress FX-125 69lb anchor
Seating	Freedman Gemini Series
Signage	Daktronics
Restrooms, Toilet	ACORN 2120-T-3-ULF-FVL-ADA
Restrooms, Flush Valve	TOTO TET1LA EcoPower
Restrooms, Urinal	ACORN 2159
Restrooms, Hands free lavatory	ACORN 1953-L
Restrooms, Hand dryer	Dyson Airblade V
Restrooms, Doors	Libra
Restrooms, Hatches	Freeman
Notation	Subchapter T Service restriction Rivers (cold water) Partially Protected Waters
Tonnage:	Less than 100 regulatory tons

The New Ferry Landings

Dimensions	90 x 35 ft.
Designer	McLaren Engineering Group

All landings are ADA and LL68 compliant
10 new landings are built and open in 2017
Landings have low profiles to preserve views
Barges for the ferry landing are made on Staten Island
Landings are equipped with canopies and wind screens and radiant heaters to shelter from seasonal weather conditions



SPECIFICATIONS

OVERALL LENGTH: (excl APPENDAGES)	26.0m [85'-4"]
WATERLINE LENGTH:	24.5m [80'-5"]
BEAM: (excl SPONSONS)	8.00m [26'-3"]
SEATS (INTERNAL):	123
SEATS (EXTERNAL):	42
TOTAL PASSENGERS:	149
CONSTRUCTION	
HULL:	ALUMINUM
SUPERSTRUCTURE:	ALUMINUM
FUEL OIL:	2 x 3785 L [1000 US Gal]
FRESH WATER:	1 x 757 L [200 US Gal]
SULLAGE:	1 x 1987 L [525 US Gal]
MACHINERY:	2 x BAUDOUIN 12M26.3 "P2" RATING
RATED POWER:	2 x 1029kW [1400mhp] @ 2100rpm
PROPULSION:	2 x PROPELLERS

NO.	REVISION	DRAWN	DATE
B	UPDATED IN LINE WITH IC16019	J.L.	30AUG16
A	CONTRACT ISSUE	S.F.	1JUL16

Incat Crowther

DESIGN: 26m CATAMARAN PASSENGER FERRY

DESCRIPTION: GENERAL ARRANGEMENT

DESIGN No.: IC16018 | SHEET No.: D–011–01

DRAWN	DATE	CHECKED	SCALE
J.L.	1JUL16	J.S.	1:75 (U.N.O.)

DO NOT SCALE
DIMENSIONS IN MILLIMETRES UNLESS NOTED

A1

Owner/Operator

CITYWIDE FERRY —operated by— HORNBLOWER

Shipbuilder

HORIZON SHIPBUILDING

Shipbuilder

METAL SHARK METALSHARKBOATS.COM

Keel Coolers

FERNSTRUM R.W. Fernstrum & Company

Radar, Fish Finder, GPS, AIS

FURUNO

Propellers, Struts

MICHIGAN WHEEL

Gearbox

ZF

vessels, Clark and his team opted for Tier III diesel engines from Baudouin. While 'all-electric' and 'LNG-powered' ferries are evolving from a novelty, gaining favor yet still a far cry from mainstream, Clark contends that the Tier III diesel option proved to be the prudent choice on a project of this magnitude and timescale. "When you're doing something rapidly, you want to minimize risks. The best way to do that is a common platform. The route and power and speed requirements for the East River service are different from the Rockaway service. But we didn't want something that precluded us from being nimble and evolving the system."

The challenges to this project are not relegated to the vessels alone.

"What is most different for me (for this project) is having 22 'front doors,'" said Annabella Stagner, Vice President of Sales & Marketing, Hornblower. "Every boarding location is a 'front door' versus, for example our Statue of Liberty route where Battery Park and Statue of Liberty are the only two 'front doors.' This gives us an opportunity for access to communities unlike we have ever had before."

"The way that it is the same? We are creating a platform for amazing experiences that go beyond transportation services. Something that Hornblower tries to bring to every start up, with every journey, is to ensure that the passenger comes away with the feeling that they have been cared for," said Stagner.

While Clark acknowledges the challenges, he neatly summarizes how his company is able to fulfill efficiently.

"There are a lot of moving pieces; I think we're trying to develop something that's going to meet the needs of millions of people, and the needs in one community are different than the needs of another community. I think the biggest challenge is pulling it all together. That said, and I know I'm biased, but I can't think of another operator in the country that would be able to finance, design, project manage, build, develop app technology, market to millions of people, hire a team of operational people and guest services people, work through city politics, and do it all in 18 months."

The Routes & The Boats

Starting Summer 2017, Citywide Ferry by Hornblower will provide a new affordable way to travel between waterfront communities throughout New York City. When Citywide Ferry by Hornblower becomes fully operational in 2018, the six routes will carry an estimated 4.6 million passenger trips per year.

- Combined, the routes will cover over 60 miles of waterway
- More than half a million New Yorkers live within a half-mile of one of the 21 Citywide Ferry landings

Rockaway Route

The Rockaway Route of the Citywide Ferry will provide a key transit link between the Rockaways, Sunset Park, and Lower Manhattan, while connecting New Yorkers to our city's beaches.

Astoria Route

The Astoria Route of the Citywide Ferry will connect the growing residential and business communities of Western Queens; Roosevelt Island, including the new Cornell Tech campus; and residents and job centers in Midtown and the Financial District.

South Brooklyn Route

The South Brooklyn Route of the Citywide Ferry will connect South Brooklyn's residential communities, waterfront parks, and innovative industries to residents and job centers in Midtown and the Financial District.

North Brooklyn Route

The North Brooklyn Route (Formerly known as East River Ferry) features frequent, reliable service that connects Manhattan with various destinations in Brooklyn, Queens and seasonally on Governor's Island.

Lower East Side Route

The Lower East Side Route of the Citywide Ferry will connect residents with job centers in Midtown, the Financial District, and Long Island City.

Soundview Route

The Soundview Route of the Citywide Ferry will connect communities in the Bronx and the Upper East Side with job centers in Lower Manhattan.

Korara: New Ferry for Fullers Group

Korora, a 34m catamaran that is the first of a two vessel repeat order and a collaboration between operator Fullers Group, designer Incat Crowther and builder Q-West., was delivered. Korora will operate in Auckland and adjacent coastal areas. The design differentiates from earlier deliveries with the addition of a sundeck and an increase in passenger capacity to a total of 401. The wheelhouse has an asymmetric configuration, designed in consideration of the local operational requirements. The starboard wing control station is enclosed for protection from the elements, while the port side is dedicated to crew access via stairs to the foredeck. Korora is propelled with conventional fixed pitch propellers and demonstrated an average speed of 29 knots at 85% MCR with typical deadweight during sea trials.

(Photo: Incat Crowther)

Korora Main Particulars

Length, o.a.	114.8 ft. / 34.9m
Beam, o.a.	31.25 ft. / 9.5m
Draft (hull)	4.35 ft. / 1.32m
Draft (prop)	6.5 ft. / 1.95m
Depth	10 ft. / 3.05m
Construction	Marine grade aluminum
Fuel Oil	2906 gallons
Fresh Water	793 gallons
Sullage	793 gallons
Passengers	401
Crew	3
Speed (Service/Max)	29 knots/31 knots
Main Engines	2 x Cummins QSK50-M
Power	2 x 1342kW (1800hp) @ 1900rpm
Propulsion	2 x Fixed-pitch propellers
Generators	2 x 100 kVA Cummins 6B-CP
Flag	New Zealand
Class/Survey	Maritime New Zealand

Gulfstream Wins U.S. DHS Ferry Contract

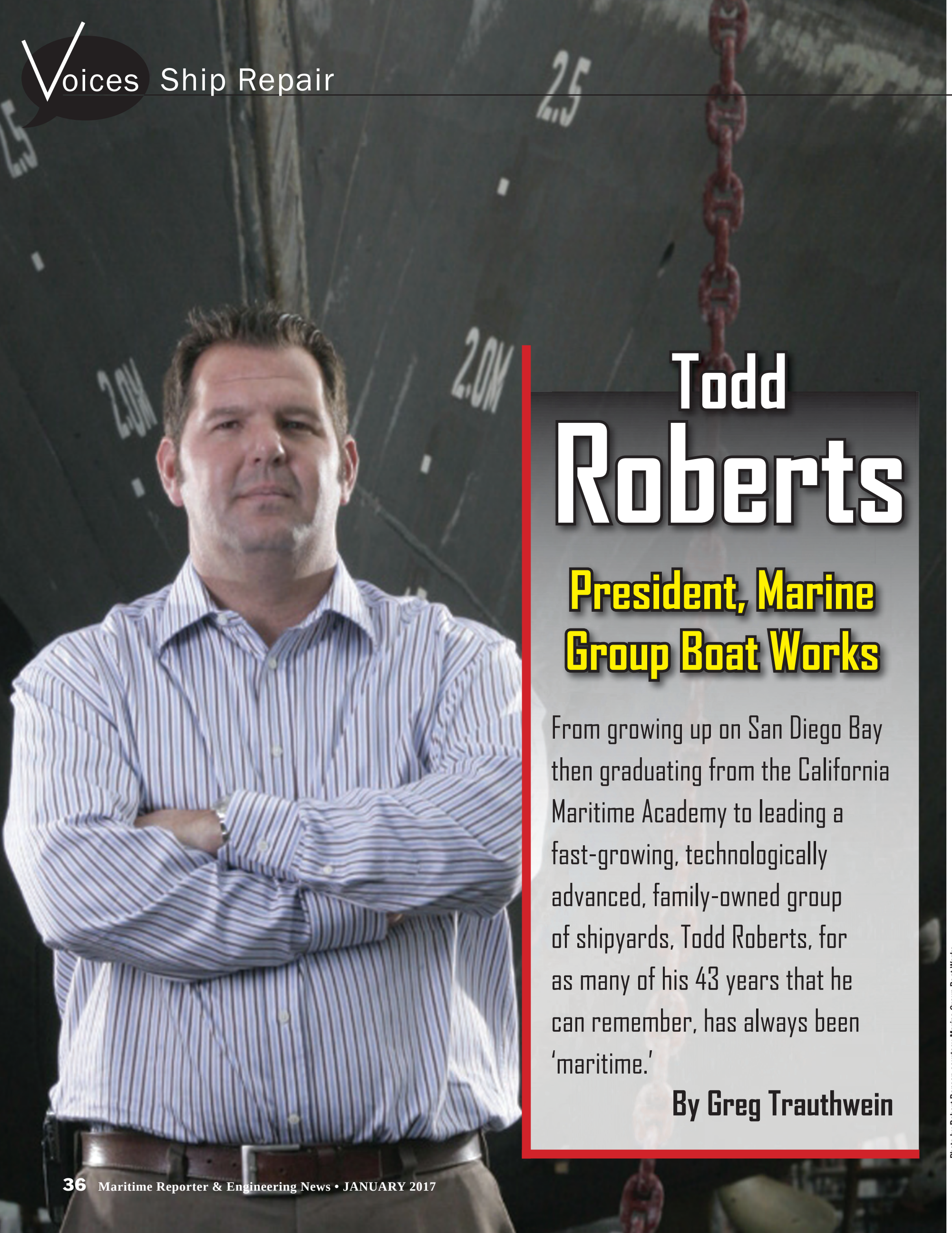
Gulfstream Shipbuilding won a contract through the United States Department of Homeland Security (DHS) for a 26-knot passenger/vehicle ferry to service the New York and Connecticut waters. This 118 x 27 x 10.75 ft. crew boat-style vessel will be capable of transporting passengers, freight and vehicles in and around the waters of the Eastern Long Island Sound and Gardiner's Bay. The vessel has an expected delivery date of April 2017. Gulfstream will work with naval architect C. Fly Marine Services. The welded aluminum, mono hull, Caterpillar diesel propelled, quad screw passenger/vehicle ferry includes a 6.5 ft. draft and 75 hp Wesmar Hydraulic Dual Prop Thruster.

(Photo: Gulfstream)

ABB Electrification of HH Ferries

ABB's project to convert two HH Ferries' vessels into the world's largest emission-free ferries is gathering pace after Öresund Dry Docks was selected to carry out the work. M/F Tycho Brahe and M/F Aurora will both be fitted with 4.16 MW of batteries and the containers with the battery racks will be lifted on board in February 2017. The dry-docking of the first vessel, Tycho Brahe, will begin in April and it will start operating as a fully electric ferry immediately when work is completed. Aurora will undergo the same process in October 2017.

(Photo: Courtesy ABB)



Todd Roberts

President, Marine Group Boat Works

From growing up on San Diego Bay then graduating from the California Maritime Academy to leading a fast-growing, technologically advanced, family-owned group of shipyards, Todd Roberts, for as many of his 43 years that he can remember, has always been 'maritime.'

By Greg Trauthwein

Photo by Robert Benson courtesy Marine Group Boat Works

> *As a kid, I worked for our sister company, Flagship Cruises (formerly San Diego Harbor Excursion),” said Roberts. “I wanted to be a deckhand on the ferry but I was told that I was too young, so I started out sweeping the floors in the boathouse, and doing just about anything, from loading the boats to hauling line.* **Going to work for me was like other kids going to the Little League field. This is where I wanted to be; this is what I wanted to do.**

And so starts the story of Todd Roberts’ maritime career some three decades ago. Roberts graduated Cal Maritime, and after nearly two years of sailing various commercial vessels, he knew that his maritime future lie ashore. “I graduated in 1995 with a degree in business administration and marine transportation, which was a new program at the time. As usual Cal Maritime was 15 years ahead of the curve, realizing that it didn’t need to graduate only mariners, but mariners with a business sense,” said Roberts. “I always had an entrepreneurial spirit and a head for business, and going to sea you can only do so much in controlling the operations of a ship.”

But after coming to shore and working as a port captain and broker for bulk cargo ships coming out of San Diego, he was bored at work. His career trajectory changed for good when he ran into the president of the company he used to sweep floors for less than 20 years earlier—also the co-owner of Marine Group. Eventually he was offered the position of Director of Operations for the company’s San Diego Harbor Excursion operations, running 10 boats carrying more than a million passengers per year.

During his tour as the Director of Operations, his duties included the usual – supervising vessel construction, acquisition and operations – as well as the cutting edge: Emissions trading and the sale of NOX credits to local power companies, not a common practice in the year 2000.

“We created a system of taking surplus emissions from vessels, reducing vessel emissions and selling those (NOX credits) on the open market to power companies — a very exciting project,” said Roberts.But even with this workload, Roberts had time to invest in other projects, so he went to the owner and said “if there’s something else you have cooking, let me know.”

Closing a Shipyard

One of the company’s holding was a shipyard in Chula Vista that wasn’t doing great, so Roberts – now still in his late 20’s – was sent in to shut it down in 2001 to make way for a proposed hotel construction project. In his words the owners were ‘done with it’, and the mandate was to lay off 60 workers to start, and finish any work that was still open. But Roberts, who had never before managed a shipyard, noticed a ‘megayacht vibe’ proliferating in Southern California. That, combined with the fact that the proposed hotel project was ensnared in a quagmire of regulatory red tape, prompted him to approach ownership with the notion of providing a “Quickie Lube” for yachts, following the land-based automotive trend.

“The proposal was that we would haul your boat on Monday, we would limit our work to shafts, propellers and bottoms, and your boat leaves on Thursday,” said Roberts. “With a fixed price and three trades, we became efficient very quickly and we started to expand, picking up some Navy business.”

With success in hand, Roberts went back to ownership for additional financing to turn the Chula Vista yard into a full-fledged superyacht facility. Ownership essentially said ‘here’s a fixed amount, good luck, not a nickel more; and if it doesn’t work, send everyone home.’

Nearly a decade later, the business where he saw value continues to grow in earnest, with three facilities (Chula Vista, CA, National City, CA and Los Cabos, Mexico) and a growing portfolio of repair, refit and new construction for commercial and government/military clients.

Of the $7 million invested at the time, Roberts counts the 660-ton Travelift as the key investment, remembering “the day we put that machine into service there was no looking back. We booked our first year in the first three months … it was the epitome of ‘if you build it, they will come’; the central player was the lift capacity,” said Roberts.

MGBW: The Modern Shipyard

By virtue of Roberts’ diverse background in the marine business, he never pigeonholed himself or his company as a ‘yacht yard’ or as a ‘tugboat yard.’ You have workboat yards that want nothing to do with the white hulled ‘foo foo’ boats, and vice versa, you have yacht yards that don’t want ‘smelly workboats’ in their yard, he said “They’re all the same to me. I don’t care, I love them all.”

Love is one thing, performance another, and Roberts and his team take ‘keeping to schedule’ to a new level.

“The megayacht market is so discerning you have to have an insatiable level of detail work; you can’t screw up, there is no ‘sorry.’ Roberts said that he learned the value of ‘on time’ early on, when a famous yacht owner in late 80’s told him ‘Young man, I have more money than time. Don’t be late.’

“I’ll never forget that comment. That’s the mantra we live by: Honor your commitments, stay on your schedule.”

By word of mouth commercial tug and barge owners saw the yard’s lift capacity and started inquiring, and according to Roberts he and his team are always up for a good challenge. “We love when people doubt our capability to do something. (I tell them) “if it doesn’t work and I’m wrong, I’ll give you your money back, we’ll shake hands and we’ll part friends. We haven’t failed yet,” said Roberts, who today runs the operation and owns a minority share.

Looking back from when it started to today, he can see the obvious changes, but also the similarities.

“It’s most different by the size and

complexity of the jobs that we do. The biggest change, arguably, came with the addition of new construction capability. It's most the same by the passion and integrity of the people who work here. We still have that craftsmanship mentality. That spirit penetrates the yard, and I must admit that's both good and bad. It's good because it mixes some love into the recipe; when you're making the cake, you can follow the directions all that you want, but there's a little love in mom's cooking. The downside is we're working on more complex vessels, we're working on specifications that are very tight, and sometimes craftsman want to do it their way. You have to take that craftsmanship and love and blend it with technology. When you have a catamaran that's carrying 350 people at 30 knots, when they meant a 1 x 6 angle they didn't mean a 1 x 6.25 angle."

To that end MGBW has a progressive view toward investment. Our investment strategy is an investment in technology capacity Roberts said. "We buy the tools we need to do the job and grow the business. There is no hard and fast "Capital Improvement Budget;" whatever we need, if we can make a good sense of it, we'll buy it. This philosophy was fast-tracked during the (economic) downturn, when sub-suppliers slowed down and caused some delays."

Recent investments include a 10-ton gantry crane (bought with help from MarAd's small shipyard assistance grant program) for use in fabrication shop to make newbuilding more efficient. The company also upgraded its waterjet cutting table to handle a 10 x 40 sheets of material, meaning bigger pieces and less welding.

"We struggled with outsourcing and vendors dropping the ball on us, so we decided to control our own destiny and cut our own parts." The yard also invested in a same-size plasma cutting table to cut its own steel in an efficient manner, as well as sandblasting capability; and in its National City yard a new 70-ton hydraulic trailer for moving modules in and out of the fabrication building as well as two new docks. All of these tools are critical to maximizing efficiencies and keep schedule.

But arguably the purchase which Roberts is most proud … the "Crowning achievement which is the least fun to buy but the most fun to have," is its $3m, 500 kW solar system at its National City building, allowing it to produce about 2/3 of its own power and driving the company toward a "Zero Emission Facility." (See related story next page).

With 217 people across three yards, an armada of cutting edge technology, and a growing market in Southern California, Roberts is happy to discuss what he views as a good contract:

"What's a good job for us? It's profitable and a win-win situation. If it's not good business for either side, you don't want to be here and frankly, we don't want you here. There is no magic in boat repair."

Marine Group Boat Works' yard in Chula Vista, CA.

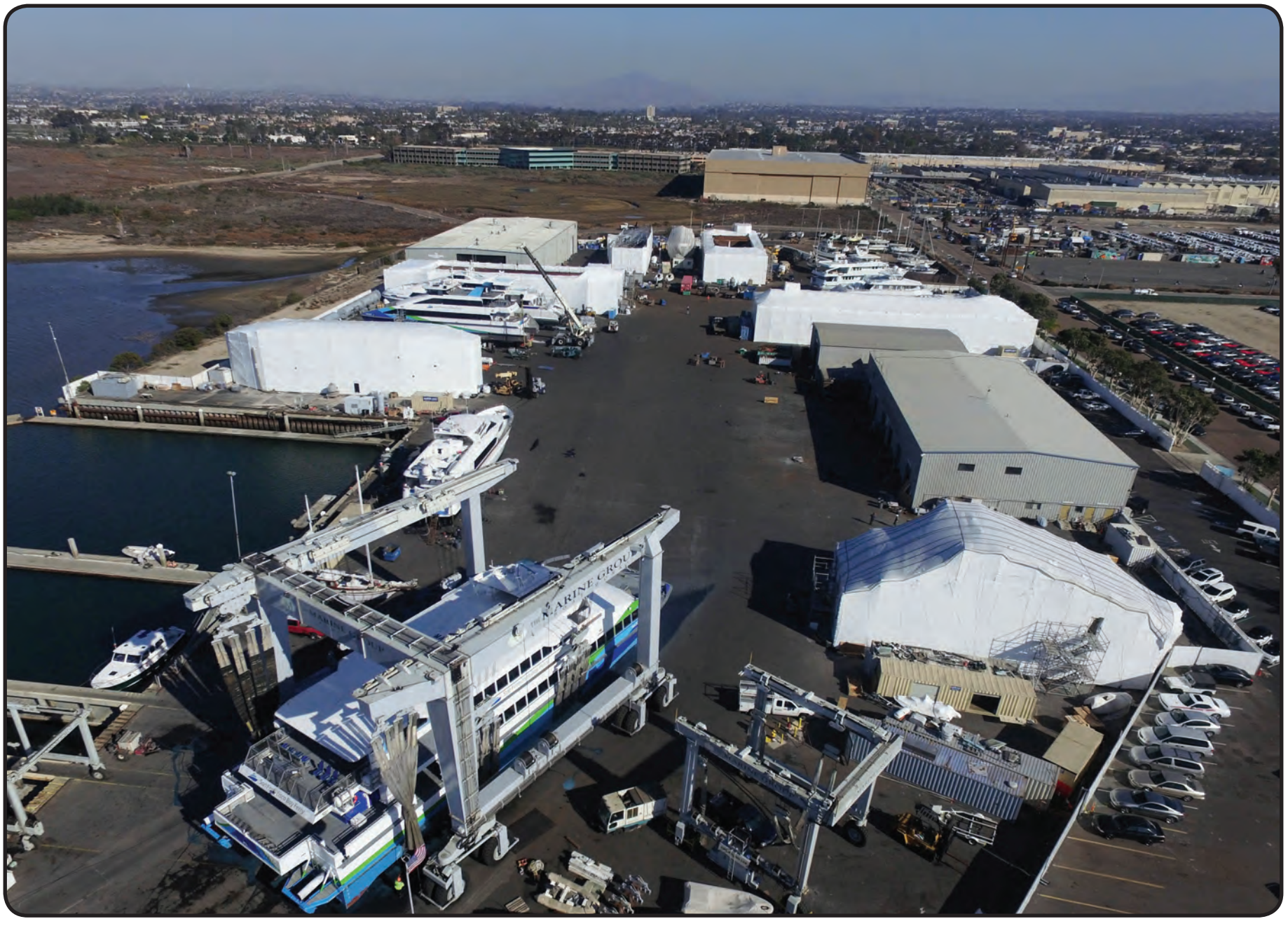


Photo: Marine Group Boat Works

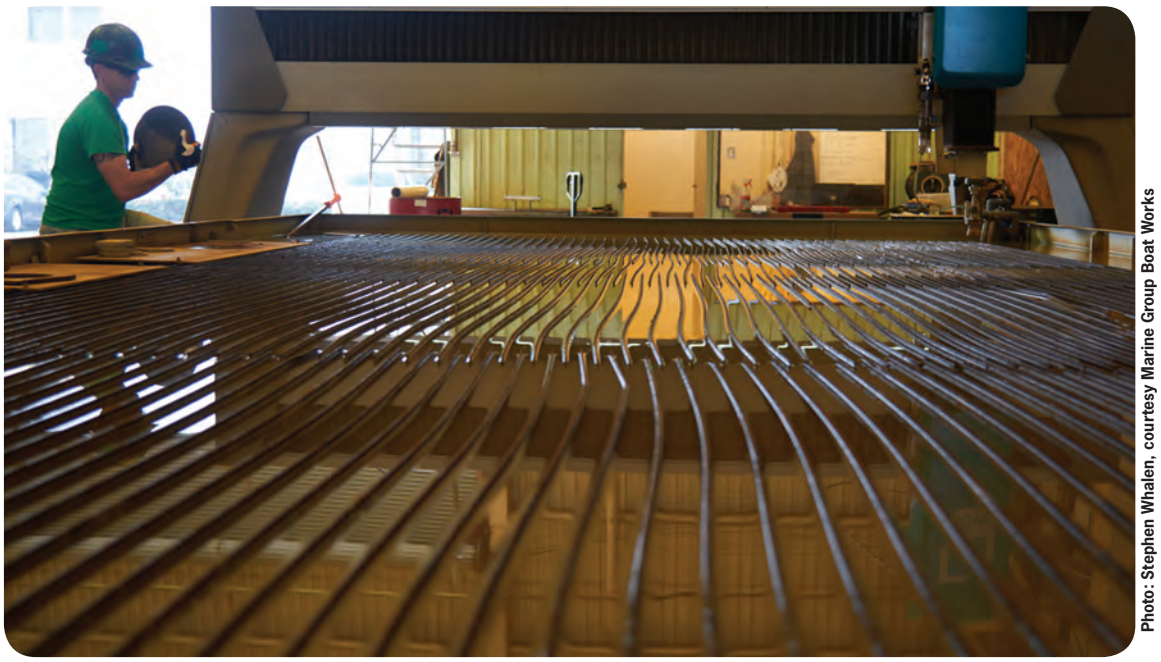


Photo: Stephen Whalen, courtesy Marine Group Boat Works

MGBW continuously invests in technologies to make operations efficient.

Solar-Powered Boatbuilding

Marine Group Boat Works Moves Towards a Zero-Emission Shipyard

Marine Group Boat Works, LLC, completed a 500 kW rooftop solar panel system for its shipyard in National City, CA, (pictured below) making it reportedly first boatbuilder to use solar energy to construct boats. “Our initial decision to go solar was driven primarily by our desire to be a zero-emission, low impact boatbuilder,” said Todd Roberts, president of MGBW. “There’s no question that solar is an economic benefit, but there are many other advantages – everything from self-reliance and sustainability to doing the right thing.” The new solar panel system will decrease MGBW’s footprint and is expected to reduce annual energy consumption by 81% based on past and projected consumption. While MGBW has wanted to go solar for the past several years, energy consumption from boat repair was simply not great enough to warrant the investment. However, since MGBW opened its new construction division, increases in manufacturing and Solar panel installation helps San Diego boatbuilders Marine Group Boat Works, LLC power the construction of boats for the Navy. Baker Electric Solar, San Diego, was selected to design and install the 500 kW rooftop solar panel system for MGBW. The total cost was $1.2m, and the new system reportedly will provide more than $3m in net savings over 25 years, with return on the initial investment in about five years.

Photo: Marine Group Boat Works

Photo: Marine Group Boat Works

Todd Roberts on:

The Market Today:
I think the market is very healthy. I think it is healthy for yards that are willing to accept technology and innovate.

Running a shipyard in California:
In shipbuilding there is a leveling of the competition (globally). The only thing that knocks the level away is the state of California (and the extra expenses that come with environmental regulatory compliance). But there are benefits to a shipyard operating in California: our environmental requirements are unprecedented in the world, and they exceed any yard in the U.S. It creates a cleaner, more productive environment … we can overcome environmental regulations and the result, in my opinion, is a better product. You can’t tell me that welding aluminum in a dirt lot that you’re not going to have contamination.

The Adoption of Technology:
A lot of the environmental regulatory requirements transition into quality, and we are forced to innovate. We have to lean on technology, we have to look at everything and think ‘How can we cut these pieces more efficiently’ … ‘Where can we bend and break instead of weld’

His Greatest Challenge:
Finding and keeping a qualified workforce. The biggest struggle we have is finding qualified labor, and you wouldn’t think that in a big navy town like San Diego. Roberts said a successful MGBW employee is one that is flexible and cross trained, able to work projects on the repair or new construction sides, yacht, commercial or navy. “Some folks can do it, some cannot. The ones that can are very successful, and the ones that cannot are not. I refuse to put folks in pews and limit their work scope. Our reluctance to do that has been a key to our success.”

BAE Systems Expands in SD

BAE Systems Ship Repair, with six U.S. Shipyards (in Alabama, California, Florida, Hawaii, and Virginia) encompassing eight dry docks and nearly 4,000 employees, is well situated to grow the majority of its business, which is focused on the U.S. Navy.

Most recently the company's San Diego shipyard received a new 950-ft.-long, 55,000-long-ton floating dry dock, which is a portion of the company's $100 million investment in the yard to service the anticipated increase of U.S. Navy ships on the West Coast.

"We have made the strategic investment to meet the ship repair needs of the Navy," said Joe Campbell, VP and GM of BAE Systems Ship Repair in a release. "With two large dry docks now in our shipyard, we'll enhance the San Diego industrial base's ability to repair warships in their homeport, providing the key maintenance and modernization work needed for the ships' continued service to our nation and the stability for the ships' crews."

According to Karl D. Johnson, Director, Communications, BAE Systems Ship Repair the new dry dock is scheduled to be ready for service in early February 2017, with its first job, the dry docking of New Orleans (LPD 18) for structural and tank repairs, propulsion repairs and ventilation repairs. The new drydock will be able to accommodate most every class of Navy ship, or as Johnson said, "anything that can fit under the Coronado Bridge." The investment in San Diego is particularly important as it is one of the U.S. Navy strategic home ports that does not have a U.S. Navy shipyard, meaning that private companies are important partners to keeping USN ships on schedule and on budget.

In early 2017 the company announced that it had completed the sale of its San Francisco Ship Repair business to Puglia Engineering, Inc., a Tacoma, Wash.-based ship repair company currently operating two shipyards in Washington state.

"We believe this divestiture is in the best interests of the San Francisco shipyard employees and both companies, as it will better position the San Francisco Ship Repair business with a parent company that has access to broader markets," said Erwin Bieber, President of BAE Systems, Inc.'s Platforms & Services sector.

(Photo: BAE Systems)

DDG1000 Win

Earlier in 2016 it was announced that the U.S. Navy had awarded BAE Systems a $192 million contract for work on new DDG 1000 ships The new guided missile destroyer USS Zumwalt (DDG 1000), along with the USS Michael Monsoor (DDG 1001), will head to BAE Systems' shipyard in San Diego for post-construction work.

BAE Systems has received an indefinite delivery / indefinite quantity contract from the U.S. Navy for post-construction work aboard the guided missile destroyers USS Zumwalt (DDG 1000) and USS Michael Monsoor (DDG 1001).

The contract has an initial award of $10.3 million and a maximum value of $192.7 million for work through September 2021.

USS Zumwalt and Michael Monsoor are the first two ships of the Navy's new class of surface combatants. The ships are 610 ft. long, displace about 15,700 tons, and are comprised of steel hulls and composite structure deckhouses. Zumwalt was commissioned in Baltimore late in 2016 and it will homeport in San Diego. The Michael Monsoor is under construction in Bath, Maine, and will also be homeported in San Diego.

While BAE Systems Ship Repair garners the majority of its business from the U.S. Navy, it does its fair share of commercial work at its Florida shipyard on the St. Johns River, a facility that handles everything from containerships to mega-yachts, and its yard in Mobile, Alabama which works on ships primarily in the oil and gas sector.

New San Diego Dry Dock Facts & Figures

Length ..... 950 ft.
Width ..... 205 ft.
Lift capacity ..... 55,000 LT ship weight (capable of accommodating amphibious assault ships, auxiliary ships, cruisers, destroyers, littoral combat ships, transport dock and dock landing ships, and select commercial vessels)
Power: ..... All electric
Environmental features:

- LED lighting throughout the structure
- Non-toxic underwater hull and ballast tank coating (paint)
- Storm water recovery systems
- Closed-loop salt water fire protection and cooling systems
- Air-cooled emergency backup generators

Jose Carlos Alvarez, Managing Director Astican & Astander

Maritime Reporter & Engineering News interviews Jose Carlos Alvarez, Managing Director, Astican & Astander, a global leader in ship repair and conversion, for his insights on the market today.

By Greg Trauthwein

(Photo: Greg Trauthwein)

Please share with us your view on 'the market' today.

First it is important to say that the main business of Astican is repair and the offshore business, where as the main focus of Astander is the conversion business. We are suffering as a consequence of the market for the time being, but (there are bright spots) specifically the fishing vessel figures are quite good. Specifically, Astander recently carried out an important conversion project for a Canadian fishing company, so the turnover figures for Astander (in 2016) are quite good. The turnover figures for Astican will be more or less 'OK'.

You have been in this business for more than a quarter of a century. How is this market the same or different from previous downturns?

I have lived the ups and downs in the marine business for 26 years, and perhaps this crash is a bit deeper than previous ones. For me, the key to staying afloat, the most important thing to manage this crisis, is to be efficient and to manage your costs.

Obviously your business is capital intensive. How do you manage investment in facilities, equipment and people when times are tougher?

Now is the time for investment. Yes, we need to be efficient and to manage costs, but we also must keep our eye on the future and the inevitable turnaround. The key is to make clever investments. For example, at Astican we are investing in a new deepwater pier (21 to 25 meters) to serve the offshore community, specifically thruster removal on the biggest rigs and drill ships. This will be ready in 2017. In addition Astican is lengthening its drydock to make it Panamax size.

Last year in Hamburg SMM 2016 was held, the world's largest and arguably best maritime exhibition in the world and a perennial bellwether for the industry. I saw a strong show with many visitors. What did you see?

Overall it was good, depending on the sector. It is very clear that the oil and gas industry remains under pressure. On the other hand, the cruise and fishing sectors are booming, which is good for us as we are well positioned in both sectors. The fishing fleet in particular is a strong growth sector, with investment in new vessels, investment in new equipment and facilities. This should be a growing area for the coming two to three years.

Chen Yong, President
Zhoushan IMC YongYue Shipyard Engineering Co.

Maritime Reporter & Engineering News interviews Chen Yong president Zhoushan IMC YongYue Shipyard Engineering Co., (IMC-YY) an emerging leader in ship repair and conversion in China.

By Greg Trauthwein


(Photo: Greg Trauthwein)

For our readers not familiar with IMC-YY, can you describe your physical facilities?

Houshan IMC-Yougyue Shipyard & Engineering's success starts with its physical facilities, which includes two graving docks (300,000 dwt, 350 x 65 x 13.6 m; and 100,000 dwt, 251 x 39 x 11.8m) and two sizable wharfs, one measuring 524.5m long with a 12-m depth, the second 250m long with a 12-m depth. IMC-YY started drydocking repairs on January 18, 2006, and it is located at the Mazhi Island Zhoushan Zhejiang, meaning it is situated in a very convenient marine convenient traffic region. The regional location and the favorable port condition are ideal for drydocking and shiprepair works, and in the last decade the shipyard has achieved considerable experiences for all kinds of merchant ships repairs including tankers, RoRos/PCTC/PCC, containerships, and bulk carrier, with the shipyard eying the lucrative and expanding cruise ship's repair market in the near future.

How do you see the ship repair market today?

I think a lot of people focus too much on the condition of the market, complaining that the market is bad. To us, the market is the market: sometimes is it going up, sometimes down. To me it is not good or bad. The most important thing is to prepare well to catch the market on its way up and to prepare for the inevitable slowdown.

In our past conversations you have discussed the importance of your employees in the grand scheme of your overall business philosophy. Can you elaborate?

We have about 1,200 employees today, all direct employees, not subcontractors. (Subcontractors) can sometimes help you reduce costs, but it can also cause quality problems. We like to find the right people and employ them directly, training them regarding our corporate mindset, our culture, our business philosophy. First and foremost, we call it our 'enterprise culture' and the first thing our employees learn is to provide good service to the ship owner. This means we talk to our clients (and understand their needs); this is a partnership. Second, it is important that we create something for the future, meaning that we must try and invest in new technologies.

What technology do you see as important to making the business of fixing ships more efficient and safe?

Sand blasting and grit blasting both come with problems for health and the environment; hydro blasting has a very bright future. Our shipyard is the first in China to use hydro blasting technology, a technology we use which was developed in tandem with Palfinger and Hammelman. We want our shipyard to be a leading shipyard in adopting hydro blast technology and we want to introduce this technology to all Chinese shipyards. It is a social responsibility.

Have you continued investment in the yard through the current downturn?

We invested about $35 million in new equipment (in 2016), with another $5 million planned (for 2017). Investment is mainly in hull treatment and tank cleaning and coating. We want to create a new concept in ship repair; we want to become a lifetime partner in the health of our clients' ships. After a repair is complete we provide a report with recommendations for future maintenance and repairs. Also we want to make repair information available online. We are sure that the ship repair business will be changing soon, driven by digitalization.

Grand Bahama Shipyard Finishes 2016 Strong

Grand Bahama Shipyard Limited (GBSL) worked on 49 commercial vessels and 20 cruise ships throughout 2016, with scope of works ranging from major steel fabrication and repairs, to engine and technical systems overhauls, hull treatment and tank cleanings.Looking to 2017 and beyond, the yard reports it has a healthy order book, with docking periods secured as far ahead as three years. Highlights recently reported include:

- Wihelmsen Ship Management docked two containerships in May, Seaboard (SEB) Atlantic and Seaboard Patriot. A third vessel from Wilhelmsen Ship Management, Seaboard Sun, received extensive hull treatment work during a 26-day dry docking in June.
- Polska Zegluga Morska signed a fleet agreement for six bulk carriers to be overhauled in 2016/2017. Regalica was among the first vessels in dry dock mid-October post Hurricane Matthew, followed by Narew in November for similar work. General repairs will be completed on the remaining four bulk carriers beginning January 2017.
- Crowley, a long-time customer, dry docked three vessels, Barge Jacksonville, Barge 650-1, with tug Pacific Reliance (pictured right) all in for extensive three week or more docking periods to provide classification work including steel work and complete hull treatment.

"To meet the needs of our customers, we are dedicated to continual upgrades to our yard, and our services," said Graham Couser, GBSL VP Sales and Marketing. "In 2016 significant investments included facility upgrades and purchasing of new machinery and tooling adding to our workshops' capabilities. Plans are afoot in 2017 for additional developments and expansions to our South Beach and East Beach areas which will benefit logistics and staging for the offshore and tanker vessels."

Watch Graham Couser's interview on Maritime Reporter TV at http://www.marinelink.com/videos/video/ship-repair-giant-discusses-current-market-conditions-100105


(Photo: Grand Bahama Shipyard)

Crowley's Pacific Reliance.

Detyens 'Dredging Up' Business

(Photos: Detyens)

"Customers know that they can go to Detyens and might pay a little bit more, but it will be fair and the **boat is going to leave on time. No question."**

D. Loy Stewart, Jr., President, Detyens

This story is excerpted from a feature authored by Joseph Keefe for *MarineNews*, sister-publication to *Maritime Reporter & Enginering News*. For the full story on Detyens, please visit:
www.marinelink.com/news/detyens-markets-repair419829

Detyens Shipyards, located in Charleston, SC, has been repairing and converting commercial and U.S. government vessels since 1962. Although perhaps better known for its blue water, deep draft work, the firm boasts a deep portfolio of experience on vessels ranging from tugs and barges to tankers, bulkers, car carriers, container ships and cruise ships. And, if its primary attraction today is its geography, then from that advantage, several key niche business sectors have blossomed for the yard.

In 1982, William J. Detyens sold the business to a small group of employees which included his son-in-law and the yard's current owner, D. Loy Stewart. In those days, U.S. Navy and Government work provided the majority of its business, but in 1993, the Charleston area was dealt a major blow when the Defense Department's Base Realignment and Closure Commission announced the closure of the Naval Station Charleston. Detyens Shipyards naturally felt the full impact of that decision.

Nevertheless, and just three years later, the Detyens group secured a long term lease on Charleston's then now-shuttered Naval Shipyard, moved its entire operation to that location and has operated continually from there ever since. Today, Detyens leverages three (3) graving docks, enclosed shops for all crafts; eight 56-ton gantry cranes (on a continuous rail system); four tower cranes; rail access over 8,000 feet of deep water pier space and a dry dock for smaller vessels. Having successfully transitioned from a full menu of government work to one which includes an equal amount of private sector work, the yard today is always looking for additional sources of income.

Diversified Client Base

Over time, the yard has successfully dry docked dozens of international vessels of all sizes and continues to bid in that highly competitive market, as opportunities arise. With a portfolio that is roughly split evenly between government and commercial jobs, and 98% focused on the repair sector, Detyens services a brown water portfolio that spans government operated NOAA vessels, the nation's research vessel fleet, domestic dredges and a host of other shallow draft work.

According to Detyens President D. Loy Stewart, Jr., the Military Sealift Command is Detyens biggest customer, but the yard also works for virtually every other government agency (other than the U.S. Navy). On the commercial side, the yard's workload is divided evenly between foreign and domestic vessels

Also on the commercial side, this time in the domestic markets, Detyens found a welcome niche in the refit and repair of dredges. Stewart explains, "We do a lot of dredges; scows, cutter head dredges, and hopper dredges, too. It's dirty, grunt work and that's what we're good at." He adds, "Customers know that they can go to Detyens and might pay a little bit more, but it will be fair and the boat is going to leave on time. No question."

The dredging work, in particular, might have happened at first as a function of location, but it stays because Detyens gets the job done. Loy Stewart Jr. adds, "There's a lot of dredging in the Gulf, and there's a lot of dredging way up the East Coast. These vessels are constantly transiting. With dredges in particular, time is money. And so, we know that if a dredge is anywhere close, or on its way up or down the coast, we have a better than average chance of getting that work."

Because today's domestic dredging situation – whether storm related or maintenance dredging – is highly fluid, the typical dredge is often its way from one job to another. Often, Charleston, SC is on the way. As a result, Detyens' dredging clients include Great Lakes Dredging, Norfolk Dredging, the Dutra Group, Manson construction and the U.S. Army Corps of Engineers. Getting that work is one thing; keeping it is another. And, that's where the yard's bonus, incentive and benefit package comes in.

Fisheries Fleets Review:

Part 1 Pacific Northwest

Bulbous and New:
The Ocean Peace post-conversion.

(Photo: Courtesy Vigor)

A Time to Build & Refit

BY WILLIAM STOICHEVSKI

The aging Pacific Northwest fishing fleet is either undergoing or about to undergo a long-overdo upgrade, judging by a major economic report commissioned by the Port of Seattle. Fisheries managers, seafood suppliers, yards and the supply chain all hope an accompanying surge in ship finance "lifts all boats". For now, the newbuild count is growing apace, slowed just a bit by owners opting for major retrofits amid rich fish harvests. This fisheries upsurge comes with some rising stars of ship design-and-build for vessels set to ply the Bering and Beaufort seas.

The 70's were the heyday of boatbuilding — half of the current U.S. Pacific Northwest's 400-strong fleet of vessels over 58 feet were built when sideburns were mandatory. The fleet's boats are so well-maintained, most of them, that they're still candidates for retrofits of engines, holds, electrical systems and deck machinery.

Modernization of the North Pacific Fishing Fleet, a study by The McDowell Group for the Port of Seattle, has made the rounds and given weight to the idea that a major fleet upgrade really is underway. With average 2014 gross revenues having run between $2 million for Bering Sea/Aleutian Island trawl vessels to $16 million for some catcher-processors, there's a feeling that owners can afford new vessels that might cost $15 million for the first group or $130 million for the second. Despite the big harvests, just one large vessel a year has been built or heavily modified since 2000. That's about to change.

The study showed that vessels over 30 years of age are worth about $9 billion in "replacement value" to the supply chain. Those built when the Vietnam War ended, or before, represent $4.4 billion if replaced. "The results of this analysis (of average vessel age) indicate $1.6 billion (or 37 new vessels) in modernization projects will be completed within the next 10 years, assuming no significant changes in financing options. In some cases, vessels will be retired without replacement, and in others two or more vessels will be replaced with a single larger or more efficient vessel," McDowell researchers credibly assert. Increasingly, too, many of the upswing's vessels will be of efficient U.S. design. "The European designs seem to have the owners' attention, but there are several U.S. engineering firms that have (comparable) designs," Stephen J. Berthold, Eastern Shipbuilding's VP of sales, tells us in an email.

He goes on to name five U.S. designers which can compete with European designs, although Eastern appears to be "aggressively perusing new 2017 and 2018" work of all types.

Risk Abated

The McDowell compilations suggests that to pick up the pace, "one-off" builds might need to yield to other build models.

Some European designers spread the risk of a build between themselves and a consortium of partners, with the chosen

(Photo/Illustration: Skipsteknisk)

Fisheries Fleets Review: *Pacific Northwest*

The 194-ft. Araho was a 90's era scallop boat from the East Coast, converted at Eastern Shipbuilding to be "the most technologically advanced fishing boat in the Bering Sea."

(Photo: Eastern Shipbuilding)

yard asked to just build more runs of a single hull type to earn some economies of scale. In the U.S., some lender risk has been removed by federal building credits, and some owner risk has been dumped in recent rules changes that grant owner the right to upgrade or build a new vessel for previously protected species. Finally, the chasing away of other nations' vessels from U.S. economic zones has changed out risk with near-certain reward. Now, savings and quotas can be used as equity and collateral toward newbuilds.

Authorities in seafood and building hub now know that an average of three new or totally altered vessels are due out each year between 2017 and 2021. By 2022, and possibly into the future, five large boat projects a year are forecast. These builds would top an upswing which, in the past four years, has seen 13 vessels built. The surge continues from 2016 to 2021, as 15 are projected built. Twenty-two more are due between 2022 to 2026. The Report suggests half of these will be new-builds built in Puget Sound, Washington, although count on "Florida" coming through, too.

International Designs

Not surprisingly, perhaps, the fisheries revival — delayed by the earlier boom-bust, grab-and-go fishery — has already seen established features of modern European designs get their U.S. Northwest debut.

The seiner style pump that sucks rather than dumps a catch onboard will help more catch meet the standards of demanding buyers. The new cod long-liner freezer vessel, Blue North, a $36 million Skipsteknisk ST-155L build, will see crews work in the safety of a moonpool rather than risking being washed overboard or hooked. The Alaskan pollock ground-fish fleet will see new trawlers, including three other designs from the drawing boards of Skipsteknisk in Norway. In Panama City, Florida, two are being built: a 59.1 meter x 14.9m ST-115 trawler for O'Hara Corp. and an ST-118 that's 80m x 17m for an unnamed U.S. customer.

Skipsteknisk sales manager for fishing boats, Inge Bertil Straume, points us to the 79.8 x 15.4 m ST-116XL being built for Fishermen's Finest at Dakota

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Creek Industries in Anacortes, Washington. This boat — built to carry 49 crew with their own hospital — is a replacement built to catch and freeze at sea a series of whitefish products, including cod plus yellow and black sole in the Gulf of Alaska, Chukchi Sea and Bering Sea. A MAN diesel engine will give this first ST-116XL to operate in the U.S. a top speed of 15 knots. The Blue North, too, will have plant to produce fillets, cod liver and the cosmetics ingredient, collagen, a Pacific Northwest nod to the added value in upping fish use by 30 percent to 90 percent. The moonpool joins the "heavily weighted" box keel design and anti-roll tank for low weight and stability as U.S. firsts. The Blue North's diesel-electric, dual-azimuth propulsion will also meet Tier III environmental strictures for U.S. waters.

Conversion Captivates

At Jensen Marine, management and designers working with operators of long-liners, trawlers, catcher boats and large factory trawlers say they're feeling the revival.

"This year we have found that the cod fisheries have been very active with new long-liners, and the pollock industry is looking at new factory trawlers and catcher boats," writes Jensen Maritime VP, Mark Miller, during a pause. To stay with the trend, "We have developed new designs in all these areas that address efficient vessels to operate and process fish." The 55-year-old Seattle yard has been a commercial "go-to" naval architecture and engineering firm for years with many of the larger operators off the Pacific and Alaskan coasts hiring the firm. Miller says about 30 percent of the business is conversions "at the moment", although, "The buzz is such that we think that percentage will increase in 2017. We are currently working on a long-liner conversion at a shipyard and have done drawings for our clients of conversions of OSV's to fishing vessels." Seafood company Global Seas had its Defender fishing boat re-engineered by Jensen Maritime. The Defender was converted from East Coast (herring and mackerel) to West Coast (pollock) at Patti Marine Enterprise, Florida. It, too, got a fish pump.

"We're designing more efficient hulls to decrease drag, (and) diesel electric is another feature which makes sense for some of the fisheries," Miller says. He confirms an increased interest in specific retrofits: "Increasing the factory processing space allows the operator to process more efficiently (with new plant), add new products to their line and in certain cases provide a higher quality product."

Specific Retrofits

Seattle's Glacier Fish Company is making the most of its existing fleet by retrofit, redesign and good maintenance. In 2013, this maker of frozen-at-sea Bering Sea cod and pollock had Vigor shipyard of Seattle refit the Alaska Ocean in a job that still resonates as an ideal investment to the serious observer.

Vigor teams replaced an old fish meal plant with a modern one by cutting a hole in the hull and widening the hold before installing an integrated propeller and rudder made for retrofits. Another vessel, the Ocean Peace, was retrofitted for Ocean Peace Inc. with a bulbous bow, a bow thruster and emergency power in just four months. These conversions — with their time to increased earnings — compete hard with newbuilds in the minds of owners. O'Hara's conversion of the Araho at Eastern Shipbuilding garners attention, too. The 194-foot Araho was a 90's era scallop boat from the East Coast, but now O'Hara says, "It will be the most technologically advanced fishing boat in the Bering Sea."

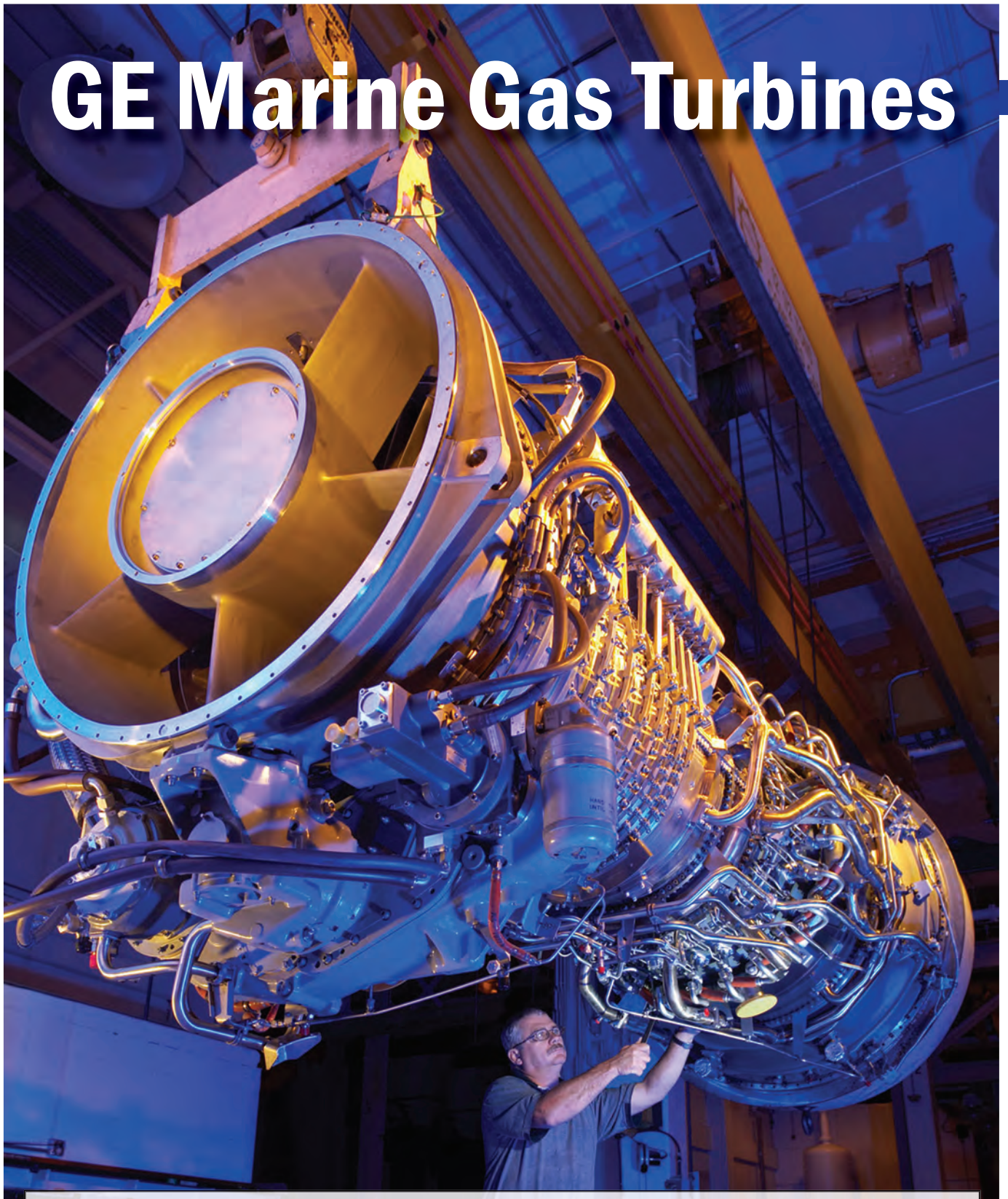
Who Can, Can't

In general, smaller fleets and vessels are expected to see less of the revival. "The catcher vessel sector has experienced less recapitalization likely due to (an) inability to add value through onboard processing," McDowell researchers say, adding, "… It is anticipated that vessels with large amounts of (catch) quota are most likely to be upgraded … Most of the recent upgrades include factory upgrades, such as a fish oil plant."

On the finance side, the renewal is expected to continue for a couple of reasons: the U.S. Department of Commerce's Fisheries Finance Program yielded in 2014 to allow more new vessel construction and not just vessel replacement. Finance for 80 percent of vessel cost and a maximum term of 25 years was extended to builds that cost up to $100 million (previously $59 million).

Alaska, needless to say, has gotten word of this.aAnd now Washington and Oregon know, too.

GE Marine Gas Turbines



COGES Crew Maintenance Tasks

Visual Inspections	Frequency
Gas turbine and steam turbine exterior and enclosure inspection and cleaning	Quarterly
Compressor inlet inspection	Semi-annual
Borescope inspection (GE training available for crew to replace GE technician)	Semi-annual (GE Technician)
First stage compressor blade inspection	Annual
Exhaust inspection	Semi-annual
Variable stator system inspection	Semi-annual
Cleaning	
Lube and scavenge pump inlet screen and electronic chip detector inspection/cleaning	Semi-annual
Heat recovery steam generator and steam turbine blowdown, gas turbine on-line water wash	As required
Testing	
Lube oil test	Monthly

Company Profile

Around the world, every two seconds a GE-powered airliner takes off. The world's air carriers rely on the 36,000 GE engines powering these planes that deliver passengers to global destinations. The same quality system used on these experienced jet engines also delivers gas turbines for marine power and propulsion. GE is a leading provider of marine gas turbines ranging from 4.5 to 52 MW. These aeroderivative gas turbines are based on GE's engines used on wide body airplanes. They are produced in the same factory as GE's flight engines using aviation quality standards and parts. Each engine undergoes rigorous testing to ensure optimum performance, making it ready to provide safe, reliable propulsion.

GE marine gas turbines have been sailing the seas for decades, logging more than 14 million operating hours onboard commercial and military ships worldwide. These power-dense engines are fuel flexible, capable of operating on LNG and distillate fuels -- even switching from one fuel type to another while running at power. As the choice of 34 navies worldwide powering 100 military ship classes, these marine engines can be used for mechanical drive, electric drive and hybrid applications.

GE gas turbines are designed and built to be easy to maintain. Commercial shipbuilders work closely with GE to incorporate gas turbines into new ship designs, providing unique propulsion solutions for fast ferries and large commercial ships. Consider GE's COmbined Gas turbine Electric and Steam (COGES) system, which is an option for LNG carriers and container ships. Ships with a COGES system follow GE's "on condition" maintenance philosophy, meaning engine service events are driven not by operating time, but when scheduled inspections reveal the need. On gas fuel, a typical engine operates over 50,000 hours before requiring anything beyond preventive maintenance. Power and pipeline operations using GE's LM2500 gas turbines run reliably at full power 24/7 using this same maintenance philosophy.

OPEX

With little maintenance required underway, COGES makes possible the reduction of four licensed crew members versus diesel-powered ships, representing a $400,000 per year cost OPEX reduction.

The total COGES plant requires minimal preventive maintenance. The LM2500 gas turbine itself requires only 300 man-hours per year for preventive maintenance. Regular tasks include checking fluid levels, changing filters and simple inspections to ensure proper operation – all easily performed by the ship's crew. Similar to the gas turbine, the generator set, heat recovery steam generator, steam turbine generator, fuel compressor and black start diesel all require only very light preventive maintenance. To perform the infrequent corrective actions, ship technical staff needs only minimal training. The table on the previous page illustrates the requirements and frequency for the on-ship maintenance routine of the COGES system.

Global Presence

To meet the needs of customers across the globe, GE maintains a robust inventory of spare engines and parts. An extensive network of GE authorized service providers ensures world-class support of GE engines for decades to come. When overhaul is required — on average, after 50,000 operating hours — rather than service in place as is the norm for diesels, the gas turbine is removed to a land-based facility for overhaul. The removed asset is replaced with a spare engine, all within 24 hours, so that the ship is quickly returned to revenue service. The installed gas turbine is immediately ready for unrestricted service since no break-in period is required. Gas turbine removal is easily timed to coincide with scheduled ship maintenance. Thus GE's maintenance philosophy, combined with high reliability and a compact, easy-to-remove design, yields increased ship availability.

Optimal Readiness

Buquebus, owner and operator of the Buenos Aires-based fast ferry Francisco, entered into a 10-year Customized Service Agreement (CSA) with GE. The two dual-fuel powered LM2500 gas turbines (LNG and liquid) propel the world's fastest commercial ship to more than 50 knots. A CSA tailored expressly for Francisco includes both scheduled and unscheduled maintenance, onsite field service support, component repair and engine lease coverage.

GE provides total maintenance service for 24 LM2500 gas turbines powering the Royal Canadian Navy HALIFAX-class frigates. Under this in-service support contract now in its 15th year, the RCN enjoys an impressive 99.85% average gas turbine availability. GE provides dedicated field representatives (home port and deployed) for 24/7 support, overhaul services and parts inventory management. Just last year, the Royal Australian Navy awarded a similar contract to GE for service support of the RAN LM2500 gas turbine fleet.

PHOTOS:
Left: The MAN D2862 LE124 is actually used for agricultural engineering. Griffon Hovercraft now meet the current emission standards for marine applications.

Right: Since summer 2016, the Solent Flyer and Island Flyer have been carrying passengers across the Solent.

(© MAN)

(© Griffon Hoverwork)

MAN D&T

Innovative Hovercraft Drive

In April 2016 Griffon Hoverwork finished Solent Flyer and Island Flyer, a pair of amphibious craft, 12000TD models, for ferry company Hovertravel, which were built to replace the 30-year-old AP-188 models at the beginning of summer 2016.

The older models were equipped with four engines, as is customary in conventional hovercraft. **But courtesy of an innovative new drive system, the 2000TD model hovercraft require only two power units, a major step in cutting fuel consumption by approximately one-third.**

The double-engine system is comprised of a pair of MAN D2862 LE124, enableing the hovercraft to draw upon 1,586 kW (2,158 hp), enabling a top speed of 50 knots (92.6 km/h).

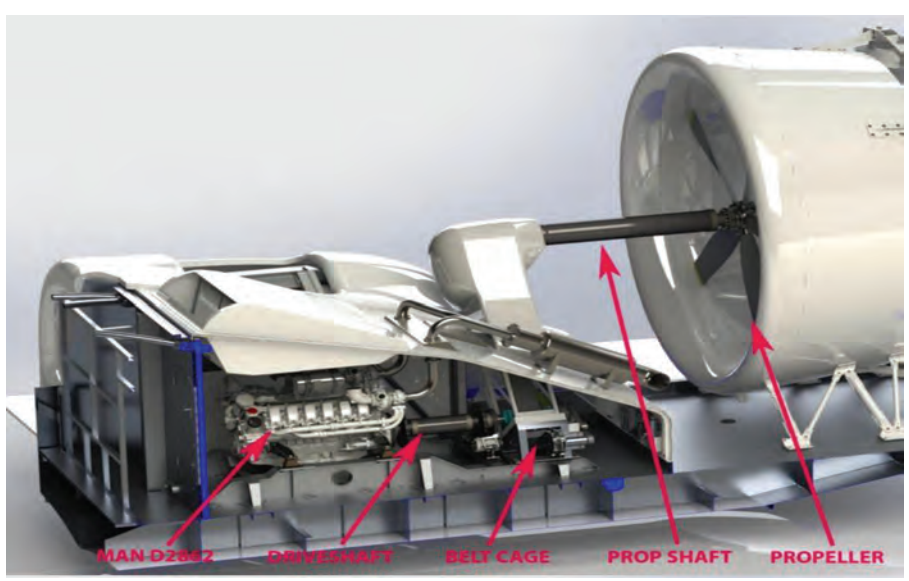
The 12-cylinder units are the heart of an innovative drive package. The drive has been configured specifically for this very use, which is why the development departments of the Marine and Off-Road market segments worked together on the project in the MAN International Engine Competence Center in Nuremberg, Germany. Together they developed modifications to the engine in order to be able to meet the challenges of a hovercraft.

"With the D2862 LE124 we have deliberately chosen engines used for agricultural engineering because they are lighter and are radiator cooled. This is important because with a hovercraft you do not come into direct contact with the water therefore it is not possible to use the typical water cooling system used for marine engines. In addition to various minor modifications, the special feature of the power units – which are actually used on the land – is that they comply with the MARPOL regulations for the shipping industry," said Andrew Mellard, General Manager of MAN Engines & Components in the UK. The hovercraft engines need to meet this standard because they are used at sea in the U.K. as passenger ferries. The ferry company Hovertravel Ltd. is the first to use hovercraft of this type in a commercial context. The models, which are to be replaced in the future, cross the Solent in the south-west of the UK over 70 times a day and carry both commuters and tourists across the strait.

The new amphibious vehicles were designed and produced for the ferry service by the sister company Griffon Hoverwork. Thanks to the new drive design for the Solent Flyer and the Island Flyer, there is now a considerable potential for fuel savings. The 12000TD models began a phased introduction in the summer of 2016 and have been transporting passengers more comfortably and more importantly, much more efficiently from Portsmouth to the Isle of Wight. In one trip across the strait, the hovercraft can carry up to 88 people, including the crew, meaning that the hovercraft can cater for three times the capacity of an average city bus.

Fuel Savings

With a 793 kW (1,079 hp) output at 1,800 rpm



Powertrain of the Hovercrafts Solent Flyer and Island Flyer.

(© Griffon Hoverwork)

Brunvoll Acquires Scana Propulsion

Above: Odd Tore Finnøy, CEO, Brunvoll AS.
Below: Final assembly and FAT of Brunvoll AR100 Retractable Azimuth Thruster.

(Photos: Brunvoll)

Brunvoll, a family-owned company headquartered in Molde, Norway, that designs, manufactures and services complete thruster systems for maneuvering, positioning and propulsion of advanced vessels, signed an agreement with Incus Investor ASA to acquire all the shares in Scana Propulsion AS, including subsidiaries Scana Volda AS and Scana Mar-El AS in Norway and three sales companies located in the U.S., Singapore and China. Brunvoll Holding AS signed an option agreement for the acquisition of Scana Volda AS Real Estate, which owns manufacturing and office facilities of Scana Volda AS. Scana Propulsion AS supplies gear and propeller systems with associated control systems for the propulsion of ships and thus have a complementary product range to Brunvoll. Odd Tore Finnøy, CEO, Brunvoll, said the acquisition is a strategic move, aiming is to create a "win-win" for both companies, a single source offering better, comprehensive solutions for both propulsion and operation of advanced vessels. "We are strengthening our position in the market with this acquisition," said Finnøy. The transaction is subject to approval from the Competition Authority.

– which each engine generates from a 24.24 L cylinder capacity – these vehicles have enough power available to accelerate the hovercraft up to speeds of 50 knots (92.6 km/h). In the older amphibious vessels two engines were used for lift and two were used for horizontal acceleration. In the new models, these two functions have been combined, so that the two 12-cylinder engines provide both lift and propulsion.

Due to their modern design, the new systems not only saves fuel and money, but also helps to improve comfort levels onboard the hovercraft:

"The engines are fuel-efficient and quiet and this is very important in ensuring our passengers have a pleasant experience," said Mark Downer, Chief Engineer at Griffon Hoverwork. "We have also reduced the noise level in the cabin by using larger propellers. They can deliver the same active power as their predecessors did, but at a lower speed," said the Chief Engineer.

A Design Challenge

The challenges in designing a hovercraft start, however, when looking at the geometry and design of the centerof gravity. To make a structure hover that has a floor area of 22.4 times ten meters, i.e. the size of a tennis court, requires sophisticated engineering: the hull of the vehicle is equipped with a skirt made of special composites. An air cushion, which is generated by fans under the hovercraft, start to make the vehicle hover. One and a half meters above the ground, the amphibious vehicle can then be moved forwards by means of the propeller at the rear. The propeller shafts and the electric motors for operating the lift fans are powered by the MAN 12-cylinder engine. The engines are mounted as low as possible in order to generate an ideal center of gravity.

In addition to being used as a passenger ferry, hovercraft are already in use in many other fields. Border guards, the coast guard and disaster relief, among others, use these amphibious vehicles. The outstanding feature of the hovercraft is that they can be used on almost any surface, something that confers considerable advantages, especially in developing countries that have a poor infrastructure. For the operators of Hovertravel Ltd., the characteristics of the hovercraft are also worth their weight in gold. Due to their very nature, they are independent of the tides, and at low tide they can travel right up to the location for the next bus connection, therefore saving passengers a long walk.

Technical Data for the D2862 LE124	
Power	793 kW (1,079 HP)
Cylinder capacity	24.24 L
Cylinder (arrangement)	12 (V)
Dry weight	1,959 kg
Rated engine speed	1,800 rpm
Min. specific fuel cons.	199 g/kWh [1500]
Compression ratio	19:1

(Image: © Kongsberg)

New CO2 Monitoring, Reporting and Verification (MRV) application for Kongsberg Maritime's K-Fleet suite of Marine Fleet Management Software.

Kongsberg: Monitoring, Reporting & Verification Application

Kongsberg Maritime developed a new Carbon Dioxide (CO2) Monitoring, Reporting and Verification (MRV) application for its K-Fleet suite of Marine Fleet Management Software. It has been assessed as meeting the requirements of new EU-regulation 2015/757, which is a result of the EU calling for a global approach to reducing greenhouse gas emissions from international shipping. Entered into force on July 1, 2015, the regulation will be fully effective on January 1, 2018, when large ships using EU ports will be required to report their verified annual emissions and other relevant information. According to the 3rd IMO GHG study, Maritime transport emits approximately 1000 million tons of CO2 annually and is responsible for about 2.5% of global greenhouse gas emissions. By some estimates, shipping emissions are predicted to increase between 50% and 250% by 2050. The regulation, for ships exceeding 5000 GT and which call at any EU port regardless of flag or country of ownership, aims to quantify and reduce CO2 emissions from the shipping industry and demands that shipping companies have monitoring plans prepared by August 31, 2017. As per the new regulation, K-Fleet MRV enables monitoring and reporting of emissions on per voyage basis to, from and between EU ports, and is available for deployment now in new and existing K-Fleet installations. By automating much of the CO2 calculations and report generation, K-Fleet MRV reduces the burden for crews to ensure that vessel's and fleets meet the requirements of the new regulation. The system combines data collection from on board sensors and manual entries, making it easier for events to be verified by the Master before reports are sent to the shore-office. K-Fleet MRV can be interfaced with other K-Fleet applications including K-Fleet Logbook and K-Fleet Maintenance, which provides for quality assurance of measuring equipment on board.

Radio Zeeland DMP Launches Titan Line

Radio Zeeland DMP is manufacturing a next-gen navigation display system – the TITAN Line – that can be connected either to a network or to a wired system. The technology is touted by the manufacturer as a first; the first navigation line to provide wider flexibility and customization with the ability to have a combined digital or analogue display unit within the same panel. The TITAN Line incorporates technology deployed from its earlier products FALCON or SIGMA, has ISO-certified quality assurance, and is ideal for all types of new builds or refits for the commercial shipping industry.

"Our R&D Department upgraded the current design to a more customized, digital model," said David Leone, President of Radio Zeeland DMP. "The TITAN Line provides a much more flexible solution and has many more variable options, which will make the lives of engineers and project managers a much easier process to integrate our system into a multitude of different instruments. These instruments could be anything from rudder angle sensors, an echo sounder indicator set, wind speed and direction indicator, rate of turn indictor, GPS compass, auto pilot, path pilot, intercom station, generic control panel, trackball panel, steering system, joystick panel, to controlling a camera or search light.

The TITAN line from Radio Zeeland DMP on display at the Workboat Show in New Orleans.

(Image: Radio Holland Group)

Presentation of the anniversary book A Century Radio Holland during the celebration of the 100th anniversary of Radio Holland on board of the ss Rotterdam. From left; Paul Smulders (CEO Radio Holland Group), Ing. A. Aboutaleb (Mayor of Rotterdam), Erik van der Noordaa (CEO RH Marine Group) and Ben Vree (Chairman of the supervisory board of RH Marine Group).

Radio Holland Turns 100

One of the ubiquitous names in maritime history, Radio Holland Group (Rotterdam) celebrates its 100th anniversary in the maritime shipping industry in 2017. An event to help celebrate took place on board the historical ship ss Rotterdam in the port of Rotterdam where Radio Holland also has its headquarters. “We have a rich history, full of unique moments and milestones,” said Paul Smulders, CEO, Radio Holland. “At the same time we always look ahead. For example with developments and innovations in remote monitoring, connectivity and ICT on board. Our aim is to help our customers to manage their operations as efficient, safe and effective as possible.”

The event onboard ss Rotterdam was a ‘Who’s Who’ in the industry, including ship owners, operators and managers, as well as yards, suppliers, class, navy and former directors of the company.

To commemorate the milestone the company created the book *‘A Century Radio Holland, 1916-2016’* which examines the history of thecompany in text and visuals.

One hundred years ago ...

The company was founded in 1916 in Amsterdam as the “Nederlandsche Telegraaf Maatschappij Radio-Holland” by a group of Dutch ship owners. They saw the significance and necessity of radio communications to the safety and efficiency of shipping. Radio Holland began installing radio stations on board of Dutch merchant vessels. In those years and up to the nineties Radio Holland also employed the radio-officer (also called ‘sparks’) on board, who operated the equipment and in the early days with the morse key. For this purpose, Radio Holland founded a special own training college for radio-officers after the first World War, in Amsterdam. When the radio-officer job ceased to exist on board in the beginning of the nineties, several radio-officers came ashore in the Radio Holland organization in various functions, from technician to purchaser, using their onboard and technical knowledge excellently.

In the years following this pioneering start, the company expanded its activities considerably and soon built up a worldwide network of branches, starting off in the East Indies(1920s), Curaçao (1930s) and continuing to for example Hong Kong, Singapore, USA, Middle East and Africa in the seventies & eighties.

Today, Radio Holland specializes in NavCom, Connectivity, On Board ICT and Maintenance solutions. It connects its customers courtesy of a network of more than 80 offices globally.


U.S. Navy

Ray Mabus


Conrad Shipyard

Kinkle


©Devin Ford / Marine Exhaust Systems)

Simmons


ASRY

Shaw


Schottel

Aucoin


VT Halter

Albert

U.S. SecNAv Calls for 355-ship Fleet

In announcing the results of the 2016 Force Structure Assessment (FSA), U.S. Secretary of the Navy **Ray Mabus** recommended a 355-ship fleet, including 12 carriers, 104 large surface combatants, 52 small surface combatants, 38 amphibious ships and 66 submarines.

MHI Makes Executive Changes

Mitsubishi Heavy Industries, Ltd. (MHI) announced executive-level personnel changes effective January 31 and February 1, 2017. Hiroshi Yokota, SVP, Head of Nagasaki Shipyard & Machinery Works, President of Mitsubishi Heavy Industries Shipbuilding Co., Ltd., will retire January 31, 2017. Masao Miyazaki, currently Fellow, GM, Shipbuilding & Ocean Development Division of Commercial Aviation & Transportation Systems, will become Fellow, General Manager, Shipbuilding & Ocean Development Division of Commercial Aviation & Transportation Systems, Head of Nagasaki Shipyard & Machinery Works effective February 1, 2017.

Petterson Named Great Lakes CEO

The Board of Directors of Great Lakes Dredge & Dock Corporation, provider of dredging, environmental and remediation services, announced the selection of Lasse Petterson as CEO, as well as his appointment to the company's board of directors. Petterson will join the Board immediately and assume the role of chief executive officer once his application for U.S. citizenship, as required by the Jones Act, is finalized, which is expected in Q1 2017. Petterson brings to the role 35 years of experience in the engineering, construction and maritime industries.

New Maritime Bank Opens Its Doors

A new niche bank for the shipping and offshore sector opened its doors for business on December 20, 2016. Serving the global maritime markets from its main office in Oslo, Maritime & Merchant Bank ASA (M&M) will provide secured lending in the form of first priority terms loans.

Conrad's Kinkle Retires after 51 Years

Conrad Shipyard's Johnny Kinkle retired in December 2016 after 51 years in shipbuilding. Kinkle went to work for Conrad on December 2, 1969, and for five decades his reply to any request was, "No problem, babe. Whatever the customer wants."

"Johnny Kinkle has been my good friend and a dedicated and loyal member of our team for many, many years," said Johnny Conrad. "He has been a mentor and inspiration to me and to many others in the Conrad family. We will miss his can-do attitude and wish him much happiness in his retirement."

Simmons Named CFO

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

ASRY: Andrew Shaw takes Helm

Andrew Shaw has taken up his new position as Chief Executive at ASRY. Effective January 4, 2017, Shaw will be leading the firm as it enters its 40th year of operation. He re-joins the company after previously holding the position of General Manager of the ASRY Offshore Services division from 2009 to 2014.

Aucoin Joins Schottel

Gary Aucoin has joined Schottel Inc. in Houma, La., as the new General Manager. Aucoin is a dedicated sales executive taking over leadership of the growing U.S. subsidiary. Most recently, from 2010, he held the role of account manager at Wärtsilä with responsibility for both new business development and after sales service in the offshore market. Aucoin holds a master degree in business administration and 15-years of experience in the North American maritime sector.

KR Elects Lee Chairman & CEO

The Korean Register (KR) – an IACS member classification society – has announced that Mr. Lee Jeong-kie has been elected as its new Chairman and CEO. Mr Lee was elected at the extraordinary meeting of KR's general assembly which oversees the running of KR and comprises 86 voting members. Mr. Lee assumes the role of Chairman and CEO, following the death of Mr. B. S. Park, who passed away after a short illness in October 2016.

MTNW Rebrands as Rugged Controls

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

Noonan Named CMA's '17 Commodore

CMA announced that John D. "Jack" Noonan, CEO of Chembulk Tankers, has been named as the CMA Commodore for the year 2017. Noonan joined the company in April 2007, originally serving as COO. He is a graduate of the U.S. Merchant Marine Academy at Kings Point.

Albert Takes the Helm at VT Halter

Paul J. Albert has been appointed as the President and CEO for VT Halter Marine, effective immediately. "Paul's proven leadership and operational skills in managing complex shipbuilding projects makes him the right choice to lead VT Halter Marine. We are confident in his ability to grow the company while maintaining its reputation as one of the most innovative shipbuilding companies in the United States," said Admiral Bill Landay, Chairman of the VT Halter Marine Board. Albert, who joined VT Halter Marine as the Senior Vice President of Production in 2002, was named COO in 2009. He had served as the Interim President and CEO since July 2016.


Crowley

Crowley Honors USMMA Cadets

Crowley Maritime awarded six U.S. Merchant Marine Academy (USMMA) cadets with Thomas B. Crowley Memorial Scholarships. Crowley's Jenny Terpenning, supervisor, marine recruiting, presented the scholarships to Midshipmen (MIDN) Stacee Glass, Connor Sexton, John Terselic, Tanner Evans, Dylan Rabbitt, and Chandler Chiappe.

Glass, from Johnstown, Pa., is midshipman first class studying maritime logistics and security. Glass sailed aboard the Crowley-managed M/V National Glory during her sea term.

Sexton, a midshipman first class from Vermilion, Ohio, is majoring in marine transportation. During his time at USMMA, he has been an integral member of the offshore sailing team.

Terselic, a midshipman first class originally from Tijeras, New Mexico, completed his at-sea semester aboard the Crowley-managed M/V Ocean Giant, as an engine cadet.

Evans, a USMMA midshipman first class from Anchorage, Alaska, is studying marine transportation. After he graduates in June, he plans to begin a maritime career with a third mate's license.

Rabbitt, from Easton, Md., is a midshipman second class majoring in maritime logistics and security. He served as a cadet onboard various commercial and U.S. military vessels that were providing the U.S. Air Force with prepositioned ammunition stocks, conducting underway replenishments and providing support for the 6th Fleet Command.

Chiappe, a midshipman second class from Granbury, Texas, is studying marine transportation. Chiappe hopes to serve as a Navy pilot before joining a commercial maritime fleet.

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MARITIME REPORTER AND ENGINEERING NEWS

2017 EDITORIAL CALENDAR

JANUARY

AD CLOSE: DEC 21

The Ship Repair & Conversion Edition

Market: Fishing Vessel Quarterly
Technical: Marine Salvage & Recovery
Product Ship Repair Tools
Design: Passenger Vessels: Ferries & Riverboats
Roundtable: Maritime Propulsion Directory & Guide
Special Report: Bunker Fuel
Region Report: The Pacific Northwest

BONUS DISTRIBUTION:
PVA Maritrends: Jan 29-Feb 1, Seattle, WA
ASNE DAY: Feb 14-16, Crystal City, VA
Euromaritime: Jan 31-Feb 2, Paris, France

FEBRUARY

AD CLOSE: JAN 24

The Cruise Industry Edition

Market: Shipbuilding: Cruise & Passenger
Technical: Satellite Communications
Design: Marine Pollution Mitigation
Roundtable: IoT: The Internet of Things
Special Report: Cruise Ports of Call
Product : Green Marine Fuels & Lubricants and Emission Technologies
Region Report: Vietnam

BONUS DISTRIBUTION:
Seatrade Cruise Global: Mar 13-16, Ft Lauderdale
Intermodal Asia 2017: Mar 22-24, Shanghai, China
Inland Waterways Conference: Mar 7-8, Cincinnati
Green Ship Technology Conference: Mar 21-24, Copenhagen
INMEX Vietnam: Mar 29-31, Ho Chi Min City, Vietnam

MARCH

AD CLOSE: FEB 21

The Green Marine Technology Edition

Market: U.S. Navy Quarterly
Market: Maritime Simulation Technologies
Technical: Energy Efficient Drives
Product Marine Coatings & Corrosion Control
Design: Port & Ship: Loading and Unloading Technology & Equipment
Roundtable: Tanker Owners
Special Report: Ballast Water Technology
Region Report: Singapore

BONUS DISTRIBUTION:
CMA Shipping: Mar 20-22, Stamford, CT
NACE Corrosion: Mar 26-30, New Orleans, LA
Sea-Air-Space: Apr 3-5, National Harbor, MD
Gastech Japan: Apr 4-7, Tokyo, Japan
SeaAsia: Apr 25-27, Singapore
Commerical Marine Expo: Apr 26-27, New Bedford, MA

APRIL

AD CLOSE: MAR 21

The Offshore Annual

Market: Fishing Vessel Quarterly
Technical: Fuels, Lubricants & Additives
Product: Deck Machinery, Winches and Ropes
Design: Workboat Design & Construction
Roundtable: Energy Port Focus
Special Report: Marine Medicine
Region Report: Japan

BONUS DISTRIBUTION:
Inland Marine Expo: May 22-24, St. Louis
Tugnology: May 23-24, Rotterdam, Netherlands
Bari Ship 2017: May 25-27, Imbari, Japan
NAVExpo: May 10-12, Lorient, France
ASNE Intelligent Ships Symposium: May, Philadelphia
Portsecure 2017: May

MAY

AD CLOSE: APR 21

The Marine Propulsion Edition

Market: Shipbuilding: Oceangoing Ships
Technical: Cyber Security
Design: Hybrid Drives
Product: Navigation: Electronics, Radar & ECDIS
Roundtable: RIB & Patrol Boat Report
Special Report: U.S. Coast Guard Annual
Region Report: Norway

BONUS DISTRIBUTION:
Norshipping: May 30-Jun 2, Oslo, Norway
Electric & Hybrid Marine World Expo: Jun 6-8, Amsterdam
MAST Asia: Jun 12-14, Tokyo, Japan
SeaWork: Jun 13-15, Southampton, UK

JUNE

AD CLOSE: MAY 24

The Annual World Yearbook

Market: U.S. Navy Quarterly
Technical: Dredging
Design: Fire Safety Systems
Product: Pumps, Valves, Pipes & Insulation
Roundtable: Maritime Academies & Training Centers
Special Report: The Yachting Life (YachtingJournal.com)
Region Report: Greece
Special Section: Maritime Reporters Buyer's Guide

BONUS DISTRIBUTION:
Marine Money Week: Jun 20-22, New York, NY

2017 EDITORIAL CALENDAR

MARITIME REPORTER AND ENGINEERING NEWS

JULY

AD CLOSE: JUN 23

The Marine Communications Edition

Market: Fishing Vessel Quarterly
Market: Tugboat, Towboat & Barge
Technical: Oil Spill Response & Recovery
Product: Maritime Software Solutions
Design: Offshore Accommodation
Roundtable: Ship Management
Special Report: Marine Electronics Equipment & Supplier Guide (MarineElectronics.com)
Region Report: Europe

AUGUST

AD CLOSE: JUL 25

The Shipyard Edition

Market: Shipbuilding: The World Report
Technical: Heavy Lifting Solutions: Maritime Cranes, Winches, Windlasses & Capstan
Product: Ballast Water Technologies
Design: Icebreakers
Roundtable: Big Data
Special Report: Cruising Europe
Region Report: Russia

BONUS DISTRIBUTION:
Seatrade Europe: Sep 6-8, Hamburg, Germany
NEVA 2017: Sep 19-22, St. Petersburg, Russia
Offshore Marine & Workboats: Sep 25-27 Abu Dhabi, UAE

SEPTEMBER

AD CLOSE: AUG 24

Maritime Port & Ship Security Edition

Market: U.S. Navy Quarterly
Technical: Drones
Product: Clean Water Technologies
Design: Interior Design: Onboard Amenities
Roundtable: Environmental
Special Report: Offshore Deepwater: Structures & Systems
Region Report: Denmark

BONUS DISTRIBUTION:
Shipping Insight
Danish Maritime Days: Copenhagen, Denmark
OTC Brazil: Oct 24-26, Rio de Janeiro, Brazil
KORMARINE: Oct 24-27, Busan, Korea

OCTOBER

AD CLOSE: SEP 22

The Marine Design Annual

Market: Fishing Vessel Quarterly
Technical: Marine Firefighting, Safety & Salvage
Product: Software Solutions: CAD/CAM
Design: Naval Architecture & Marine Engineering
Roundtable: Ship Classification Societies
Special Report: Propulsion, Thrusters & Gears
Region Report: The Netherlands

BONUS DISTRIBUTION:
SNAME: Oct 23-28, Houston, TX
Europort: Nov 7- 10, Rotterdam, Netherlands
Marintec China: Dec 5-8, Shanghai, China

NOVEMBER

AD CLOSE: OCT 25

The Workboat Edition

Market: Shipbuilding: Workboats
Technical: Alternative Marine Fuels
Design: Offshore Wind Power
Roundtable: Marine Coatings & Rust Control
Special Report: Top 50 Marine Equipment Distributors
Product: Deck Machinery, Winches & Ropes
Region Report: U.S.A.

BONUS DISTRIBUTION:
Workboat Show: Nov, New Orleans, LA
Interferry 2017: Split, Croatia
Clean Gulf: Dec 4-7, Houston, TX

DECEMBER

AD CLOSE: NOV 22

The Great Ships of 2017

Market: U.S. Navy Quarterly
Technical: The Autonomous Ship
Design: Marine Engine Guide (MaritimePropulsion.com)
Roundtable: Ship Registries
Special Report: Prolific Ship Owners & Buyers
Product: Welding & Cutting Equipment

BONUS DISTRIBUTION:
Surface Navy Association 2018: Jan 2018, Crystal City, VA

**Editoral calendar content may be subject to change

BUYER'S DIRECTORY

This directory section is an editorial feature published in every issue for the convenience of the readers of MARITIME REPORTER. A quick-reference readers' guide, it includes the names and addresses of the world's leading manufacturers and suppliers of all types of marine machinery, equipment, supplies and services. A listing is provided, at no cost for one year in all issues, only to companies with continuing advertising programs in this publication, whether an advertisement appears in every issue or not. Because it is an editorial service, unpaid and not part of the advertisers contract, MR assumes no responsibility for errors. If you are interested in having your company listed in this Buyer's Directory Section, contact Mark O'Malley at momalley@marinelink.com

ANCHORS & CHAINS

Anchor Marine & Supply, INC., 6545 Lindbergh Houston, Texas 77087 , tel:(713) 644-1183, fax:(713) 644-1185, david@anchormarinehouston.com

ANTI-CONDENSATION COATINGS

Mascoat Products, 4310 Campbell Rd., Houston, TX , USA , tel:(713) 465-0304, fax:(713) 465-0302, wconner@mascoat.com

AUTOMATIC IDENTIFICATION SYSTEM

Saab AB (publ) TransponderTech, SE-589 41 Linkoping , tel:46 13 180000, fax:46 13 182377, Info.transpondertech@saabgroup.com

BARGE FABRICATION

McDonough Marine Service, 3500 Causeway Blvd., Suite 900, Metairie, LA , USA , tel:(504) 780-8100, fax:(504) 780-8200, pstant@marmac.net

BOAT BUILDING AND DESIGN

All American Marine, 200 Harris Avenue, Bellingham, WA , USA , tel:(360) 647-7602, fax:(360) 647-7607, jhudspeth@allamericanmarine.com

COATINGS/ CORROSION CONTROL/ PAINT

Hempel A/S, Lundtoftegårdsvej 91 2800 Kgs. Lyngby , tel:45 4593 3800, fax:45 4588 5518, marine@hempel.com , www.hempel.com

Tri-State Coating and Machine Co. Inc., 5610 McComas Road, PO Box 296, Salt Rock, WV V4W 3S8, USA , tel:1-800-477-4460, fax:304-736-7773, brichmond@tscminc.com

CORDAGE

Helkama Bica Oy, Lakimiehenkatu 4, KAARINA FI-20780, Finland , tel:+358-2-410 8700, sales@helkamabica.fi , www.helkamabica.com

COUPLINGS

Centa Corporation, 2570 Beverly Drive #128, Aurora, IL 48331, USA , tel:(630) 236-3500, fax:(630) 236-3565, bobl@centacorp.com

DECK MACHINERY- CARGO HANDLING EQUIPMENT

Allied Systems Company, 21433 SW Oregon Street, Sherwood, OR 23462, USA , tel:(503) 625-2560, cranes@alliedsystems.com, www.alliedsystems.com

DRILLS

Hougen Inc., 3001 Hogan Drive Swartz Creek, MI 48473

DRIVESHAFTS

Centa Corporation, 2570 Beverly Drive #128, Aurora, IL 48331, USA , tel:(630) 236-3500, fax:(630) 236-3565, bobl@centacorp.com

Driveline Service of Portland, Inc., 9041 NE Vancouver Way, Portland, OR 97211 , USA , tel:(503) 289-2264, fax:(503) 289-5838, info@driveshafts.com contact: Kevin McCaffrey, www.driveshafts.com

DRY DOCK TRAINING

DM Consulting, 12316 Dormouse Road, San Diego, CA 92129, USA , tel:+1 858-705-0760, joe@drydocktraining.com

EDUCATION

San Jacinto College, 8060 Spencer Highway Pasadena, TX 77505

ENVIRONMENTAL SOLUTIONS

Evonik Resource Efficiency GmbH, Active Oxygens, Rodenbacher Chaussee 4, D-63457 Hanau, Germany, , tel:+49 6181-59 5326, fax:+49 6181-59 75326, juergen.meier@evonik.com , www.evonik.com/peraclean-ocean

FILTERS/FILTER SYSTEMS

UT 99 AG Oil Mist Separators, Schaubenstrasse 5 CH-8450 Andelfingen , Switzerland , tel:+41 52 397 11 99, fax:+41 52 397 11 90, info@ut99.ch , www.ut99.ch/en

GROUNDING & EARTHING BRUSHES

Sohre Turbomachinery, Inc., 128 Main Street, Monson, MA , USA , tel:413-267-0590, fax:413-267-0592, tsohre@sohreturbo.com contact: Tom Sohre, www.sohreturbo.com

HYDRAULIC SYSTEMS

Jastram Engineering, 135 Riverside Drive, North Vancouver, BC, V7H 1T6 Canada , tel:Office: (604) 988-1111 Cell: (604) 808 - 6281, csimon@jastram.com

INTERIOR DESIGN

Metalcolour Sweden AB, Box 510, SE-372 25 Ronneby, Sweden , tel:+46 457 781 00, fax:+46 457 666 75, info@metalcolour.com , www.metalcolour.com

INTERIOR MATERIALS

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LIFT EQUIPMENT

Kleeco, 10110 S. M43 HIGHWAY Delton, MI 49046

Tandemloc, 824 Highway 101(FONTANA BLVD) HAVELOCK, NC 28532

MARINE EQUIPMENT

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Smith Brothers, Inc., P.O. Box 124, Galesville,, MD , USA , tel:(410) 867-1818, fax:(410) 867-7813, smithbarge@comcast.net

MARINE TRANSPORTATION

Central Boat Rentals, Inc., P.O. Box 2545, Morgan City, LA , USA , tel:985-384-8200, fax:985-384-8455, earl@centralboat.com or gary@centralboat.com

MECHANICALLY ATTACHED FITTINGS (MAFS)

Viega, Mountain View Corporate Center Building 1, Suite 395 12303 Airport Way, Broomfield, CO , USA , tel:904-315-3899, fax:888-782-6188, paul.switzer@viega.us contact: Paul Switzer, www.viega.us

MILITARY PATROL CRAFT MANUFACTURERS

Brunswick Commercial & Government Products, 420 Megan Z Avenue, Edgwater, FL 80204, USA , tel:(386) 423-2900, kelsey.nemeth@whaler.com , www.brunswickcgp.com

Tampa Defense USA, 4350 62nd Avenue North, Pinellas Park, FL , USA , tel:(813) 792-2114 / (813) 843-8737, robert.stevens@tampa-yacht.com

NAVAL ARCHITECTS, MARINE ENGINEERS

3GA Marine, 208-1497 ADMIRALS RD VIEW ROYAL, Victoria BC Canada V9A 2P8

Bristol Harbor Group, Inc., 99 Poppasquash Road Unit H, Bristol, RI , USA , tel:(401) 253-4318, fax:(401) 253-2329, kribeiro@bristolharborgroup.com

Brunswick Commercial & Government Products, 420 Megan Z Avenue, Edgwater, FL 80204, USA , tel:(386) 423-2900, kelsey.nemeth@whaler.com

JMS Naval Architects, 70 Essex Street, Mystic, CT 06355 , USA , tel:(860) 536-0009 EXT 102, RickF@JMSnet.com contact: Rick Fernandes, www.JMSnet.com

The Shearer Group, Inc., 99 Poppasquash Road, Unit H, Bristol, RI , USA , tel:(401) 253-4318, fax:(401) 253-2329, kribeiro@bristolharborgroup.com

NITROGEN GENERATORS

Air Product AS, Vige Havnevei 78, 4633 Kristiansand, Norway, P.O.Box 4103 Kongsgaard, 4689 Kristiansand, Norway , tel:+47 38 03 99 00, norway@airproducts.com , www.airproducts.no

PAINTS AND ANTI FOULANTS

Sherwin-Williams, 101 W. Prospect Avenue Cleveland, OH 44115 , tel:(216) 515-4739, klarmstrong@sherwin.com contact: Kim Armstrong

PIPING INSTALLATION AND SERVICES

Tube-Mac Piping Technologies Ltd., 853 Arvin Avenue Stoney Creek, Ontario , tel:(905) 643-8823, fax:(905) 643-0643, sean.kennedy@tube-mac.com

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PROPULSION CONTROL SYSTEMS

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SATELLITE COMMUNICATIONS

MARLINK, Lysaker Torg 45 Post Box 433 NO-1327 Lysaker NORWAY , tel:+47 22 58 20 50, customercare@marlink.com , www.marlink.com

SEATING

The Springfield Marine Company, 1093 N. Cynthia Drive, Suite #1 Nixa, MO 65714

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Maritime Manager of Technical Projects

Keystone Shipping Co.
Full Time , Engineer
Category: Engineer / Naval Architect
Job Location: One Bala Plaza East Suite 600 Bala Cynwyd, PA, 19004 USA
Contact
Email: cdoyle@keyship.com
One Bala Plaza East Suite 600 Bala Cynwyd, PA, 19004 USA
Skills:
• International Shipping Company is currently seeking qualified maritime professional to fill the position of Manager of Technical Projects in the Engineering Department of our Bala Cynwyd, PA office, reporting directly to the Vice President of Engineering.
• Bachelor Degree in Naval Architecture, Marine Engineering or equivalent engineering discipline.
• At least five (5) years' experience in the Engineering Department of a ship operating or marine design related company.
• Demonstrated experience in project management and or ship design management on vessel modifications, or conversion of at least $5 Million.
• Working knowledge of U.S. Coast Guard and ABS rules and regulations.
• Possess or have the ability to obtain SECRET government security clearance.
• Have a Transportation Workers identification Card (TWIC) issued by the TSA.
• Be able to pass a physical and by physically able to enter confined spaces and climb ladders aboard ships while at sea or in port.
Description:
• Provide technical and/or operational advice to the Operations, Engineering and Chartering Department as it relates to regulatory compliance, vessel modifications, new construction, and other design or naval architectural matters.
• Receive and coordinate the review of new construction contract plans, specifications, construction drawings and instruction books.
• Manage and supervise all aspects of new construction projects, including inspections; costs and schedules; contract and specification review; plan approval; trails and testing; and warranty enforcement.
• Provide technical development and project management for major vessel modifications and conversions, including engineering, plan development, regulatory body approval, material procurement and specification preparation.
• Support the Port Engineers with technical and regulatory approval of vessel modifications as required.
• Remain cognizant of and current with existing and new regulatory body rules and regulations. Perform analysis of the effect of new regulations on Company vessels and disseminate such information to the Port Engineers, Fleet Administrators and other Company management personnel.
• Represent the company in industry technical forums related to regulatory developments and new regulations.
• Undertake additional assignments as directed by the Vice President of Engineering.
The position will require relocation to Philadelphia area and require national and international travel.
We offer salary based on experience and an excellent comprehensive benefits package.
M/F/D/V
EOE Employer

EXECUTIVE DIRECTOR

Salary: $ DOE , Full Time , Executive
Category: Corporate / Senior Management
Job Location: 5215 Ballard Ave NW Seattle, WA, 98107 USA
Contact Executive Board Member
Email: jeffjms@gmail.com
Cell Phone : (206)498-5147
5215 Ballard Ave NW Seattle, WA, 98107 USA
Description:
Job Title: Executive Director
Reports to: Executive Board
Location: Seattle, Washington
Salary: D.O.E.
Summary of Position: At the direction of the Deep Sea Fishermen's Union (DSFU) Executive Board, the Executive Director is responsible for the overall administration of the Deep Sea Fishermen's Union, and is the prime advocate for the DSFU, and its members. Responsibilities include, but are not limited to, political advocacy, membership services, communications, personnel management, and financial oversight. Some travel may be required.
Responsibilities and Duties:
Membership and Board Support
• Work with the Board to set goals and to prioritize objectives and strategies for the organization.
• Oversee membership activities such as providing general support, regular communications, making arrangements and preparing materials for monthly board meetings, committee formation and oversight, etc.
• Maintain the membership roster and Union cards.
• Prepare delegate packets and Union calendars.
• Ensure coordination and timely communications among members, board members, committees, and

staff to achieve project objectives.
• Increasing growth and expansion of the Union membership is paramount.
• Work with other trade organizations on concerns of mutual interest to members.
• Advise of Quota stock outlooks and investment opportunities; sablefish, halibut, pacific cod, and crab.

Administration and Operations

• Provide general oversight for efficient daily operations of the Union.
• Ensure that the organization operates within its bylaws and legal obligations as a Section 501(c)(5) non-profit corporation.
• Work with the Board to develop proposed budgets, implement programs within the budgetapproved by the Board, and ensure that the organization is fiscally sound.
• Ensure that the DSFU building upkeep reflects our pride of ownership.
• Communicate with other labor groups and Industry groups. The intent is to build a consensus on issues that affect the Union in their capacity as labor stakeholders.
• Recruit, hire, and supervise employees as directed by Board.
• Develop a positive organizational culture for both employees and members.
• Recommend and coordinate activities of contractors or consultants for various purposes as appropriate to meet the objectives of the organization.
• Seek additional funding through grants or other funding sources for special projects, if needed.

Policy Development and Advocacy

• Help identify regulatory or political needs, or issues that may affect the organization or its members.
• Represent the organization to State and Federal agencies, Congress, the North Pacific Fisheries Management Council, International Pacific Halibut Commission, industry conferences and meetings, and to the public press.
• The ideal Executive Director will secure appointments on regulatory entities such as the IPHC and governing bodies such as the NPFMC or PFMC to further DSFU member interests.
• Develop relationships with other organizations and government agencies, under direction of the Board, to further the organization's interests.

Science & Technology

• Help Board identify sablefish, halibut, and other groundfish science concerns or technological issues that affect members' groundfish harvesting operations and IFQ.
• Ensure organization representation at various groundfish meetings and committees, regional Gulf of Alaska, Bering Sea and Aleutian Islands groundfish Plan Teams, NPFMC SSC, IPHC, and other science-based organizations and meetings.
• Coordinate with consultants and various scientists on status of sablefish stocks, Halibut stocks, pacific cod stocks, crab stocks and stock assessments and harvest levels.
• Prioritize activities and supervise efforts surrounding these issues.

Public Relations and Deep Sea Fishermen's Union Promotion

• Strive to promote the Union in the local community; participate in various local seafood festivals and fishing industry events.
• Prepare materials, interact with the press, draft and release information at Board direction and represent the organization to the press as needed.
• Enlist the time and efforts of our members' wives and children to promote good will as well as seafood
• Revival of Scholarship Fund management

Essential Skills and Abilities

• Develop a comfortable working knowledge of the members, longline vessels, the Alaska longline sablefish and halibut industry and its history, and the current issues involved to maintain or improve the fishery.
• Demonstrate leadership to establish positive working relationships with members and other groups.
• Successful management experience in budgeting and personnel.
• Understanding of nonprofit organizations and working with an Executive Board.
• Effective communication skills, both written and oral.
• Effective computer skills and data management.

Education & Experience

• Experience working in marine resources, fisheries, or government.
• A combination of education and/or work experience may be considered. Previous fishing industry nonprofit, executive experience and college preferred.

Other Core Competencies

• Be diplomatic, trustworthy, and a critical thinker with sound decision-making skills.
• Manage time effectively in a high pressure, high stakes environment.
• Address and help to respectfully resolve issues and conflict.
• Build consensus by developing and motivating individuals to accomplish common goals.
• An Independent thinker capable of working with little or no guidance during fishing season.

Travel is required 45-60 days per year

Please send Cover letter, Resume and References to **dsfu@dsfu.org** Inquiries and applications will stay confidential among committee members.

MR
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52,53	Electronic Marine Systems	www.emsmarcon.com	(732) 382-4344
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31	Sohre Turbomachinery, Inc.	www.sohreturbo.com	(413) 267-0590
C4	SSI	www.ssi-corporate.com	Please visit us online
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21	Tecnico Corp.	www.tecnicocorp.com/marine	(757) 545-4013
3	The Switch	www.theswitch.com	+ 358 20 783 8200
41	University of Hawaii Marine Center	mgbanas@hawaii.edu	(808) 956-0690
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27	Walz & Krenzer	www.wkdoors.com	(203) 267-5712
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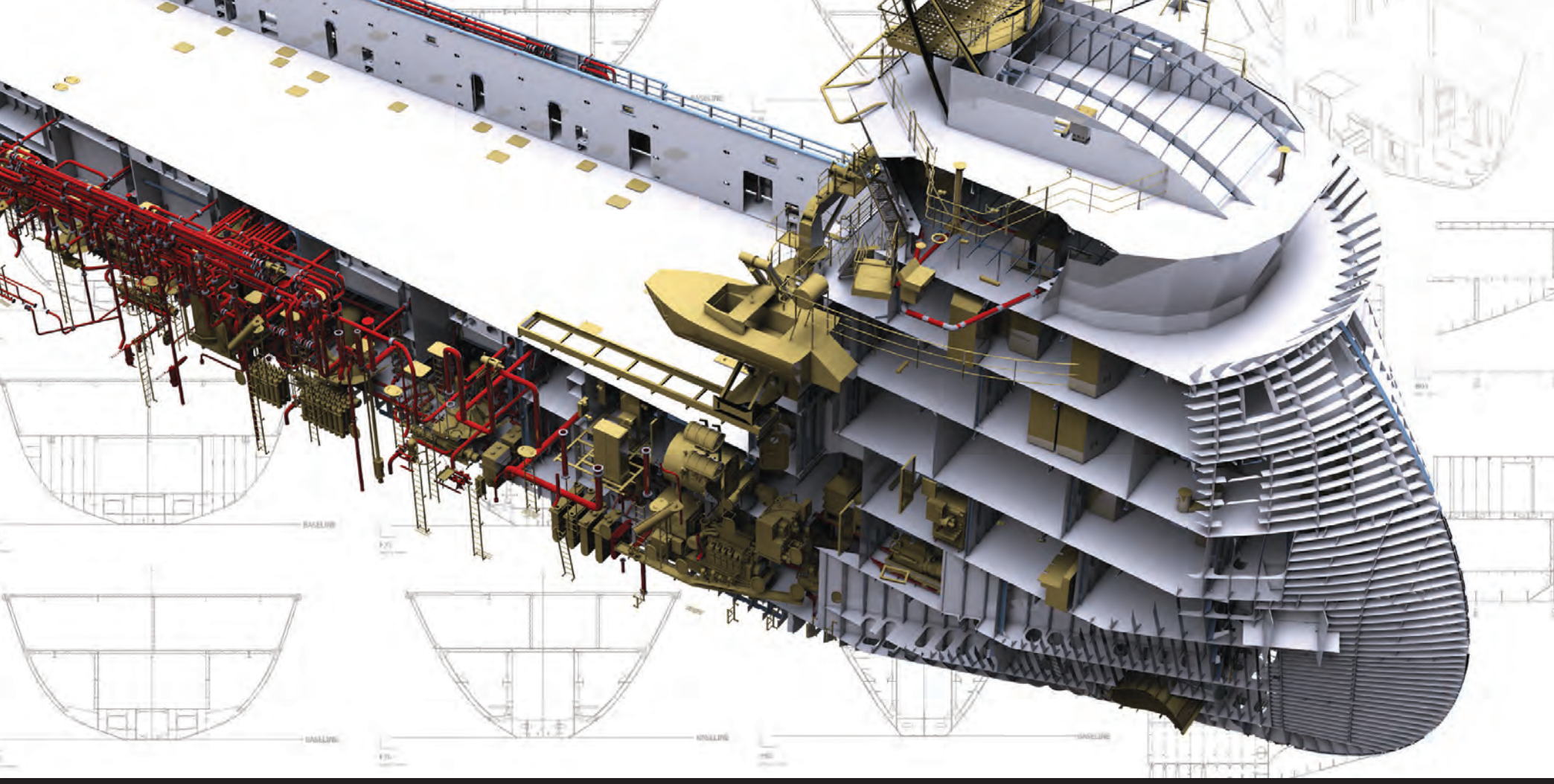

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• Reuse initial design data from Rhino, Maxsurf, NAPA and others	• Directly reuse the basic design	• Automatically nest plates and profiles directly from the model
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• Manage change with associative and parametric 3D modeling features	• Automatically build the production model (marking, assembly, bending and more) as the 3D model is created	• Generate pipe and HVAC spool drawings
• Create de-featured 3D models for FEA	• Expand shell plates including forming templates	• Generate 3D assembly drawings
• Generate 2D classification and general arrangement drawings from the 3D model	• Common environment for all disciplines	• Generate profile plots/sketches
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	• Automatically maintain part naming based on assembly sequence and properties	• Visualize the assembly sequence
		• Create as built models from laser scan data
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