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Volume 26 • Number 12

Marine News

DECEMBER 2015

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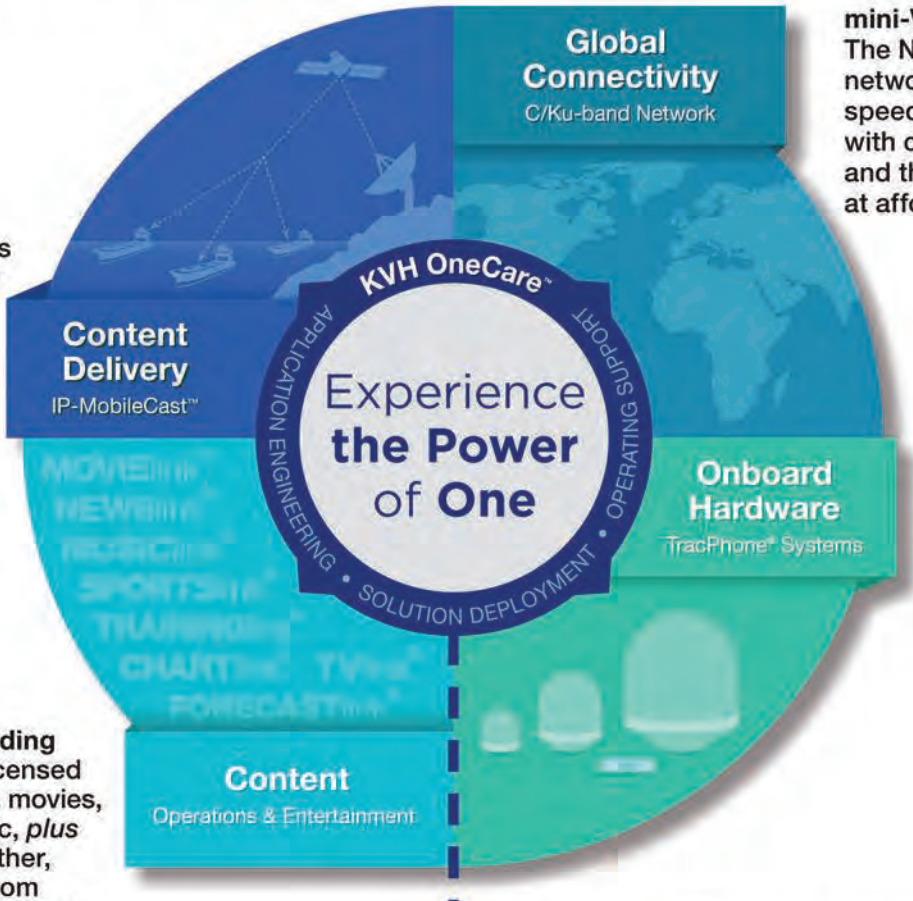

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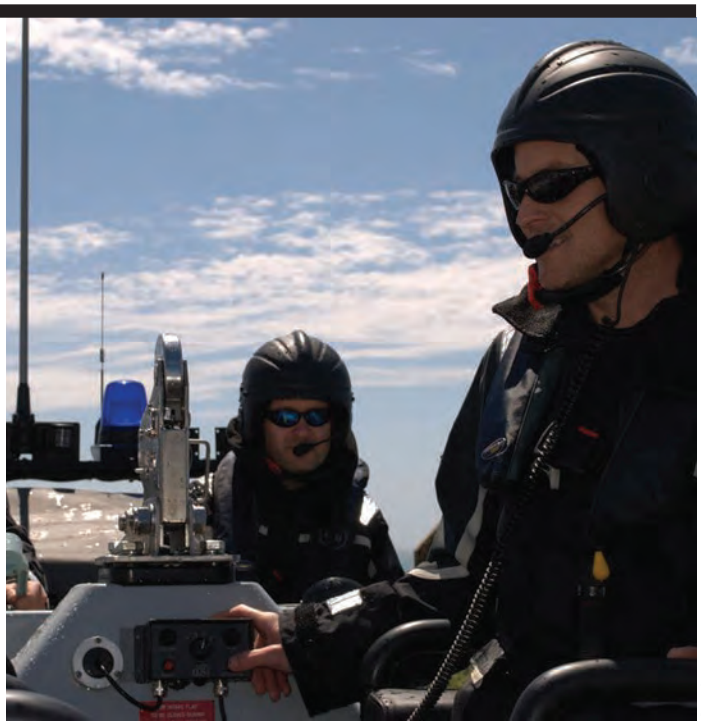

Credit: Drumgrange

Features

ON THE COVER

In late November, the Fire Department of the City of New York (FDNY) welcomed its newest fireboat the William M. Feehan, built by Metalcraft Marine. Feehan was an FDNY firefighter lost in the September 11 World Trade Center attacks. The FDNY fleet was out in force on the Hudson River to celebrate the new arrival. Our fireboat coverage begins on page 30.

(Photo: Greg Trauthwein)

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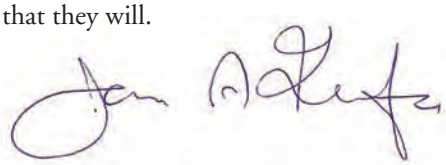
Within this edition, Allan Leatt, the new Chief Executive of the International Marine Contractors Association (IMCA) opines about the offshore oil and gas industry, saying that as oil neared its recent heady apex, *"… industry had probably become less efficient than at $20 oil, when you had to be very efficient and disciplined or you were out of business."* The lesson there, of course, is that when times get tough – and certainly, the world of workboats is inextricably linked with the health of global energy – the smarter companies who learn to adapt to the realities of the ongoing business climate are those that will not only survive, but also prosper.

One way to encourage prosperity, says Leatt, is to ensure that the efficiencies that become critical at a $40 per barrel threshold are the same ones we keep when oil (some day) climbs back above $100. Another way, of course, is to embrace and pursue innovation, new trends and better equipment, all of which adds up to a more economical – and better – way of doing business. Sure, the front end investment can sometimes be scary, but amortizing those costs over time for the backend payout is the ultimate reward.

In this, our final edition of 2015, we examine the best of new trends in boatbuilding and the innovative products that made their debut in the past 12 months. The scope and depth of these vessels and equipment is impressive. They show great innovation and beyond that; the willingness of industry to invest smartly in the future. Those investments might take the form of improved safety (always a concern when money is tight), environmental improvements intended to meet regulatory requirements (or better yet, just because it is the right thing to do), and/or products that improve the bottom line by improving operational efficiencies.

All of these efforts start at the proverbial 'drawing board,' or as vessel designers might say: the CAD/CAM screen. It is here where great advancements have been made over the last decade; shortening modeling times, simplifying the enormously complicated calculations that go into building the perfect boat and, at the end of the day, producing more accurate predictive models of how the finished product will perform on the water. Demonstrating that point aptly is ***MarineNews*** West Coast-based contributor Kathy A. Smith's look at two Canada-based firms, collaborating together on design and software. The story begins on page 42.

A glance in the Radar to see what is over the horizon in 2016 predictably yields a lot of sea clutter and not a whole lot of certainty. Hence, I will only make one prediction as we approach the end of the 2015 sea passage. What I do know is that the regulatory hammer, unlike the economy it oversees, won't take time off to weather a softened business cycle. In particular, the so-called subchapter M towboat rules are looming – on a steady bearing with decreasing range. No one knows definitively when they will come. That said; I know that they will.



Joseph Keefe, Editor, keefe@marinelink.com

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NOAA's Report on the U.S. Ocean and Great Lakes Economy

Issued in 2015, the report entitled "NOAA Report on the U.S. Ocean and Great Lakes Economy" is based upon 2012 NOAA data produced by NOAA's Office for Coastal Management, as well as employment and gross domestic product statistics are derived from the Bureau of Labor and the Bureau of Economic Analysis. The report's authors remind us that the oceans and Great Lakes support the lives, lifestyles, and livelihoods of all Americans. We fish from their waters, vacation on their edges, ship cargo on their surface, and extract oil, gas, sand, and gravel from their seafloors. The ocean economy, as represented in the data, includes six economic sectors that depend in various ways on the oceans, rivers and Great Lakes. These include:

living resources	marine transportation	ship and boat building
marine construction	offshore mineral extraction	tourism and recreation

As with almost all government data and reports, the final tallies typically lag a year or two behind, and these numbers are no different. Still they provide a stark and well formatted summary of just how important the maritime sector is to the greater economy. For example, and according to the report, coastal economic facts (2012) include, ***by-the-numbers:***

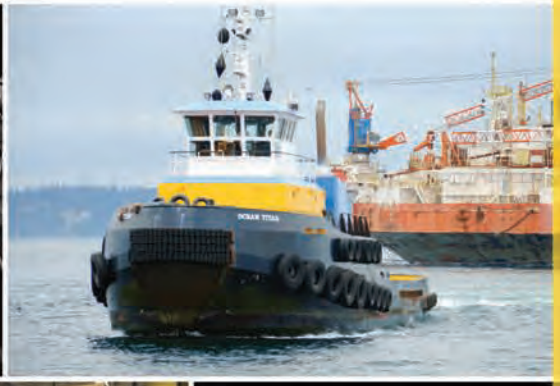
New jobs created (2011-to-2012): 108,000	3.8 percent growth in employment (2x national rate)
National Avg. Wages: $49	Average wage (ocean industries): $63,000 to $143,000
$113 billion in annual wages	Goods & Services Produced: $343 billion
147,000 total business establishments	2.2 percent of the nation's employment
Employed: ~ 3 million people	2.1 percent of its gross domestic product

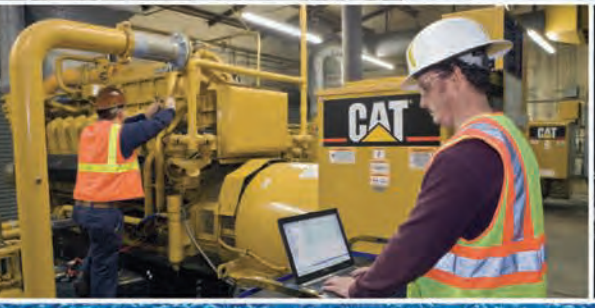
In 2012, the ocean economy's contribution to gross domestic product grew by 10.5 percent – or more than four times as fast as the U.S. economy as a whole. And, in 2012, employment in the ocean economy was 2.4 percent higher than in 2007, while employment of the U.S. economy as a whole decreased about 2.7 percent during the same period. Sure, the economy has dipped more than a little bit in the intervening years, and the price of oil is taking its toll as well, but the ocean economy shows remarkable resilience. Take, for example that in 2012, inflation-adjusted gross domestic product in the ocean economy was 15.7 percent higher than in 2007, contrasted with a 2.8 percent increase in the U.S. economy as a whole over the same period. In just one year, from 2011 to 2012, the ocean economy's Inflation-adjusted gross domestic product grew by 10.5 percent—more than four times the rate of growth experienced in the nation as a whole (2.5 percent).

In fact, gross domestic product in all six ocean sectors increased in 2012, with all but the living resources sector growing faster than the U.S. economy as a whole. ***Marine construction*** represents but a small percentage of the ocean economy, but it is an integral component, paying one of the highest average wages per employee of $67,000, much higher than the national average of $49,000. Marine construction activities occur in most states but it is highly concentrated in Texas, Florida, and Louisiana, which in 2012 accounted for about 47.1 percent of employment and 43.7 percent of the gross domestic product in this sector. On the other hand, ***Offshore Mineral Extraction*** – which includes oil and gas exploration and production, as well as limestone, sand, and gravel mining – is largely concentrated in the Gulf of Mexico. Interestingly, offshore mineral extraction accounted for only 5.5 percent of the total employment, but contributed 46.3 percent of its gross domestic product. Average wages per employee of more than $143,000 per year were more than twice the national average. The national center of the oil and gas industry is Houston, Texas. Texas alone accounted for two thirds of the employment in offshore mineral extraction sector and 71.5 percent of its 2012 gross domestic product.

The ***Ship and Boat Building*** sector includes the construction, maintenance, and repair of ships, recreational boats, commercial fishing vessels, ferries, and other marine vessels. An important attribute of this sector is the concentration of large shipyards in a few locations around the country. However, boatbuilding and repair activity is spread more evenly around the country, with concentrations in areas engaged in commercial fishing and recreational boating. In 2012, the ship and boat building sector accounted for 5.2 percent of the employment and 4.9 percent of the gross domestic product in the U.S. Ocean and Great Lakes economy. Average wages per employee, of $63,000, were significantly higher than the national av-

FULL SPEED AHEAD





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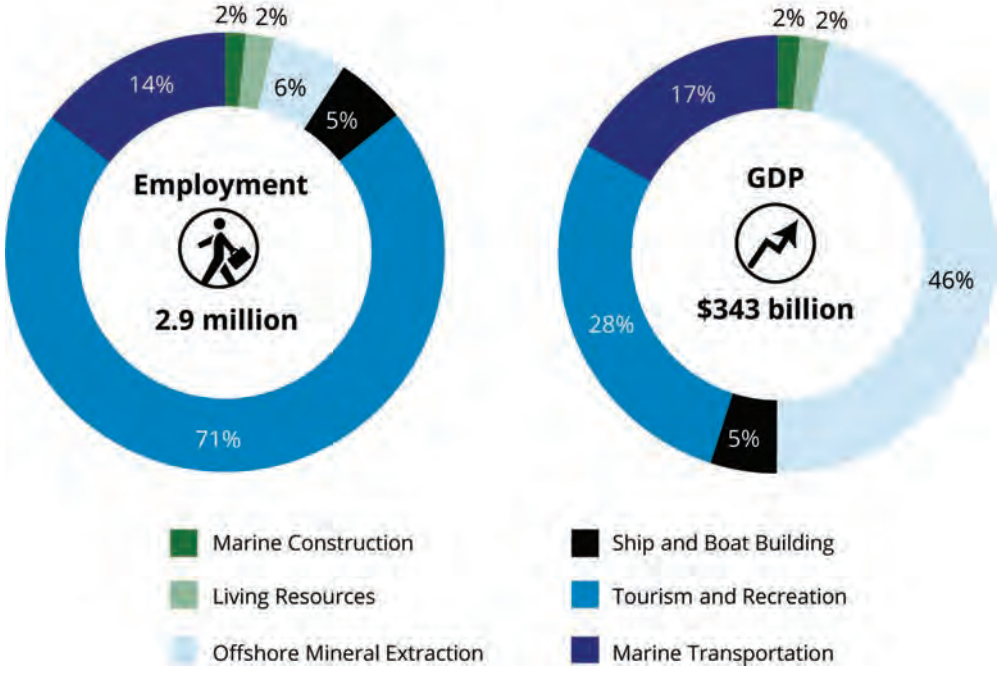
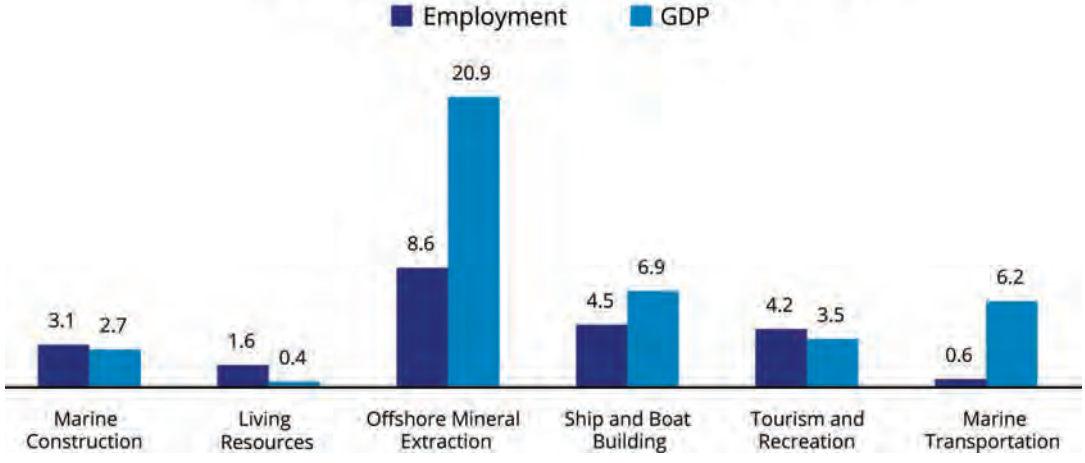
erage of $49,000. The ship building, maintenance, and repair component of this sector accounted for more than 85 percent of the employment and gross domestic product. At the time, the ship and boat building sector grew at a rate of 6.9 percent in gross domestic product from 2011 to 2012 – a significant rebound from its decline of 7.7 percent in 2011. From there, of course, the industry ramped up only to arrive at the oil-induced dip that we are currently experiencing. Virginia contributed most to the jobs in this sector, accounting for 23.7 percent of the employment. Washington – where Vigor Industries is concentrated – contributed most to values in this sector, accounting for 20.5 percent of the gross domestic product.

Marine Transportation includes businesses engaged in the traffic of deep-sea freight, marine passenger services, pipeline transportation, marine transportation services, warehousing, and the manufacture of navigation equipment. It accounted for 14.5 percent of the employment and 16.7 percent of the gross domestic product in the U.S. Ocean and Great Lakes. While the sector represents a smaller percentage of the ocean economy than tourism and recreation or offshore mineral extraction, it is an integral component of the ocean economy, paying one of the highest average wages per employee of $70,000 in 2012.

The ocean economy accounted for 2.2% of total employment and 2.1% of total GDP in the United States



Annual Percentage Change by Sector, 2012

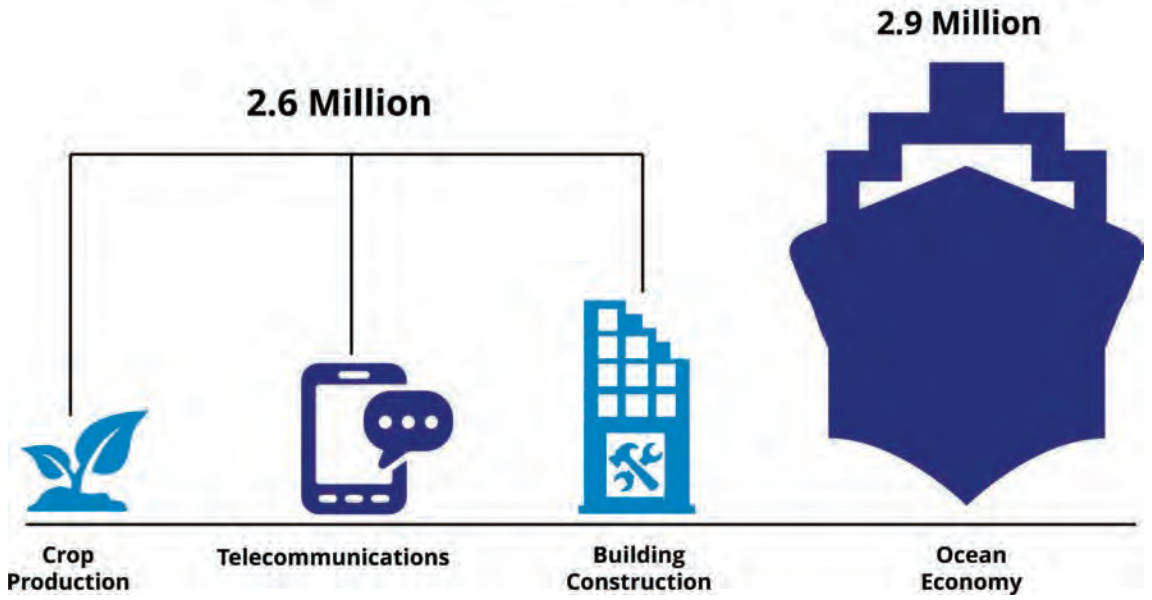


The U.S. ocean and Great Lakes economy accounted for

147,000	2.9 million	$113 billion	$343 billion
Establishments	Employees	Wages	Goods and Services

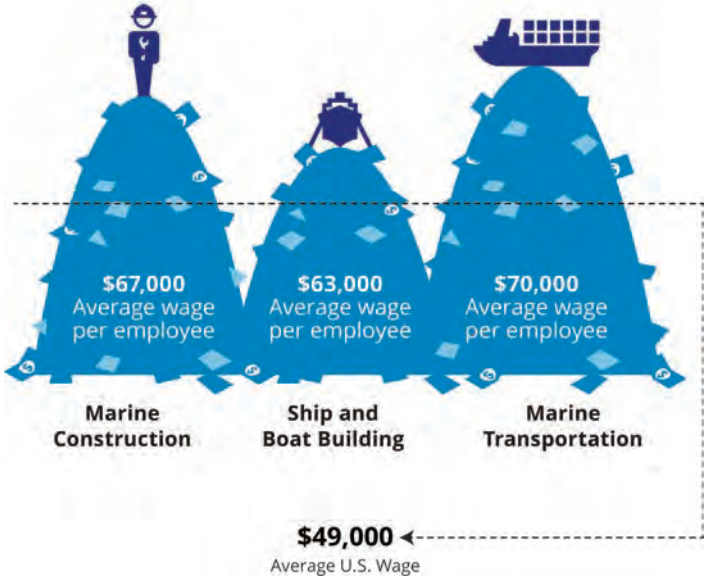
in the U.S. ocean and Great Lakes economy in 2012

U.S. Total Employment Comparison



2012 Wages per Employee Working on the Water

All three sectors paid an average wage per employee above the national average of $49,000



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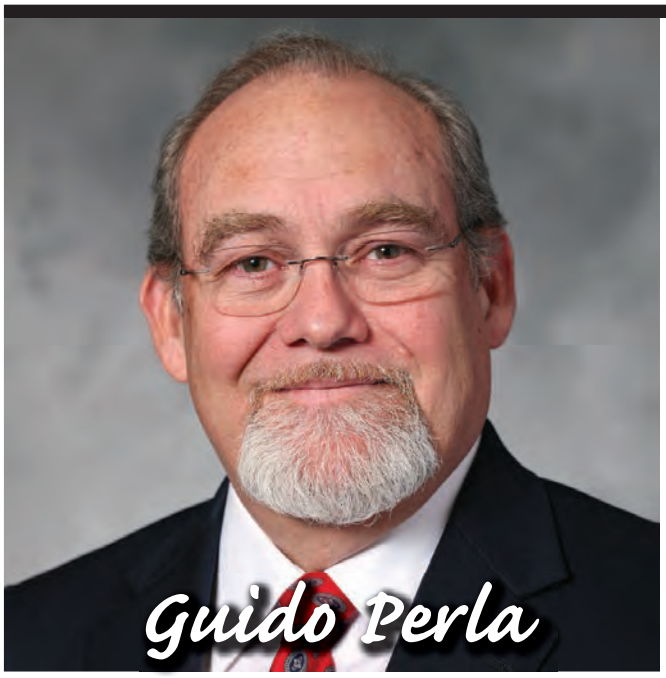

GUIDO PERLA & ASSOCIATES, INC.
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Chairman, GPA, Inc.

Guido Perla is the Chairman of the Seattle-based Naval Architecture and Marine Engineering firm GPA. Mr. Perla, born and raised in Colombia, obtained a BSE in Mechanical Engineering from University Pontificia Bolivariana in Colombia. After graduation, he worked for a shipyard in Barranquilla, before leaving Colombia in 1971 to attend the University of Michigan to receive a BSE in Naval Architecture. His first employer in the U.S. was Jacksonville Shipyards in Jacksonville, Florida, and in 1974, he went to work for Rockport Yacht & Supply in Rockport, Texas, where he completed his first PSV design, a vessel type that was to become particularly important to him, and to the company that he was to later form. The one-man company has since evolved into a multi-disciplinary naval architecture and marine engineering firm, headquartered in Seattle, WA, with subsidiaries in Brazil, Chile, China and Germany. GPA provides services worldwide in different marine sectors. Mr. Perla is responsible for the strategic development of the company, and focuses on preliminary and conceptual design work. His take on naval architecture today is therefore particularly valuable. Listen in as he provides his perspective on the industry today.

What is the biggest design variable impacting the newbuild and/or retrofit markets today? Why?

Environmental regulations and labor rules. I believe both are good, but we need to pace ourselves on regulations to allow the technology to come up with better and more practical ways to meet them. I believe we are in a transition period and it is very difficult to make decisions and advise our clients as to what the best solution is to meet these new regulations and laws. These new regulations are promoting or requiring the use of alternative fuels. One major component of this issue is that LNG, for example, is an alternative that volumetrically is significantly less efficient to store and handle as standard fuels and make the vessels larger to accommodate these new requirements. Thus, you need larger vessels to do the same work using alternatives fuels. That implies more power, more fuel, larger equipment and investment. We are working on developing designs to comply with these new regulations and alternative fuels. It is not the most practical but it is what we have available. We need to be smart in trying to do the best we can with the technology and options presented to us. In terms of labor rules, changes like the implementation of MLC 2006 have a similar effect on vessel design by expanding the size of accommodation structures for a given crew size. This is certainly a good thing for the crew, and should foster more comfortable conditions and ideally a crew who can operate a vessel more effectively and efficiently – but there are also losses in the fact that a given ship now must carry around more steel. Many of these changes in regulations promote bigger ships to carry out a task that could have been done before by a smaller vessel. There are benefits in all of these rules, but the cost is that now everyone must consume more power than before to complete a given task.

Give us your assessment of the boatbuilding markets here in the U.S. today.

The decline of the oil price has created a large problem in areas related to the oil exploration and production (E&P) industry and other sectors. If the predictions are

right, I see more difficult times to come. Some predictions are stating that oil prices will start to come up by 2020. That is a long time to wait. 2016 is predicted to be worse than 2015 and that is going to put many companies in difficult situations. The new construction industry in the last ten years or so has depended heavily on the E&P business and now this reduction is leaving a big hole in it. The strategy now is to find the slingshot that will take you to the other side or go to church and start lighting little candles as offerings. Some yards are busy with work on tugs, river towboats, ferries, ATBs, etc. but they are mainly previous contracts and we see already a reduction on new orders, due to the cycling of these areas of the industry. Companies will streamline and reduce their labor capacity. Diversification, if there is time to implement it, will play a more important role in the industry. Unfortunately, this slowing down in business is worldwide, thus reducing the opportunities to do work outside the country. Things are tough, but they're going to get tougher.

What is the biggest change in what is being asked of the typical naval architecture shop in today's environment as opposed to what was offered perhaps 25 years ago?

On the design engineering side, we are more involved in resolving and interpreting regulations and laws. Regulations, class rules and governing laws are getting very complex and require a lot of time to interpret, explain, apply and defend. We are becoming more like lawyers, but we do not get paid the same. In addition, vessels are more complex and more automated, requiring a lot more equipment integration and coordination. Labor, competitiveness and legal requirements are demanding more of the design in matters relevant to the environment, accommodation, quietness, low vibration, amenities, ergonomics, etc. Environmental rules are requiring the mechanical systems to be more complex and as a naval architect, you find yourself trying to accommodate 10 pounds of stuff in a 5 pound bag. Owners are now asking for more cargo on same size vessels to increase their revenue. Because of the environmental regulatory requirements and the cost of fuel, we have to put more effort into hull and machinery efficiency, in addition to our classic holistic approach to efficiency on the vessel. We get pulled in many directions, but we must maintain our ability to see the whole problem with a clear head. On the production/construction engineering side, the shipyards are asking for a lot more information than 25 years ago to construct the vessel. The level of skills at the yard has deteriorated, requiring great detail to instruct the worker for tasks which used to require a sketch or typical detail. Also, more planning is done in the yards in order to reduce labor cost and streamline the production. What we have noticed is that some yards feels that a lot of engineering can solve their problems, but it is not true. There is a point that engineering return on investment starts flattening out. If you do not train your worker and maintain the management/organizational skills, engineering is not going to solve the problem. Also, the number of vessels to be built has a big influence on how detailed the construction engineering has to be. All has to come to a balance. This is not to mention the challenges presented by the increasing complexity of the legal and financial environment in contract development. We have found that the schedule tends to always include a fixed delivery date, while the bankers and lawyers consume a bigger and bigger portion of the project timeline. The squeeze this trend places on the engineering timeline presents risk to all of the stakeholders, which I think is generally under-appreciated.

CAD/CAM – has it evolved over time? What are some of the newest products and breakthroughs in technology?

There has been some development on the CAD/CAM technology that has proven very useful and reduced our work. We do not have those long hours calculating stability or finding an optimal propeller. We have capabilities on the design side that help a lot with the conceptual, preliminary and final design phase of a project. We have excellent software for hydrostatics and stability, structural Final Element Analysis (FEA), Computational Fluid Dynamics (CFD), visualization, renderings, propulsion and propeller design and evaluation, etc. You can do comparative analysis of your new design and thus, optimize it for the specific function or environment. These software solutions are excellent and have helped our design development. On the production engineering side, we have now very good software for 3D modeling of the hull and systems that will create the information for the construction and shop drawings to build the vessels. This type of software is, however, generally very expensive and adds greatly to the cost of the engineering. They are valuable tools but one has to understand them and make the best utilization of their capabilities. Still the technology has some drawbacks especially on the output side and drawing generation – largely related to the fact that we are still required by our shipbuilding clients, as well as our regulatory and classification bodies to provide a 2D representation of our 3D engineering output. In addition, like the shipyards, we on the engineering side are losing the skilled personnel to provide production engineering. The main problem is that if you hire a person that is proficient on specific software, sometimes that person does not have any idea of how to construct a vessel or install a pipe or detail a structure. You need that because you are building the vessel in all its detail in the computer. Generally, there is a lack of skilled production personnel, and the shipyards and design firms can't seem to find enough of them. Cost has been a difficult part to manage and it takes a lot more money to start a new engineer than years ago. By the time you provide the computer, the software licenses, and all other items, it adds to a lot of money – many tens of thousands of dollars per person. We are also losing our "seat-of-the-pants" approach and gut feelings or intuitive naval architecture, in other words. We are depending too much on the computer for creative tasks. As an engineer, you need that so you have situational awareness of the project and so you know what to expect.

Today, over 140 GPA-designed offshore vessels are equipped with diesel electric systems. What is the state of that technology today?

The technology of the Diesel electric system has evolved in the last decade. Systems are more compact, lighter, more reliable and more affordable. They provide cleaner power now than in previous years. You can have many different styles of managing, distributing and generating power by many different manufacturers to adapt to different types of applications. Shipyards and operators are more familiar with them and thus, the system is very popular and accepted now worldwide. This gives you better pricing, better quality of installation and improved operation and reliability. The diesel electric in combination with batteries can provide an enhanced "hybrid" system that is more efficient and gives a high level of safety and reliability compared with systems of many years ago. Diesel electric is expanding into many different applications but it is best applied where the demand of power varies. The magic of diesel electric is the power management that allows generating and delivering the required amount of power as the system, operation, or vessel demands. Electricity is going to be the way machinery is going to be energized or powered in the future. How we generate that electricity is going to be what will change. This is the system of the future.

The motto at Guido Perla & Associates, Inc. (GPA) has always been: Engineering Ideas into Reality. Tell us about a recent 'idea' that GPA has transformed into 'reality.'

On the latest research vessels designs from GPA, we were presented with the idea to develop a hull shape that would preclude air bubbles from the wake of the vessel to go under the hull and affect the sonar and instruments on the bottom of the hull. This needed to be accomplished without use of appendage or any other protrusion. GPA engineered a hull shape that did that and was easy to build for the R/V Neil Armstrong and sister ship Sally Ride (AGOR 27 & 28), the newest UNOLS research vessels for Woods Hole Oceanographic Institution and Scripps Institution of Oceanography. This has been proven on sea trials.

LNG as a fuel, LNG-powered vessels and/or LNG bunker barges are frequently mentioned as design projects as the industry moves towards a cleaner environmental footprint. What is the biggest impact of "LNG" on the typical vessel design?

Volumetric efficiency, cost and the difficulty of handling it. For the same autonomy and cargo or operational performance on a vessel while running on fuel oil, LNG requires four times the space to store the fuel and equipment to protect it, degasify it and feed the engines. Because of that it will require a larger vessel. It adds a large cost to the vessel to

maintain the same performance as the vessel operating on fuel oil. GPA has been working on reducing the space utilization and cost of installing an LNG system on a vessel. We have developed what we call the LNG Power Pack. In a standard Offshore Supply Vessel of around 4,500 deadweight tons, and around 88 meters overall length, it will add about 12 meters of length and about an additional 30% of the original cost of the vessel to provide the same performance autonomy and deadweight capacity as the original diesel powered vessel. This is more pronounced on smaller vessels such as tugs. Some vessels are more adaptable to this alternative fuel and the final installation will have a smaller impact on the final outcome of the vessel, but the increase in cost is proportionally large; it does not matter the type of vessel.

What can vessel owners looking to build new tonnage in today's atmosphere do to get the most efficiency and value out of each CapEx dollar that they spend in the shipyard?

Simplicity is the best bet. Simplicity comes in many ways and it is applicable to every stage, phase, discipline, regulations, laws or operation onboard a vessel. All together comes to the final goal, the best cost for your dollar. The best design is the one in which you take away everything you can and still perform the way expected. It should start with a well designed vessel for the owner, for the operation and for the shipyard building it. Designs are in essence similar, but operators and shipyards are different and to really get to the best results, it should be tailored to and engineered for both of them. If your company or enterprise does not require going out to bid your project, our advice is to select the shipyard that you want and bring it to the table from the beginning. You get the best of all sides.

The Health of the Marine Contracting Industry – *The IMCA View*

By Allan Leatt, Chief Executive, IMCA

Leatt

Just three weeks after taking up my IMCA role I delivered a keynote address at our Annual Seminar. Held in Abu Dhabi, with the theme *'A health check for the marine contracting industry,'* it attracted over 350 people from 30 countries, no mean feat in these challenging times. It also provided the ideal opportunity to deliver a message to our members, and, importantly, their clients, which affects the whole of the marine contracting supply chain. Central to the message is the need for offshore oil and gas operators, regulators and marine contractors to work together for the benefit of the industry.

Our Health Check

We all know the current state of health of the industry and the causes - geopolitical and macro-economic issues. We have no control over either. Every 10 years or so, the offshore oil and gas industry has a shock. It's cyclical, and we steer our way through it, we work with and for, a resilient industry. Recovery should normally come with economic growth, and should bring oil supply and demand back into balance – after all the developing world wants to develop, and needs energy to do so.

The last two oil shocks in 1998 and 2009 displayed a short V-shaped oil price recovery profile. Let's hope today's situation will be similar, but most commentators foresee a longer and lower pricing profile. Looking further back to the 1986 downturn, it was somewhat analogous to today's situation, with an oversupply driven by new oil in the market – then, from the North Sea. For roughly the next 15 years, oil stayed in the $15-20/bbl range and took until 2000 before it got back to pre-1986 levels. I hope we won't see a repeat, but you never know. Many in the industry can recall where they were working during that period. I was working in New Orleans and saw within a few days people receiving their pink slips – it was brutal but, as always, we managed our way through the crisis.

Today's new-oil is from US shale, which has been highly successful in developing reserves to produce around 4MMbd, from almost a standing start five years ago. Shale, or tight oil, will be with us for years to come; yes the wells may be less productive than offshore and may require regular workovers, but productivity improvements have been impressive and new technologies will only make it more successful. The offshore industry will need to be even more competitive to compete with shale.

The Next Part of the Cycle

No one knows what the next part of the cycle will look like. At $50/bbl many fields may be in negative equity. We, as an industry, have no influence on the macro-economic events – it's the market at work. The only aspect we can address is the economic one as it affects our members. The cost base must be addressed by all on both sides of the client: contractor fence.

The global economic crash had limited impact on our industry because of our momentum and backlog. Our economic crash has come later. However the signals of problems ahead were clear in 2013, but for different reasons. Large projects were not getting sanctioned even at $100 oil; the economics were not working for successful final investment decisions. The accumulated cost inflation over the previous six years was working against us. The supply chain had become too over-heated and both quality and schedule suffered. The industry had probably become less efficient than at $20 oil, when you had to be very efficient and disciplined or you were out of business.

Adjusting the Cost Base

To preserve liquidity, oil companies have significantly cut new CAPEX; dividends are king. Some estimate there are over $1 trillion of project delays (not all are offshore, but there is a knock-on effect). It's going to take time for new projects to be sanctioned. I firmly believe it will happen. However, if ever there was a time when clients should be receptive and work with IMCA and our members it is now.

I have no doubt the marine contracting industry will re-set its cost base. It will also shoulder the operational and performance risks that go with it, but it would be imprudent to readily accept some of the massively disproportionate contractual terms, and a re-writing of the offshore risk landscape that some oil companies are pushing in a somewhat opportunistic manner.

It's a difficult time. We've had them before, we'll have them again, but IMCA can, and will help in terms of engagement with regulatory bodies, oil companies and other

agencies. We need increasingly to be a global lobbying 'umbrella', communicating, engaging and influencing decision makers. It is not an overnight job, but long overdue.

IMCA has gained a great reputation of solid technical achievement over many years. That's significant and must continue. But, we must push harder with oil companies in accepting our guidelines rather than endless preferential and so-called 'gold-plated' engineering. I'm an engineer, and instinctively we are good at asking the "what?" and "when?" questions, but we don't always ask the "why?" question when given prescriptive specifications by clients. We now need to take a more assertive and pragmatic engineering approach to help sweep away the excessive gold plating. We need to resist endless new rules and documentation and get better at enforcing existing ones.

A Message to Oil Companies

This is a perfect time for oil companies to engage with and listen to the supply chain and to please take action. We will be asking regulators and oil companies to work with us, and our members – we're all in this together, this is a symbiotic relationship. We need regulators and oil companies to use us with thought, rather than just hit us with a big hammer.

The marine contracting industry has changed enormously in the past 30 years. The supply chain is big, important and responsible, as powerful partnerships and alliances attest. I urge oil companies to use us intelligently; and to use industrial standards we know well, and not theoretical ones. It is essential to keep a realistic risk balance, without threatening the business further.

Like so many of the companies we serve, we are conducting reviews of our structure and strategy, but unlike those companies our measure of success as a not-for-profit organization is different. Our income statement is not our ultimate KPI; the views and opinions of our members are. IMCA is stronger than it has ever been, and ironically we are more important to our industry today than in better times. Our members have to know, feel, and appreciate that we are on their side, on their bench and batting hard for them to use a sporting analogy. IMCA has to remain relevant, meaningful, efficient, and fit for purpose in these challenging times. I am going to ensure it does.

Trailblazing Transactions in the Jones Act Market

The supply chain and logistics comes full circle.

By Basil Karatzas

Karatzas

Taking a look from the bridge of a ship in port, little more than the presently lower trading activity can be seen: ships sailing high on the water, huge containerships half-empty with containers, idling barges at the end of the bay. The slower trading activity is discernible to the cognizant observant, but there are several more undercurrent movements, so to speak, that have, to date, received little notice.

In the September issue of ***MarineNews***, the changing seascape for extending credit in the brown water and Jones Act markets was discussed, where ever bigger banks and financiers have been looking for well-established and ever bigger operators and asset players to finance, leaving the traditional 'mom-and-pop' owners with few options to obtain financing. The flip side of the changing financial industry is that the shipowning structure has already been shifting, in interesting ways. Probably it's too early for the changes to be sensed by the smaller, local owners of a handful of barges or tugs in the brown water market where the industry is highly fragmented and in need of 'consolidation,' in financial parlance. However, at the top end of the market with the big players and the expensive assets, for the Jones Act product tanker market, two transactions that took place in the last twelve months are likely the trailblazers of things to come.

Looming Large in the Porthole

The Jones Act tanker market is 'boring,' one may be tempted to say by international tankers standards, although there is nothing boring or routine in shipping, as there are only ninety-seven tankers and large barges (ITBs/ATBs) in this market. The trade for crude oil consists of 12 crude tankers transporting crude oil from Alaska to the continental US, and product and chemical tankers and barges transporting petroleum products along the Gulf and Atlantic coasts. Quite often, integrated oil companies and end users either employ these vessels directly or indirectly on long term charters. The biggest excitement in this market happened ten years ago when OSG exploited Aker Philadelphia's phoenix-like aspirations and placed an order for ten Jones Act products tankers at an average cost of $89 million each and bareboat them for the long-term, reflecting an overall daily rate of $50,000 pd (including OpEx). The second excitement of the decade came almost two years ago when oil major ExxonMobil chartered a Jones Act products tanker for one year at $120,000 pd, a rate which was almost twice as high as the historic long-term average.

Most of the shipping assets in the Jones Act market are owned by US-domiciled shipping companies that do not own the cargo but just offer transport services to the cargo owners and end users – sort of the truck drivers delivering goods when and where the customer desires. Crowley, Kirby, OSG America, Keystone are names that typically stand out in this market.

Driving the Truck

Post-Lehman-Brothers, institutional investors have looked and eventually invested in the Jones Act tanker market, mostly enticed by the limited and protected market, the constrained availability of shipbuilding capacity by a handful of shipbuilders in desperate need of survival (who also managed to pull a political level or two), and special financing and tax considerations that made such projects enticing from the financial point of view. The fact that shale oil came from nowhere and caught everyone by surprise was the least expected bonanza that made these projects even more profitable than the initial projections. These financial owners had vessel management arrangements with US-based vessel owner and managers. Blackstone has been the primary investor in this industry, but there were also lesser names involved, such as Alterna Capital.

Thus, whether shipowners or financial owners, shipping assets so far in the Jones Act market have primarily owned and operated by companies with shipping as their core business; they just provide the seaway transport of the cargo, if and when the customer calls, with little other involvement in the value chain. There are some variances, but overall, all these players had the same common denominator in terms of market exposure and volatility, cost of capital, access to cargoes, to name a few. They all were competing for the same business without a strategic advantage, and they have almost similar access to resources.

Sea Change

In 2014, two interesting transactions took place. The Jones Act products tanker MT *'American Phoenix'* was sold to Genesis Energy for $157 million, a Houston-based refinery and logistics company in the energy industry. The vessel was financed and controlled by the private equity fund Alterna Capital who had a management agreement with a Jones Act vessel operator to manage the vessel, thus in every respect the ownership structure fit the description of the typical 'shipowner' with no competitive advantage in the cargo (energy) business. They just shipped crude oil and condensates by sea, if and when the customer called. However, Genesis Energy is a refinery company with preferential access to cargo, and this has been their first entreaty to the shipping markets. It arguably made strategic sense to be able to transport internal cargo, as well as that of their clients, enhancing their logistics services to their clients.

Separately, also in early 2014, Kinder Morgan acquired a series of Jones Act tankers newbuilding contracts at $142 million per vessel contract by American Petroleum Tankers (APT), a company controlled by the private equity fund Blackstone. And, in 2015, Kinder Morgan acquired the last four of the series of the newbuildings on order by a company affiliated with the same investment group. Kinder Morgan is better known for their 84,000-miles of domestic pipelines, 164 terminals, and the procurement of logistical services such as storage in the energy industry. A new entrant to the Jones Act market, Kinder Morgan's core business had been transport by pipeline, storage and logics in the energy industry.

In other words, Kinder Morgan is almost the exact same type of buyer as Genesis Energy for the tanker MT *'American Phoenix'*, a logistics company in the energy industry with preferential access to cargoes. By entering the shipping industry, they are aiming at getting an easier access to cargoes and offering their clients a wider line of services: not only refining and storage, but also delivery of the cargo by increased means in many more destinations.

This new type of buyer can offer to the cargo owner the option to buy crude product at the production site, transport it to the refinery, store it if necessary, have it refined, store it again if necessary as a petroleum derivative, and then deliver on demand to effectively any destination in the US. The traditional Jones Act shipowner would had been involved only in the two transport links and only when those two links were by sea; otherwise, the whole chain may have been largely unknown to them.

The flip side of the changing financial industry is that the shipowning structure has already been shifting, in interesting ways. Probably it's too early for the changes to be sensed by the smaller, local owners of a handful of barges or tugs in the brown water market where the industry is highly fragmented and in need of 'consolidation,' in financial parlance.

Nobody Rides for Free

Genesis and Kinder Morgan paid strong prices for their Jones Act tanker acquisitions, which more or less happened at the top of the shale oil boom, because of the market, but also because the acquired tankers had a much higher value (earnings potential) as part of their core strategy than what any shipowner would have been able to extract (and thus pay) by simply employing the ships on demand of the behalf of charterers. This new type of buyer has been using a different metric to reach value, which allowed them to out-compete traditional shipowners.

While shipowners offer 'commodity shipping' – the taxi on demand, and whoever is available or cheapest gets the fare – logistics companies, higher up in the value chain, offer the the taxi service that can help you run errands, stop at difference places, etc. Given the nature of the buyers and the generation of their earnings from logistical services which can be more predictable than earnings from shipping, it's not surprising that both buyers were both publicly listed and as Master Limited Partnerships (MLPs) where the cost of capital is lower than privately held companies, and actually lower than many other forms of publicly listed companies.

MLPs typically are low cost and risk capital structures where earnings are generated from long terms contracts (actually the pipeline industry has been the 'mother' of MLPs since once a pipeline is laid, there is minimal additional expenses by the tolls are very predictable). MLPs also enjoy certain tax benefits not available to other capital structures, whether in the private or the public space.

Both transactions are not just a coincidence for the Jones Act market. Clients get to expect more than partial fulfillment of their uni-modal transport needs from one supplier; there is demand for higher value offering, and in this case, two very sizable logisitics companies managed to offer them.

As customers and charterers demand more from the same counterparty, smaller, local owners with limited services will be facing headwinds. And, the bigger the provider and the wider the range of services they can offer to a larger customer base, makes them even more attractive to the financiers. It's where the supply chain comes full circle.

KARATZAS MARINE ADVISORS & Co.

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Workboat Communications Evolve to Meet Myriad Missions

Choosing next generation communication systems for professional marine operations can be a daunting task. Not to worry, MarineNews *provides a primer.*

By John Haynes

Over the past decade we have come to expect fast, seamless global communications from a single device that fits in our pocket. The age of the smart phone and tablet enables multiple voices talking in a conference call and real time transfer of data, ranging from documents to photos and videos.

In the modern bridge, most crew members have a GPS in their pocket which can identify where that person is on the planet. For the traveling mariner, communication devices such as the iPhone or iPad can be loaded with 'navigation' apps. However, there are distinct differences between having vast amounts of data and knowing where you are in real time, to actually navigating and passage planning.

A challenge when the marine sector moved from paper charts to digital charting was too much complexity plus a lack of uniform menus, commands and controls across different navigation systems. Commercial objectives drive innovation in design, but the danger of 'feature creep' can be adding functions to an electronic device for no reason. On a dark and stormy night, or at high speeds, a navigation system that delivers the minimum amount of relevant and clearly presented information should be the design and usability objective. How the navigator or captain transmits information externally and onboard to various crew members from engine room to deck crew can also be critical.

Marine Communications Evolve & Adapt

The traditional system for external marine communication is VHF radio. Combined transmitters and receivers operate on standard international frequencies or channels.

Image above: Marine Alutech Watercat M18 AMC is the Finnish Navy's new U700-class amphibious assault craft.

Credit: Savox Communications

Aerials mounted high can give a 'ship to ship' VHF range of over 50 nautical miles. Range between small boats with low aerials can be less than 5 nautical miles in certain conditions. This limited range of VHF is a benefit in crowded waters as it reduces the overlap of radio traffic between small vessels. A vessel in distress wants other vessels in range to come to their assistance, as they will often be first on the scene in areas where there is limited rescue coverage.

Mariners on small craft are still trained in VHF techniques with focus on the mayday distress call. Digital Selective Calling (DSC) capability allows a distress signal to be sent with a single press button on the radio which can be integrated with onboard GPS to transmit position. There is now a strong link between GPS and communication as the digitally generated location is expected to be more accurate than human error interpreting a position or confusion from spoken words and numbers in a voice only distress call.

"The Diamond system was developed to stringent end-user requirements for operations in harsh maritime environments. The system balances intuitive functionality and ease of use with a robust, low-maintenance design. In high tempo operations the system enables crew members to have independent access to both secure and non-secure communication networks, uninterrupted hands free intercom facilities and full control of voice-activated comms."

– Suzanne Coop, Business Development Manager for Drumgrange

However, in day-to-day communications, voice is still used. A simplex system only allows communication in one direction at a time while a duplex system allows each person to speak simultaneously and hear each other at the same time. A two-way system is like talking on the telephone. Headsets combine speakers and microphones which can also be incorporated into helmets. On professional vessels headsets should have industrial grade hardware that resists corrosion and be engineered for comfort. For the marine environment, a headset usually wraps around the back of the wearer's head so that when leaning over to handle a line or look down a ladder climb, the headset does not fall into the water or onto the deck. Grabbing for a falling headset can be fatal if the operator needs both hands for their task. Hands free microphones can also offer safety benefits.

Wind, wave and engine noise combine to make communicating among crew members difficult. High volume and poor quality communications can result in misunderstood radio messages, accelerated crew fatigue and slow reaction times. Many marine operations need to listen clearly to military, police, fire and emergency VHF transmissions, but due to external noise, radio calls can be missed or have to be repeated. If communication among crew members requires shouting it can create a situation where work and safety messages are subject to interpretation errors. By turning the radio volume up crews can be subjected to short term ringing in the ears and long term hearing damage. The latest low noise or noise cancelling systems are designed to give high quality communication combined with hearing protection.

Slow moving workboats are well served by communications that have evolved from industrial land based systems. However, as small boat operations increase both operating speeds

A member of the amphibious arm of the Finnish Navy, a Finnish Coastal Jaeger, equipped with IMP headset and PCU.

Credit: Savox Communications

and demands on crews, the next generation of maritime communications may be using technology that has been developed for military and security applications. As the expectations for communications performance grows, it is worth considering how military and security roles are driving changes and improvements in the systems. 'Milspec' quality is becoming an industry norm for portable electronics in harsh marine environments. Next generation systems may have a 'net' function with other types of communication, including the ability to transmit data to or upload images from mobile units. Various systems designed for military and security applications could improve safety and efficiency for the offshore sector, renewable energy, wind farms, fish farming, aquaculture, survey and scientific work. The main difference between military and civilian for some communication systems may simply be the use of encryption.

Solutions Abound for a Changing Workplace

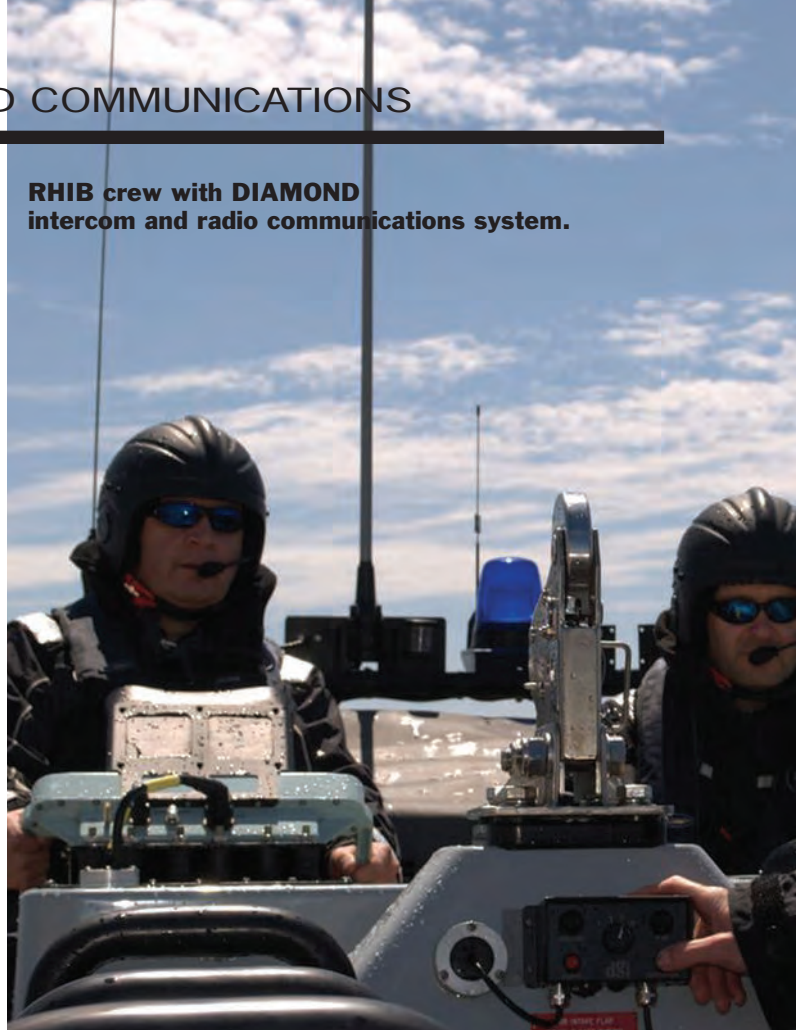
UK based-Drumgrange has developed the Diamond intercom & radio combiner system as a digital system for use on RHIBs, high-speed craft and small vessels. The compact system is designed as a combined communications solution for military, coast guard and commercial open boat applications. The Diamond system provides voice connectivity between users and on-board radios. It also integrates existing boat alarms, for example engine warning alarm, to support boat and crew safety.

Suzanne Coop, Business Development Manager for Drumgrange told MarineNews in November, "The Diamond system was developed to stringent end-user requirements for operations in harsh maritime environments. The system balances intuitive functionality and ease of use with a robust, low-maintenance design. In high tempo operations the system enables crew members to have independent access to both secure and non-secure communication networks, uninterrupted hands free intercom facilities and full control of voice-activated comms."

The intercom & radio combiner system can accommodate any radio and user combination with up to eight radios and eight users as a basic system. Key features include user-specific VOX sensitivity control and users have the ability to personalize voice-activated comms at any time. The ergonomic design is for single hand operation during high-speed transits at sea. The system is ruggedized for land and maritime use, waterproof to minimum IP67 and will work with most headset configurations, including binaural headsets which enable users to have a different communications input through each ear.

Intercom systems can use hard wired or wireless equipment for onboard communication between crew members. There may be a master control on the system or individuals can select what they want to hear.

Some systems allow operators to listen to external radio and comms transmissions while listening to onboard crew conversations. Safety benefits of onboard intercoms include situational awareness on the vessel and commands that do not have to be repeated in demanding marine environments. Whether a Superyacht or a commercial vessel, docking maneuvers put high pressure on crew communication as the risk of injuring a crew member or damaging the ship is high. This is no time for a radio bat-



RHIB crew with DIAMOND intercom and radio communications system.

tery to go flat or a microphone to fail.

Separately, the Drumgrange Maritime Interdiction Operating System (MIOS) is designed to expand operational capability for patrol and boarding operations. MIOS incorporates automated navigation, position tracking, video and data links between a command vessel and deployable remote assets, including interdiction craft and boarding parties. The MIOS C3 system was developed by Drumgrange using MOTS (Military Off The Shelf) software and hardware. Specialist features include hands-free voice comms, an integrated comms helmet, portable computer, digital scanner and camera, secure digital imaging, hazardous gas detectors, position and track data.

Coop adds, "This marine C3 system provides the command team, interdiction craft and boarding party with simultaneous, instant updates of asset location and the developing tactical situation."

Still another system offered by UK-based Ultra Electronics – Graytronics Marine Communications & Intercom System – is designed to provide clear audio under extreme conditions for civil forces and in military applications. Intercoms used in an open marine environment suffer from background noise from engines and wind turbulence around the microphone. To overcome this noise, Ultra Electronics has designed speech processors which modify the audio signal and allow only specified frequencies to pass through, greatly reducing noise and increasing speech clarity.

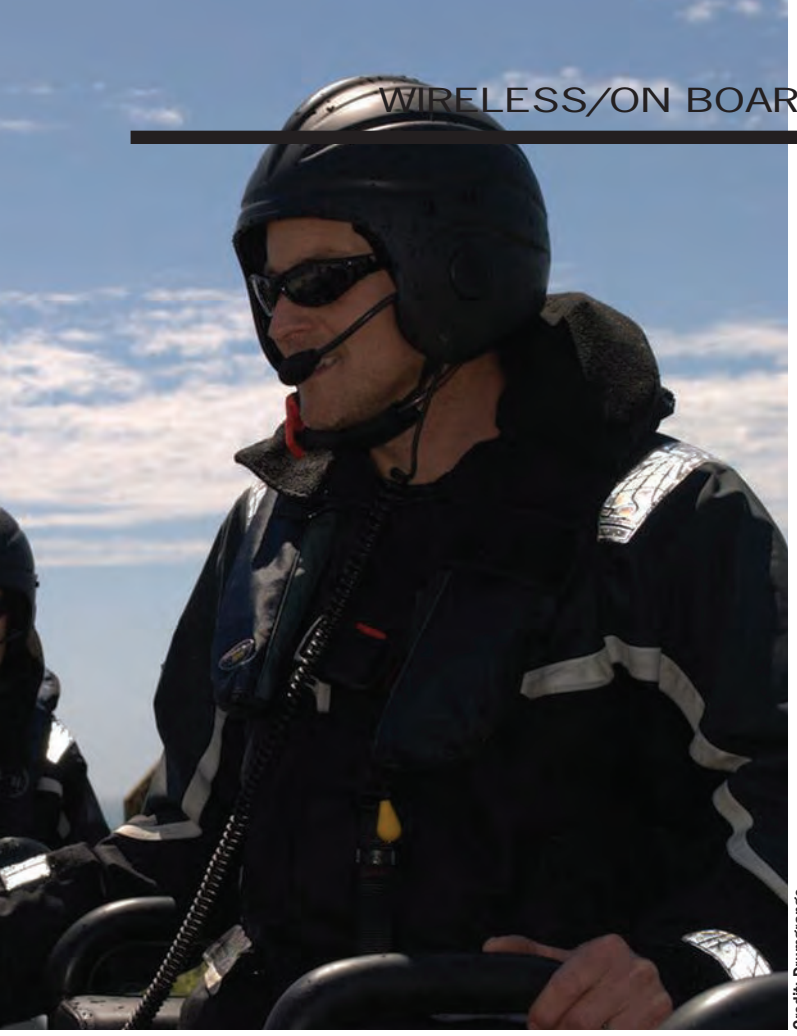
Bede O'Neill, Business Development Manager at Ultra Electronics explains, "Graytronics communication and intercom systems enable multiple radios, secure and non-secure, to be integrated with crew intercoms and marine safety helmets. A typical system comprises master control box with connections for radio operators, crew intercoms and one to six radios. The wireless option enables the crew to maintain communications while remote from the wired intercom, a necessity when performing Search and Rescue operations. Fully backwards compatible with existing installations, Graytronics Wireless delivers a key system enhancement with minimal disruption to installed systems."

Other system options include integration with waterproof loud hailer, waterproof loudspeaker, waterproof radio fist microphone and waterproof mobile telephone module. Notably, Ultra CCS Graytronics Communications systems are fitted on the U.S. Coast Guard's new Long Range Interceptor-II Cutter Boats.

Patrol vessels are used increasingly around the world to protect large areas of water and coastline. The ship's boat is then launched to board a suspect craft. Visit, Board, Search, Seizure (VBSS) are maritime boarding actions that range from counter-narcotics and anti-piracy to conducting immigration, customs, safety and fisheries to other compliance inspections. Boarding team communications is part of C3 (Command Control Communication) that enables VBSS and military teams to board other vessels with the option to talk 'radio to radio' or to a wider network, including the boarding team boat crew and mother vessel.

Luxembourg-based SAVOX Communications Group also has operations in Finland, Germany, France, the UK, the US, Canada and China. The SAVOX IMP Mobile Platform is designed to deliver clear, reliable and robust communications for military, SAR, law enforcement and professional missions. SAVOX IMP offers a lightweight Ethernet based digital solution where the man is the communication interface. Configurable and scalable the system can be configured for small crews or large vessels. The programmable software enables integration of intercom, radio and high speed data transfer.

The SAVOX user interface or Personal Control Unit (PCU) is a lightweight and ergonomic voice prompted unit providing control of intercom functions and instant access to two tactical radios. The PCU can be operated with one hand whilst wearing gloves, even when moving at



Credit: Drumgrange

speed in rough sea states. The IMP has an adaptive VOX algorithm allowing high quality voice operated communication on open boats whilst travelling at high speeds.

At the core of IMP is a digital 100Mb Ethernet backbone. This data highway provides high capacity voice and data distribution using Ethernet protocols. It allows integration with navigation aids, engine management systems and video data which can be distributed to key user positions for complete command and control of the vessel.

"SAVOX IMP is user configurable and has no system master, meaning quick and easy set up," adds Mikael Westerlund, SVP Global Marketing at SAVOX Communications.

Every workboat needs effective communications for a rapidly changing menu of mission sets. Without a doubt, matching the right system to the right mission has become more than just a nice vessel upgrade. Today's increasingly sophisticated workboats therefore come with a host of 'comms' options. Which one is right for you? That depends on your mission. And for every workboat mission, there is a communications solution to match.

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San Francisco Fire Department's New Fireboat

Photo: Jensen Marine Consultants

Vigor Industrial nears completion of San Francisco's first new fireboat in 60 years. The exciting, cutting edge vessel was worth waiting for.

By Peter Ong

"When finished, the boat's going to be pretty spectacular," said Will Lietzenmayer, Co-Project Manager and Project Engineer of the new San Francisco Fire Department's (SFFD) 88' x 25' NFPA Type II fireboat from his Vigor Industrial's Seattle, Washington office. "It's essentially a huge super-pumper. It can pump water all the way up Nob Hill (elevation of 407 feet)."

Designed by the San Francisco Fire Department as a mobile pumping station, the new fireboat arose from the need for additional earthquake fire relief. In the event that an earthquake knocks out San Francisco's water mains, the new fireboat could pump water directly from the Bay or ocean directly to the Auxiliary Water System (AWS), five large salt-water inlet manifolds along the waterfront. Each AWS manifold can have ten fireboat hoses attached to it.

Two SFFD hose tenders would create a portable above-ground hydrant and piping system to deliver the water from the fireboat to the intended fires. SFFD already has two fireboats, the Phoenix and the Guardian to do such duty, but the Phoenix was built in 1954 and the Guardian in 1950. This fireboat, built by Vigor, will therefore be the first new fireboat for San Francisco in about 60 years and will have about the same dimensions as its sisters Phoenix (89' x 19') and Guardian (89' x 20').

Design & Build

"The boat is 100% custom-modified and designed from scratch," said Bryan Nichols, Director of Sales at Seattle's Vigor Fab, the fabrication and new-build arm of Vigor Industrial. Jensen Maritime Consultants won the bid to design the boat in June 2014. "A bid went out to a group of shipyards and Vigor won the bid at $11,637,660."

While the new fireboat cannot provide electrical power offshore, it does have a requirement for providing continuous pumping onshore for 72 hours through twenty-eight discharge manifolds where attack hoses from fire engines could be hooked up. In extreme emergencies, such as land fires from a major earthquake, the new fireboat can pump for up to two weeks. The twin engine, shaft, rudder, and propeller fireboat has a top speed of twelve knots and comes with one bow thruster and two underwharf monitors, one monitor on the port and starboard side of the bow. The boat will also have foam inductors and a 1,000 gallon firefighting foam capacity. Vigor laid the keel in November of 2014.

The boat will have an ABS Grade A steel hull with a 5083 (plate) and 5086 (shapes) aluminum alloy superstructure. The Pilothouse glass will be ½" thick and defrosters are standard with a defroster on each forward facing window, three defrosters on the side windows, and two defrosters on the rear windows. Steel composes the underwharf monitor boxes, which are 1,500 GPM nozzles remotely-controlled via hydraulics from the Pilothouse. The railings and searchlights are made of aluminum while the discharge manifolds on the deck will consist of stainless steel. "The boat uses commercial off-the-shelf, but state-of-the-art technology—everything will be new," said Lietzenmayer.

The boat additionally comes with a standard warranty of one year for craftsmanship, which may be extended on some parts, and expected sixty-year hull life expectancy. The new fireboat will have three decks, a Machinery Deck below the Main Deck with a workshop, a storage room, an engine room with two Cummins QSK19 engines and a steering gear room, a Main Deck with a command center, a restroom and an equipment storage room, and a Pilothouse Deck.

Lietzenmayer described the Pilothouse interior, saying "The Pilothouse will have a console in the forward-most part of the Pilothouse that will have steering and propulsion controls on the outboard sides. The center of the console is reserved for the firefighting controls. Touchscreen panels will be installed for the AMS [Automated Monitoring System]. There will be a display to monitor off-ship firefighting pump discharge pressure. An analog pressure gauge will be mounted in the console to monitor overall system pressure."

State-of-the-art Technology

With all this state-of-the-art technology and controls, could one firefighter operate the sailing and pumping? Will Lietzenmayer replied, "It will not be possible for one person to operate the entire fireboat. An engineer will be required to adjust firefighting valves locally and adjust ballast as there are very few remote controls for the engine room machinery."

"The boat is 100% custom-modified and designed from scratch. A bid went out to a group of shipyards and Vigor won the bid at $11,637,660."

– Bryan Nichols, Director of Sales at Seattle's Vigor Fab

The Main Deck has the Command Center with a small portside window. "The Command Center will consist of a desktop in the forward part of the compartment with two chairs," says Lietzenmayer, adding, "The portside will have a settee that is convertible to a berth with seatbelts to secure a patient."

There will be a small galley consisting of a sink, small refrigerator and a microwave oven in the aft-port corner. The port side will consist of shelving for stowage. The Command Center will be outfitted with a digital clock, GPS, fluorescent lights, a red fluorescent light, a loud hailer, a touchscreen display for the Alarm and Monitoring System (AMS) and a hookup for an AM/FM radio and a television. The Fire Department will further outfit the space with Mobile Data Terminals.

The San Francisco Fire Department uses state-of-the-art firefighting technology by having "the bow monitor, pilothouse monitor, and two underwharf monitors remotely controlled via joysticks in the pilothouse," noted Lietzenmayer. "The two aft monitors are manually operated. The firefighters will be able to see all the monitors from the Pilothouse with the exception of the Pilothouse [roof] monitor."

For nighttime and adverse weather operations, the boat comes equipped with a M-625L nighttime forward-looking thermal imaging camera (FLIR) on a 360 degree gimbal mount with plus/minus ninety degree tilt and a twenty-five by twenty degree field of view. This FLIR camera has a 640 by 480 thermal resolution with two to four times the zoom power and feeds directly into a PC-based Nobeltec navigation software for plotting, positioning, and maps.

Even with all the technology and remote controls, some equipment on this new fireboat requires human muscle to operate. For instance, the starboard deck crane is manually operated with no remote control functions. Lietzenmayer pointed out, "This crane can lift 850 pounds up to twenty-five feet and 2,500 pounds up to 10 feet." An anchor that will be stowed in a deck locker requires human muscle to lower or reel it aboard since it has no powered winch.

Nuts & Bolts

Vigor will build the boat in Seattle, in modules and sections, 100% on land under the cover of buildings be-

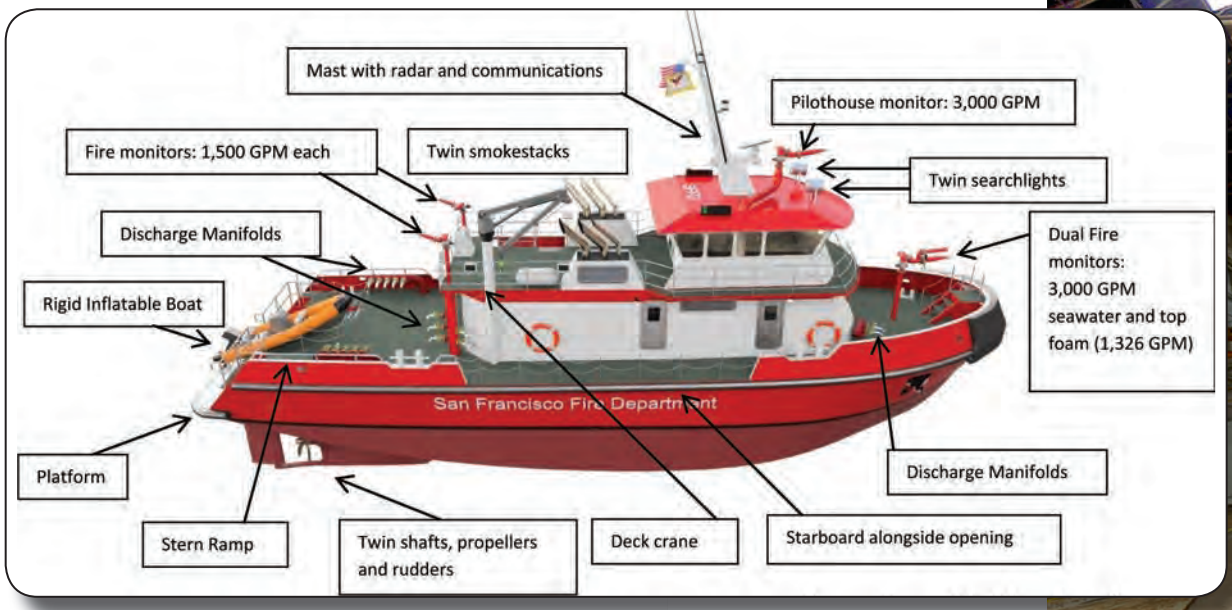
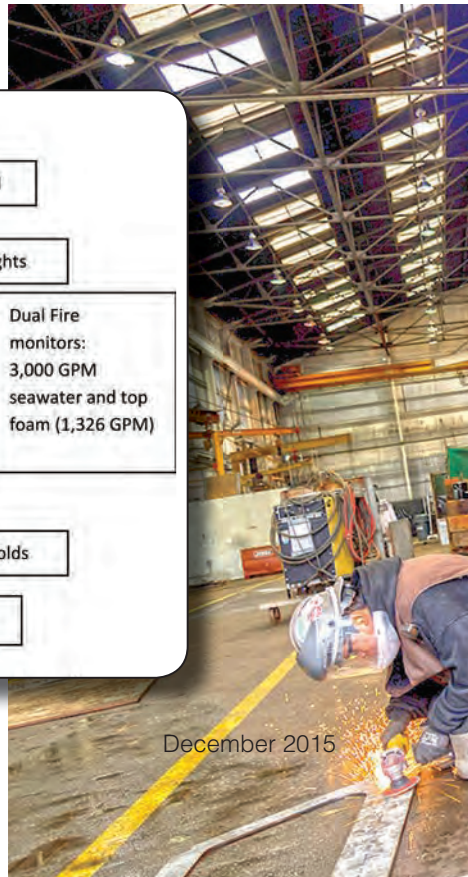


Photo: Jensen Marine Consultants



fore launching it into the water. The modules will be built concurrently and then pieced together and welded to the hull. Most of the fireboat will be handcrafted with some welds being done automatically by robot when the situation and conditions warrant. Naturally, crafting a fireboat from scratch requires enormous attention to detail. Some of the trickiest and most labor-intensive areas revolved around the installation of the two Cummins QSK19 propulsion engines. "The propulsion engines are arranged in an unconventional manner, meaning that the fire pumps are driven from the rear of the engine and the red gear/propeller is driven off the front (Power Takeoff) of the engines. We will be required to align the propeller shafts from the rear of the engine and also align the shaft for a fire pump on the nose of the engine," mentioned Will Lietzenmayer. Another unique construction area occurs at the bow. "There will be very detailed shipfitting work where the bow thruster penetrates the bow shell plating. The bow shell plating has compound curvature on it so it will take a very skilled person to ensure that the connection is watertight."

As with the Phoenix and the Guardian, SFFD will use a two-tone red and white paint scheme to combat corrosion from the foggy air and sea salt of the San Francisco Bay waters. Once built, the boat gets launched into the water and docked pierside to undergo intense builder's trials of the propulsion, steering, safety, navigation, communications, auxiliaries, and electronic components. After builder's trials, Vigor will commence open water sea trials with the customer on board and Jensen Maritime Consultants as the customer's representative. These sea trials, expected to last three to four weeks, cover the testing of the firefighting pumps, monitors, and apparatus, running through required sailing parameters and courses to test the hull and engines, and operational troubleshooting. Lietzenmayer emphasized, "The boat will be 100% fully-functional before delivery to the San Francisco Fire Department." Delivery is expected in the first quarter of 2016.

The fireboat under construction in Vigor's Seattle yard.

Photo: Vigor

INNOVATIVE BOATS
the Best of 2015

Throughout 2015 MarineNews *highlighted the best of boatbuilding for the North American inland, coastal and Great Lakes markets. As the year winds to a close, this month we celebrate the innovation and design excellence emanating from the workboat sectors.*

HARVEY POWER

Gulf Coast Shipyard Group (GCSG) has delivered Harvey Power, the second LNG vessel operating in the United States, for service to Shell Upstream America's deep water operations in the Gulf of Mexico. The second of six LNG OSVs being built for Harvey Gulf International Marine, and like her sistership Harvey Energy, Harvey Power is capable of operating on LNG or diesel fuel. Along with being able to operate on LNG, she also meets the strident criteria of the ABS Enviro+, Green Passport notation. When operating on LNG, these vessels exceeds the new Tier IV emissions regulations requiring lower sulphur oxides and nitrogen oxides emissions as part of the North American Emission Control Area (ECA). She will refuel with LNG at Harvey Gulf's new LNG bunkering facility at Port Fourchon in southern Louisiana which allows easy access to more than 600 oil and gas rigs and platforms within a 40-mile radius.

Wing P4.7 Inflatable

Wing replacement collars can be found on the majority of U.S. commercial and military RHIBs in the United States. Beyond this, Wing is the largest U.S. supplier of inflatable tubes for RHIBs in service with the United States Navy and they boast a robust export client list. Just recently, Wing made huge expansions in its inflatable boat line. In late 2014, the US Air Force Special Operations Command committed to Wing inflatable boats with the P4.7 to replace their aging Zodiac line. In early 2015, AFSOC doubled their order, and then the US Air Force Guardian Angels made their commitment to a fleet change of the same craft. Just recently, the US Navy's Naval Special Warfare made a significant commitment to Wing P4.7s to revamp and elevate their inflatable boat fleet. Next came the Army: with their partner ADS serving as the Prime Contractor, Wing just commenced producing for the U.S. Army's FoBaM (Family of Boats and Motors) con-

tract. With delivery order in hand, this Program of Record contract is for over eight–hundred Wing P4.7 (7-Person Inflatable Combat Raiding Craft), and over six-hundred Wing P5.8 (15-Person Inflatable Combat Assault Craft), along with Wing collapsible fuel bladders and Evinrude/BRP 30hp Multi-Fuel Engines. FoBaM is a five-year fulfillment contract, accompanied by 10 years of sustainment. Significantly, it's the largest inflatable boat contract ever awarded by any of the U.S. Armed Forces. Using a Computer Aided Design program, the only one of its kind in the world — custom-built for Wing, the software streamlines the process of tube design, taking into account unique polyurethane stretch along the horizontal, vertical and diagonal axis for a tighter fit, higher performance and better looks.

EBDG-designed CAPE HORN Delivered into Service

Elliott Bay Design Group (EBDG) earlier this year announced the delivery into service of the CAPE HORN, a Specialty Oilfield Vessel that it designed. EBDG partnered with Gulf of Mexico Operator SeaMar, LLC and Gulf Island Marine Fabricators on the class design and production engineering for the ship. The design of the CAPE HORN was developed from concept to production in EBDG's Gulf Coast office and features an innovative tank farm unique to Specialty Design Oilfield Vessels. EBDG provided full design services including structural, mechanical, piping and outfitting design, and served as the primary point of contact for all regulatory body requests for information.

Metal Shark Pilot Boat for Canaveral Pilots

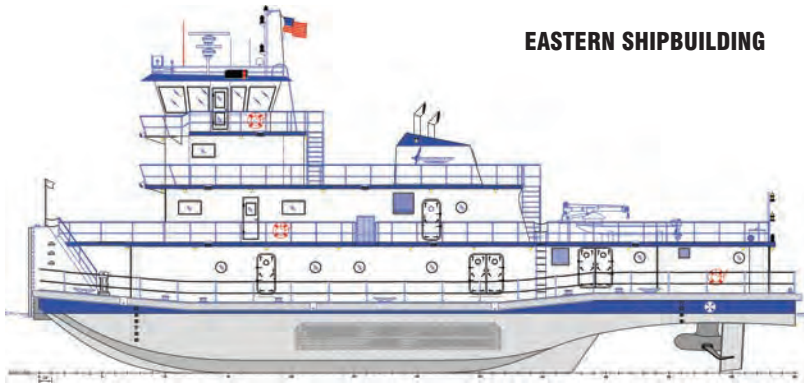
A pilot boat delivered this past year to the Canaveral Pilots Association at Port Canaveral, Florida is a custom 45-foot aluminum vessel built at Metal Shark's newly-opened shipyard in Franklin, Louisiana. Canaveral Pilots specified a purpose-built pilot boat design by naval architect Bill Preston. The design utilizes the weight of a single bow-mounted diesel engine and an extremely sharp forward entry to slice levelly through waves as opposed to riding over the top of the crests and then plummeting into the troughs. Due to its enhanced stability, this proven design is used by several pilot groups operating in the often adverse open ocean conditions encountered along Florida's Atlantic Coast. Metal Shark added its own unique touches to the design, such as its use of wraparound "pillarless" glass in the pilothouse to substantially reduce blind spots for greatly enhanced safety during inclement weather or night operations.

Eastern Shipbuilding's Thunderbolt Vision

In 2015, Eastern Shipbuilding Group unveiled its vision of the future for inland waterways with its 120 foot, 4,200 horsepower Inland Towboat design. The THUNDERBOLT combines Twin Electric V-Pod Propulsion and Diesel-Electric Technology, providing increased efficiency, performance, maneuverability, crew comfort and capacity. Eastern is now integrating their proven "Tiger Shark Class" Diesel-Electric technology into a refined, environmentally friendly, highly maneuverable Inland Towboat design. Working with Gilbert Associates, the THUNDERBOLT has been designed using ABS Class Rules for Building and Classing Steel Vessels for Service on Rivers and Intracoastal Waterways-2014. It is also designed to the Proposed U.S. Coast Guard 46CFR (Sub-Chapter M) Towing Vessel Rules and IEEE 45 2002 Standards. In a nutshell, the THUNDERBOLT is a 120' Inland River Class Towboat with 690VAC diesel-electric and twin azimuthing Verhaar Omega electric V-Pod Propulsion Units. Cummins Mid-South, LLC is providing the generator package with 3 identical diesel-electric power plants, Cummins QSK38-DM. The vessel's design offers enhanced performance of V-Pod propulsion, diesel-electric with constant speed gen-


EBDG

METAL SHARK


EASTERN SHIPBUILDING

RODRIGUEZ SHIPBUILDING


METALCRAFT


ALL AMERICAN MARINE

erator engines, with less vibration and noise along with power management and automation. This results in lower operating costs, system redundancy, increased safety, increased crew comfort and less crew fatigue.

Triple Screw Lugger for Estuary Waters

Rodriguez recently delivered the Captain Nedo C, a triple-engine Lugger powered by three Cummins QSK19-M engines, each producing 660 HP at 1800 RPM. The 70 by 29-foot tug has a molded depth of 9.5 feet and is equipped with a M50 Pullmaster stern towing winch. Even though the tug has a hefty 1,980 HP, when light loaded with fuel and water, she only draws 6.5 feet. That's because the Mississippi River empties into enclosed waters like the Mediterranean or Gulf of Mexico. Its sediment load settles rapidly to form many square miles of delta and shallow waters. Where the Mississippi meets the Gulf, shallow draft Lugger tugs have been earning their keep supplying the near shore oil industry. But their size has been limited by their draft which is subject to the prop size as much as the hull depth. Tug designers and operators have found that three smaller engines, turning smaller props can deliver as much power with significantly less draft than a twin-prop boat with bigger engines. An additional advantage is that, in the event of loss of power from one engine, the operator can still rely on two engines for maneuvering. Rodriguez Shipbuilding is perhaps best known for in-house designed Lugger-type tugs. Their aft mounted deckhouse provides a convenient foreword deck space for cargo. A single drum aft mounted towing winch allows towing or, with blocks, the boat can be rigged as a pusher.

MetalCraft Built Oil Recovery Boat

Imperial Oil's unique workboat is designed and intended to perform a myriad of duties for its oil company customer, including carriage of passengers back and forth to a dredge, carriage of generator fuel, spare parts, and the layout of anchor patterns for the dredge and to assist moving the dredge – using its high horsepower engines – around the inland pond. Given its intended operation in harsh Canadian winters, an on-board automatic winterization system for unmanned overnight storage is fitted and the vessel is designed to operate at -40 C. A 6,000 lb hydraulic A frame for anchor retrieval/deployment is also provided. Additional features include a double continuous welded first 1/3 of structure vessel built to IACS rules with 50 percent of the vessel's bottom plate increased to 9/16" thick to support beach loading and ice belt protects the vessel's sides. A floating wheelhouse to dampen sound is fitted, and that wheelhouse hinges onto the foredeck for shipping.

AAM Delivers First Passenger Cat Ferry Under New Rules

All American Marine (AAM) this year delivered a new passenger ferry for Seattle. The M/V Sally Fox is the first of two new ferries ordered by King County's Marine Division as replacement vessels for their scheduled water taxi service. Sally Fox is the first U.S. Coast Guard Sub-chapter "K" inspected passenger vessel built and delivered under the new 5A Space Performance Guidelines issued in a Memorandum regarding NVIC 9-97 Ch-1, which make it possible for boat builders to design and implement suitable structural fire protection in very low fire load spaces in the construction of weight-sensitive high speed passenger vessels. AAM partnered with naval architects Teknicraft Design Ltd. for the hull design. Each 105' x 33' aluminum catamaran features an advanced hull shape that was custom designed using digital modeling and Computational Fluid Dynamics (CFD) analysis testing. The hull design is complemented by Teknicraft's signature integration of a wave piercer that is positioned between the catamaran sponsons to break up wave action and ensure reduced drag while enhancing passenger comfort. The water taxi is powered by twin Cummins QSK-50 tier III engines, rated 1800 bhp @ 1900 rpm to provide a service speed of 28 knots. As an environmentally friendly alternative to paint, the decks are covered with peel-and-stick non-slip tread and the exterior of the superstructure is wrapped in UV-stable vinyl.

Brunswick's 850 D IMPACT

Brunswick Commercial & Government Products (BCGP) group in 2015 introduced a new boat, a variation of its 850 series RHIB, but one which has many significant features and upgrades. The idea for the boat came from existing customers, driven in part from law enforcement side. The versatile hull can be used for many missions, including combat, special operations, homeland security, law enforcement, fire/rescue or in workboat environments.

According to BCGP, there is no other manufacturer building a fiberglass hard sided RHIB. Combining the best characteristics of a standard fiberglass hull with the benefits of a RHIB, the 850 D provides customers with a solid fiberglass gunnel as well as a (Wing) collar which aids law enforcement during tactical maneuvers, where boarding another craft may be necessary. The interior gunnel additionally allows for stable footing when leaning on the gunnel as well as improved mounting surfaces for additional options. The collar is a hybrid air/foam filled unit which mitigates the risk of deflation if punctured, keeping the boat operable. The 850 D offers an enclosed or open cabin arrangement, and will be able to accommodate myriad engine configurations. The Brunswick Corpora-

BCGP

VIGOR

FOSS

BLOUNT BOATS

tion, BCGP's parent, does own Mercury. In an effort to help customers maintain fleet continuity, a wide range of engine options – from outboards to inboards – is available.

Vigor-built State-of-the-Art Towboat for Tidewater

The Crown Point is an environmentally-friendly tug with reduced air emissions and improved fuel efficiency. Designed by CT Marine, Naval Architects and Marine Engineers of Edgecomb, Maine, the vessel features a wheelhouse with exceptional all-round visibility through full height windows, leading edge navigation and communications equipment, and enhanced accommodations for the captain and crew. The vessel has been deployed in Tidewater's Columbia & Snake River Service. Crown Point is the first of a series of three towboats being built at Vigor for Tidewater. Tidewater Captains report that the vessel is the quietest tug they have ever piloted. Beyond that, they say, it has tremendous rudder power so it can turn around a loaded tow precisely and swiftly. Operating in the Columbia River Gorge high winds, extreme currents and swells can be considered normal piloting conditions. For this reason an enhanced steering system utilizing four steering and four flanking rudders was designed.

Foss Christens New Arctic Class Ocean Tug

The first of three Arctic Class tugs being built at the Foss Rainier, Oregon Shipyard was christened in April at the Foss Waterway Seaport in Tacoma, WA. The Michele Foss is ice class D0, designed specifically for polar waters and are reinforced to maneuver in ice. The vessel complies with the ABS Guide for Building and Classing Vessels Intended to Operate in Polar Waters, including ABS A1 standards, SOLAS and Green Passport. Michele Foss includes a Caterpillar C280-8 main engine, which complies with the highest federal environmental standards; a Nautican propulsion system; and Reintjes reduction gears. Markey Machinery supplied the tow winch. The tug has a bollard pull of 221,000 pounds. The vessel incorporates several environmentally focused designs and structural and technological upgrades, including the elimination of ballast tanks, so there is no chance of transporting invasive species; holding tanks for black and gray water to permit operations in no-discharge zones (such as parts of Alaska and California); hydraulic oil systems compatible with biodegradable oil; energy efficient LED lighting; and high-energy absorption Schuyler fendering.

Blount Boats Wind Farm Supply Vessels

Blount Boats earlier this year signed a contract with Rhode Island Fast Ferry for the construction of a 21 meter crew transfer vessel (CTV) that will operate for Deepwater Wind Block Island. The 21 meter aluminum vessel was designed by South Boats IOW (Isle of Wight). In 2011, Blount Boats signed a licensing agreement with South Boats to become the exclusive shipyard to manufacture U.S. Flagged aluminum catamarans of South Boats IOW designs for the U.S. wind farm industry. The South Boats' designed stock 21m wind farm vessel is a twin hulled, all aluminum catamaran.

Jensen-Designed LNG ATB has ABS AIP

This year, a Jensen Maritime-designed, liquefied natural gas (LNG)-bunkering articulated tug-barge (ATB) has been granted "approval in principle" by classification society American Bureau of Shipping (ABS). The designation establishes that Jensen's vessel concept, which is classed as an A1 Liquefied Gas Tank Barge, is compliant in principle with ABS rules and guides. Ideal for mobile bunkering, Jensen's ATB is also oceans rated, meaning that it is not limited to the intracoastal waterways, like many other similar types of LNG ATBs. This flexible design feature allows the vessel to facilitate the transfer and use of small-scale LNG in places with limited infrastructure, including offshore locations. The ATB will be built with four 1,000- m3 Type C LNG tanks (seven bar working pressure), enough LNG to fill up a large containership twice before having to replenish its own supply. This capacity, combined with flexible operational areas, makes it an ideal solution for a customer who has significant LNG needs at one or more ports not located near an LNG terminal.

Safety features include a double hull, designed to help to protect the ATB's 4,000-gallon fuel tank, and firefighting capabilities. Classed as a firefighting vessel (FFV-1), the vessel is well equipped to handle emergencies on board and can satisfy most requirements to have at least one FFV-classed tug escorting LNG tankers into port. Finally, because there is no linkage between the tug and barge, the two can disconnect quickly in the event of emergency. Expected time to build the ATB is between 18 to 30 months.

JENSEN MARITIME

Every day, industry executives turn to MarineLink.com for late breaking news and editorial. You should too.

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The Gobbler

In collaboration with Naval Architects Laurent Giles Ltd, a team of boatbuilders has this year developed a fiberglass response vessel that rapidly and effectively recovers spilled oil. The boat, introduced earlier this year, underwent tank testing over a continuous six month period – in sea states varying from calm to 2.5 meters. With a final design that is Lloyds approved for use 60 nautical miles from shore or the mother ship, the vessel and project have full backing of Lloyds Registry and the "Clean Seas" Environmental Program. The vessel's creators have also applied for U.S. Coast Guard approvals. Billed as a revolutionary way to help combat oil spills, UK-based Gobbler Boats Ltd has proven that the vessel that can remove light and heavy oils from water surfaces in offshore and coastal environments. Carrying nine unique patents, granted and pending in the UK and United States, the Gobbler is small, easily transportable, lightweight, highly maneuverable, environmentally friendly, safe and simple to operate with minimum crew/operational costs. Ideal for operations at new oil field sites with no pipelines ashore, it is especially useful around storage/transfer barges when "over-spills" occur.

Gobbler fits the hold space of transport aircraft for rapid transit to isolated locations, and the vessel can be carried by commercial or passenger vessels and larger ocean going oil spill vessels, for immediate response to incidents at sea. Because the vessel does not carry recovered oil on board, the U.S. Coast Guard has ruled that mandatory surveys for similarly sized craft do not apply. The important waiver saves both time and money for cash strapped municipalities and spill co-ops, who must make every dollar count. The vessels are currently built in the UK, but addressing Jones Act issues, a manufacturing facility in Arizona is also planned.

Moose M3 Multi-Missioned Platform

When Moose Boats first built its M3 (34'-4" LOA) monohull demonstrator in 2011, the move may have surprised some stakeholders. After all, Moose is widely considered one of industry's most prominent catamaran builders. No one should have been surprised when the Moose monohull provided so much value in such a compact hull. The intent was to offer all the design features, ergonomics and quality of Moose Boats catamarans in a smaller, more tactically maneuverable and less expensive platform. Twin Yamaha outboard 300's propel the demonstrator at speeds that can reach 47 KT. Twin Yamaha outboard 300's propel the demonstrator at speeds that can reach 47 KT. Moose shied away from water jets, in part because the installation of inboard engines and drives would reduce space and functionality in the cockpit. Should a customer desire, the monohull can accommodate up to twin 350's or triple 300's, should that kind of power be mission necessary. Another M3 was also built for New Orleans Fire Department. With the firefighting configuration, the vessel pumps up to 1,500 gpm, adding to its multi-mission potential. The M3-30 demonstrator – the Moose designation due to it's just under 30' hull length – has proven its performance to San Francisco Bay Area and Los Angeles marine law enforcement and is currently under evaluation by agencies in the Northeast United States. The hull comes at an attractive price point, and gives an organization the opportunity to do more with less hulls, each of which will accomplish much more.

MetalCraft's 9m RIB

MetalCraft Marine has introduced an all new 9M Rib. Based on a previous hull design, it is crossing into new territory in Naval Architecture, geared for offshore Vessel board and seizure and insertion/extraction missions from

THE GOBBLER

MOOSE BOATS

METALCRAFT

over the horizon. The boat can be configured for both military and municipal security configurations. According to Metal Craft, two production lines are rolling for full rate production throughout the next two years, based on current delivery orders. Metal Craft could not divulge the current back order information. In 2015, two orders specify Mercury Verado350's and one order specified Yamaha 350's. The boat has many guns with four mounts, fore and aft and two foldable swivel mounts centered. It is one of the first Naval patrol boats to utilize the British Sea Cross navigation platform that offers a revolutionary targeting program. The boat has ShoxsHD suspension stackable seats for 2 crew and 12 boarding team members.

JMS Designed Research Vessel for VIMS

JMS Naval Architects this year completed the Contract Design Package of a 93 foot research vessel for Virginia Institute of Marine Science, to replace their current research vessel. The primary mission of the Institute's fleet is to provide inshore and offshore work platforms for the support of fisheries related oceanographic research projects. The new vessel will be capable of conducting fisheries assessments of greater capacity in deeper waters and with a larger science complement and will greatly expand VIMS' capability to perform general oceanographic research in near coastal waters. Propulsion is provided by a pair of Cummins QSK-19A 660 BHP tier III diesel engines coupled to a two–in/one-out marine gear, driving a controllable pitch propeller shrouded within a nozzle. This unique arrangement will provide the capability to operate the vessel efficiently on a single propulsion engine when on station or during slow speed transits. This system will reduce overall engine hours, operational costs, improve fuel efficiency, and minimize its environmental footprint.

Willard Marine Unveils Sea Force 777 RHIB

Earlier this year, Willard Marine unveiled their new SEA FORCE 777. This military-grade, fiberglass, rigid hull inflatable boat (RHIB) is 7.77-meters long, 2.74-meters wide, and designed with a deep-V hull for maximum stability in the roughest sea conditions. The Steyr SE306J38 diesel engine with ZF-63 marine gear powering a Hamilton Jet drive HJ-274 provides 300 horsepower for a 9-member crew and can achieve 32 knots. Nine Ullman Dynamics shock-mitigating seats are installed for crew comfort and safety. A 40-ounce polyurethane WING inflatable collar is UV-coated and includes a 7-panel bow cover and rubstrakes to reduce risk of boat damage upon boarding and stability during weight shifts. International military representatives can now rely upon the new 777 the same way the U.S. Navy has relied upon similar shipboard RHIBs from Willard Marine over the last 25 years.

Becker Marine Systems, KOTUG Collaborate on LNG Hybrid Barge

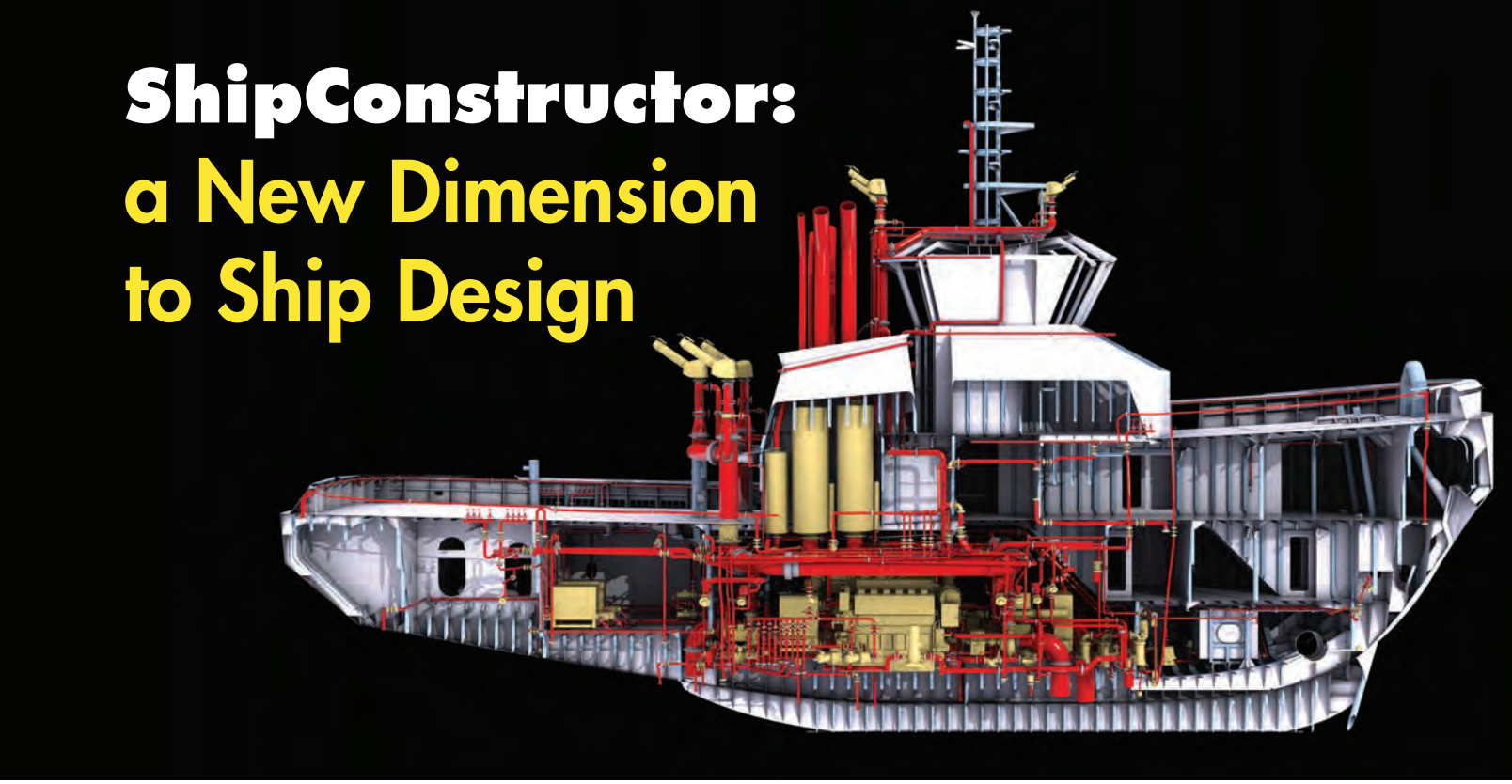
Becker Marine Systems and KOTUG have signed a Memorandum of Understanding to launch a LNG Hybrid Barge in the Port of Rotterdam. The LNG Hybrid Barge, a floating energy plant, is designed to provide environmentally friendly power for ships in ports. The LNG Hybrid Barge will deliver clean energy to moored cruise ships. It is an alternative for producing electricity in the traditional way by either their generator sets or via main engines. During winter season the LNG Hybrid Barge will be able to deliver heat to factories or to the central city heating system in addition to electricity. Becker Marine Systems (BMS) is the owner of the LNG Hybrid Barge and provides services to charter out the barge.

WILLARD MARINE

JMS NAVAL ARCHITECTS

BECKER MARINE SYSTEMS & KOTUG

ShipConstructor: a New Dimension to Ship Design



AutoCAD-based software for design, engineering and construction in the shipbuilding industry is now 'a given' in the yard and in the design shop. A visit with two Canada-based firms – RAL and SSI – spells out how and why.

By Kathy A. Smith

In today's digital age, it's hard to imagine computers not being involved in most areas of any profession, and when it comes to ship design and construction, without purpose-built software that helps speed and streamline the process, costly shipbuilding delays can occur. To that end, and for more than 20 years, Vancouver-based naval architecture and marine engineering firm Robert Allan Ltd. (RAL) has been using based SSI's (formerly known as ShipConstructor Software Inc.) products for more than 100 tug and workboat designs.

ShipConstructor, SSI's flagship program, is an AutoCAD-based software product line created for design, engineering and construction in the shipbuilding industry. The program's AutoCAD foundation provides a globally recognized CAD/CAM standard, integrates a common DWG format for sharing information with other commercial-off-the-shelf (COTS) applications such as Microsoft SQL Server, and can also be connected to numerous complementary Autodesk products.

Unique Design: Real Utility

ShipConstructor is unique in that it has been designed from the ground up to be 100 percent open architecture technology. This means there isn't any part of the program that is proprietary – any single piece of information can be extracted and leveraged for whatever purpose the user wants. Also unique is the software's ability to enable true concurrent engineering, even down to the AutoCAD based production drawing level. This means that different members of the design and engineering team can work in different disciplines concurrently and have changes reflected to each other. This streamlines the process and is more

Image above: RAL 3200 designed in ShipConstructor Software. (Image courtesy of Robert Allen Ltd.)

"One of the hardest things to track and manage throughout the proposal, design, engineering and construction phases is the weight of the project. It's also one of the most important characteristics of a vessel. Virtually every requirement for a vessel; speed, fuel, efficiency, stability, how a vessel will operate in different sea states, etc., is affected significantly by weight and center of gravity."

– SSI's CEO Darren Larkins

time- and cost-efficient.

A key technological component of ShipConstructor software that makes concurrent engineering possible is called Marine Information Modelling (MIM). At the core of MIM is a complete virtual model of the entire vessel, including each of the various disciplines, from hull production design and structural detailing, to outfitting and assembly sequencing. All work within a single integrated environment that can be shared through a consistent interface. The information is connected via a project database that stores the intelligence, relationships, attribute information and 3D model, plus the rules and standards used in the product model's composition.

Embracing Innovation for Workboats

RAL was one of the first naval architecture firms to embrace CAD/CAM innovations. The company uses ShipConstructor software for a wide variety of vessels, including workboats such as tugs and emergency response vessels. The design work involved is generally the same process for all. It begins with a class design package that includes instructions to develop a set of drawings, a hull surface model, which defines the hull shape, and structural arrangements. This information is outlined in a computerized format, the data is imported into ShipConstructor, which allows RAL to generate a 3D steel structural model of the vessel, as well as the ability to extract relevant parts by querying the database, for example, requesting all parts that are one inch thick, put the parts on a flat plate, and generate an assembly drawing which is electronically sent to any shipyard anywhere in the world.

"It's not always the exact same process for every project. We may also model the vessel's main piping arrangement, HVAC and electrical wire-ways as well." explains Jim Hyslop, RAL's Project Development Manager. "If we didn't use the software, we would have to track all of the parts individually, and that would mean putting everything on a spreadsheet. Then when it came time to cut the part out of a piece of steel, we'd have to go find it and place it on the part. We used to do this in the old days but it was very time-consuming."

The ShipConstructor program intuitively knows what material is being used, exactly what it weighs, its position

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– Jim Hyslop, RAL's Project Development Manager

in the 3D space as well as in the ship, and calculates where the center of gravity (CG) of the vessel is throughout the design phase via the MIM interface.

SSI's CEO Darren Larkins explains: "One of the hardest things to track and manage throughout the proposal, design, engineering and construction phases is the weight of the project. It's also one of the most important characteristics of a vessel. Virtually every requirement for a vessel; speed, fuel, efficiency, stability, how a vessel will operate in different sea states, etc., is affected significantly by weight and center of gravity."

So while ShipConstructor gives an accurate estimate of the weight of different parts of the ship, after they're modelled, a third party application that works in conjunction with ShipConstructor, helps to keep track of the weight estimate both before and during the modelling process. ShipWeight is a software tool can be seamlessly integrated with the ShipConstructor products.

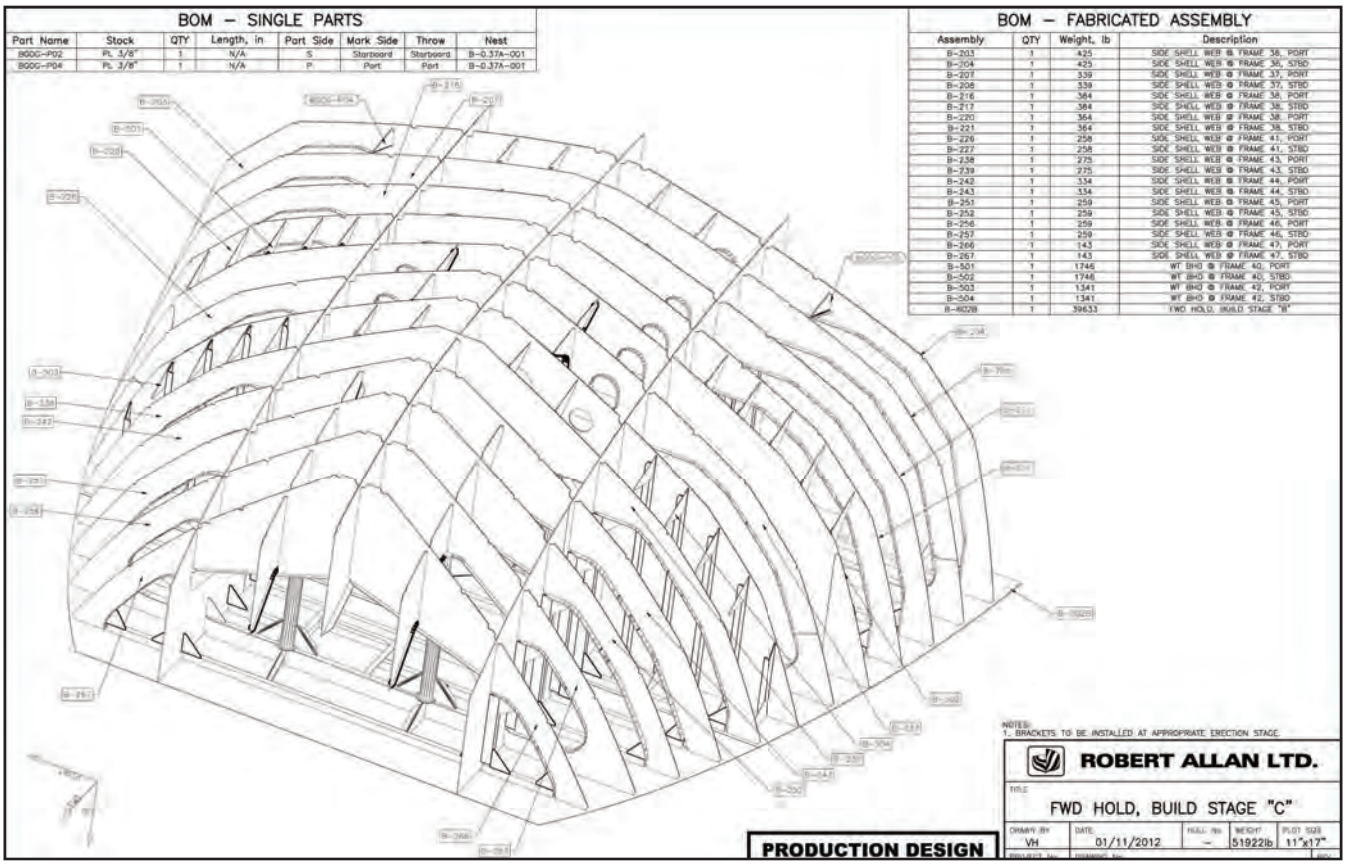
"Even before you start creating a 3D model, ShipWeight allows you to start building in estimates on the structure, piping, ballast system, etc.," says Larkins. "As you create the 3D model for areas of the ship, accurate weights are fed from ShipConstructor to ShipWeight. Those accurate weights from the 3D model are compared to the estimates in ShipWeight and give an early warning for potential weight and GC issues."

ShipWeight & ShipConstructor:

ShipWeight was developed by Norway's BAS Engineering, a company that has over 15 years of experience with weight engineering in the ship and offshore oil industry. The program was tested for its usability with ShipConstructor via a National Shipbuilding Research Program (NSRP) project in 2012 and NSRP research and development on the program have continued since then. The NSRP is an industry-led U.S. Navy research and development organization focused on reducing overall fleet costs through various processes and technologies. Essentially BAS Engineering created a software application called Fulcrum that, through this research project, became the interface between ShipConstructor and ShipWeight.

"This is exactly why we made our software open, so that other applications can easily get the data," says Larkins. "Fulcrum automatically opens information from ShipConstructor and pushes it into ShipWeight. At any time, when you feel like a certain portion of your virtual ship is going to be more accurate than your estimate, that's when you push the information over just for that one piece of the vessel. The goal is to incrementally provide better estimates, comparisons, and show you whether you're on track or not."

The next iteration of ShipConstructor, released in November of 2015, continues to strengthen the integration between the ShipConstructor's Marine Information Model and other third party applications such as ShipWeight, making engineering data even more accessible. This is via SSI's relatively new product called EnterprisePlatform which allows end users – even those without working experience with ShipConstructor or any CAD tool – to easily publish information in whatever format they need it. Anyone is able to open it, and, according to SSI, within less than an hour of training, know how to get information out of ShipConstructor. PublisherLT is the first in the EnterprisePlatform line of products and it enable users to gather, convert and manipulate information in a product



data model and save it to another location. It does this in a centralized fashion (from one user interface) that is outside of the CAD/CAM toolset.

Getting back to the weight management issue, Larkins makes reference to the fact that design mistakes with the center of gravity are more common than one might think as there are a plethora of unfortunate examples of delivered vessels that do not meet that do not meet speed and stability requirements or worse, vessels capsizing during launch or while carrying out purpose-built activity such as anchor handling.

Obviously, weight estimations are vital in the design process. Interestingly, when it comes to trends in the overall vessel design process, Hyslop reports it hasn't changed too much over the years. "Steel is still steel," he explains. "The vessels themselves have evolved somewhat significantly to be more stable, have better seakeeping abilities, and be more efficient and safer to operate. The structure has become more efficient and simpler than in the past as designers have learned to make them stronger and more efficient to build."

Flexible Relationships

Hyslop says that RAL will use ShipConstructor where a shipyard doesn't have a strong engineering office, but concedes that most shipyards use the program. "If we're working with a yard that requires that level of support, we'll do that. We also offer it to our clients."

The built-in flexibility of the software is valuable to firms like RAL. Hyslop likes having the ability to add, change and move things around during the design phase, knowing that everyone working on the project will see the same changes in real time. "The worry is if you model only half a vessel and send parts off to be cut and you figure you want to move something six inches over, if the plates have already been cut and welded into place, it will be that much harder to take things apart and re-weld. If you have time to do a little advanced engineering up front, you can end up with significant time saving down the road."

It certainly looks like SSI and RAL's successful ongoing relationship is set to continue well into the future. "We've been very happy with the software," says Hyslop. "It does a good job for what we need it to do."

Kathy A. Smith is a Victoria, BC-based maritime writer who has penned over 100 published trade articles.

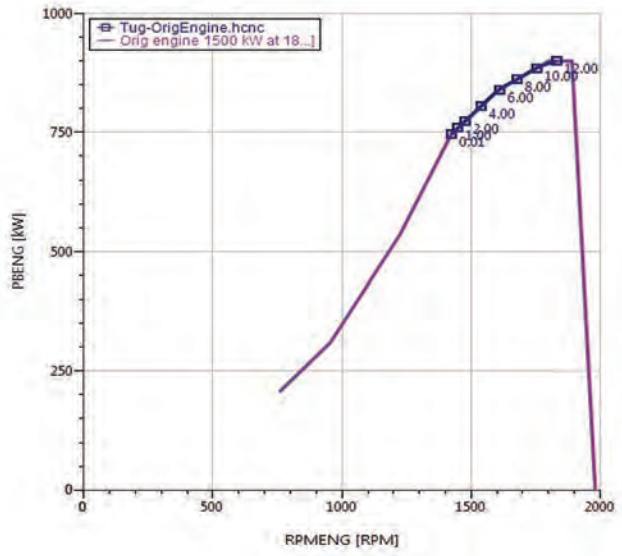
The Real Thrust of Workboat Design

Proper bollard pull calculations are everything for inland working vessels and harbor tugs. Fortunately, HydroComp NavCad removes the guesswork from deciding 'how much is enough.'

The mission of many vessels is to transit long distances, moving people and/or cargo. On the other hand, inland working vessels such as harbor tugs, neither travel great distances nor move a product. They are purveyors of thrust – the commodity that allows ships to be maneuvered and docked safely, and heavy loads manhandled from point to point.

Effectiveness of transit vessels can be measured by the total fuel consumed to move a particular cargo at a given speed, for example. These metrics will be calculated during the design phase according to simple principles of speed, resistance, thrust, and power. Fuel economy or transport efficiency, on the other hand, is not a useful measure of a tug's ability to do useful work. The practical, convenient, and traditional metric that the industry uses to compare and rank tug effectiveness is "bollard pull." Bollard pull is the figure given for a tug's useful steady-state pushing thrust (also called towpull) when it is restrained from moving. It represents, by a single numerical figure, the model of the towpull that a tug can generate when encountering a static object such as a large ship or heavy floating body. Unlike transit calculations, the prediction of towpull during design phase requires a different model of the physics involved – one that includes all aspects of the propulsion system.

Figure 1 –
Engine loading for a towing analysis with original engine



Equilibrium-Torque Analysis

Once a tug is built, its bollard pull is determined by a trial – the bollard pull test. This is a well-known procedure and, in truth, needs little more in way of expansion. Conversely, the physics of the creation of towpull includes not only the ability to generate propeller thrust at a particular engine RPM, but it must also include the ability of an engine to reach that RPM. Without a full "equilibrium torque" analysis, it is very possible – even probable – that bollard pull will be inaccurately over-predicted.

Nevertheless, companies still use simplistic calculations for the prediction of bollard pull, whereby the propeller thrust is calculated at zero boat speed and full rated engine RPM. There is usually no consideration if the engine even has sufficient power to be capable of reaching that RPM.

Consider, for example, the following prediction of 'towpull' performance to illustrate the real consequences of using simplistic calculations for bollard pull. The following plots were calculated and generated by HydroComp NavCad, a resistance and propulsion analysis software tool with the necessary equilibrium-torque analysis capability. Bollard pull is calculated at zero speed (indicated as "0.01" knots on the plot). It can be seen that the equilibrium RPM at bollard is substantially less than rated.

Figure 1 shows engine power versus RPM for an original engine option. In this case, the equilibrium RPM is limited by the engine's power curve to approximately 1400 RPM. The influence of engine curve shape can be seen in Figure 2 – with an engine of the same rated power and RPM, but with a more generous power curve at lower RPMs. Due to the higher available power below rated, the engine RPM at bollard for the new engine is able to run up to approximately 1500.

The plot of the towpull force tells an even more compelling story. Figure 3 is a comparison of predicted towpull for the original and new engines (with proper equilibrium torque analysis) along with towpull predicted by a simplistic rated RPM calculation. The bollard pull predicted at the trial would be the figures shown at zero speed for the original and new engines.

Clearly then, a simplistic prediction using rated RPM would have greatly over-predicted the bollard pull during

design. The performance would greatly fall short of the figure proposed by the designer, as well as the expectations of the owner or operator.

Careful selection of engine model (and its power curve) can contribute significantly to improved bollard pull performance. For example, towpull with the new engine offers some 12% more bollard pull – just by considering a different engine model. The shape of the engine curve is a fundamental part of a proper equilibrium-torque analysis, and it is the only way to calculate the real in-service bollard pull that would be achieved at the time of the bollard pull test. Any simplistic calculation will over-predict bollard pull, making for an uncomfortable bollard pull test for everyone involved.

Additional Considerations

Additional aspects of the hull-propulsor-engine system must be reviewed for proper modeling of a bollard pull prediction and a successful trial. HydroComp's *NavCad* insures that the designer and engineer have all of the necessary tools to build such a system model. These include:

• ***Cavitation:*** Simplistic calculations do not consider the effect of any thrust breakdown due to cavitation. NavCad includes not only a prediction of the thrust breakdown on the propeller, but also provides a criteria check for the potential of thrust breakdown on the nozzle of a ducted propeller system.

• ***Hull-propulsor interaction:*** Most estimates and predictions of the hull-propulsor interaction coefficients (wake fraction, thrust deduction, relative-rotative efficiency) are for transit speed at relatively light propeller loading. Heavy propeller thrust, particularly at very low RPM, requires the use of different figures. This is particularly true for thrust deduction, as the figure is used to consider how much open-water propeller thrust can be applied to useful work. Inappropriate figures used in bollard pull calculations can lead to differences of as much as 15% for the prediction of bollard pull. Shallow water effects also contribute to differences in these coefficients.

To be sure, a tug's measured bollard pull at trial has commercial value. It often is the one measure that determines which tug gets the job. Accurately predicting this figure during design can mean the difference between installing an engine and propeller that meets the design mission of the tug, or one that is deficient with substantially less commercial value.

A proper equilibrium-torque analysis, such as that available in HydroComp *NavCad*, provides the designer and operator with the confidence that they can meet their bollard pull objectives during newbuild or retrofit. Anything less is an unnecessary gamble on delivery of a far less valuable tug.

Figure 2 –
Engine loading for a towing analysis with new engine

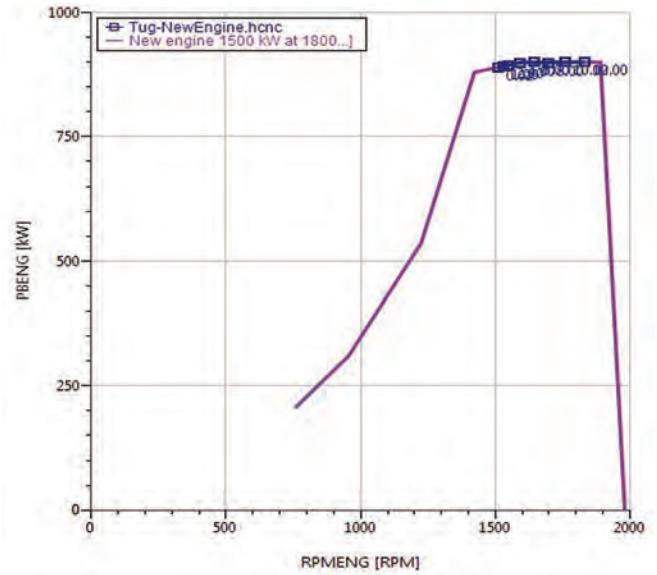
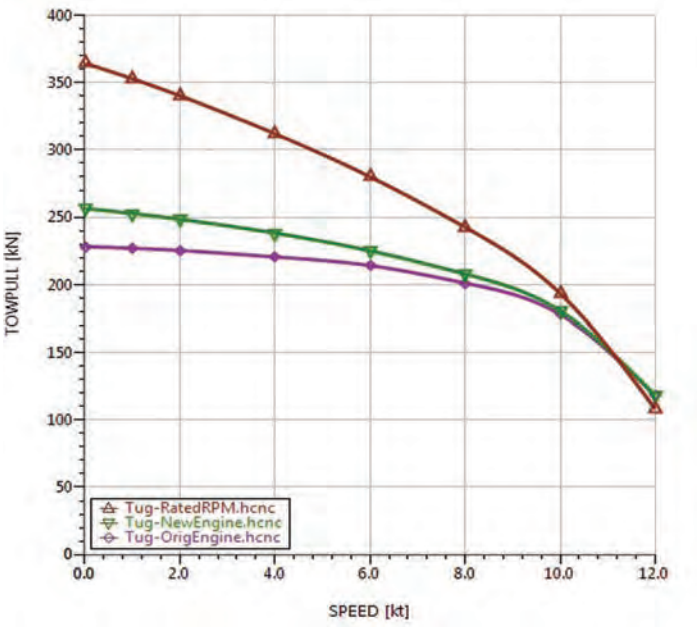


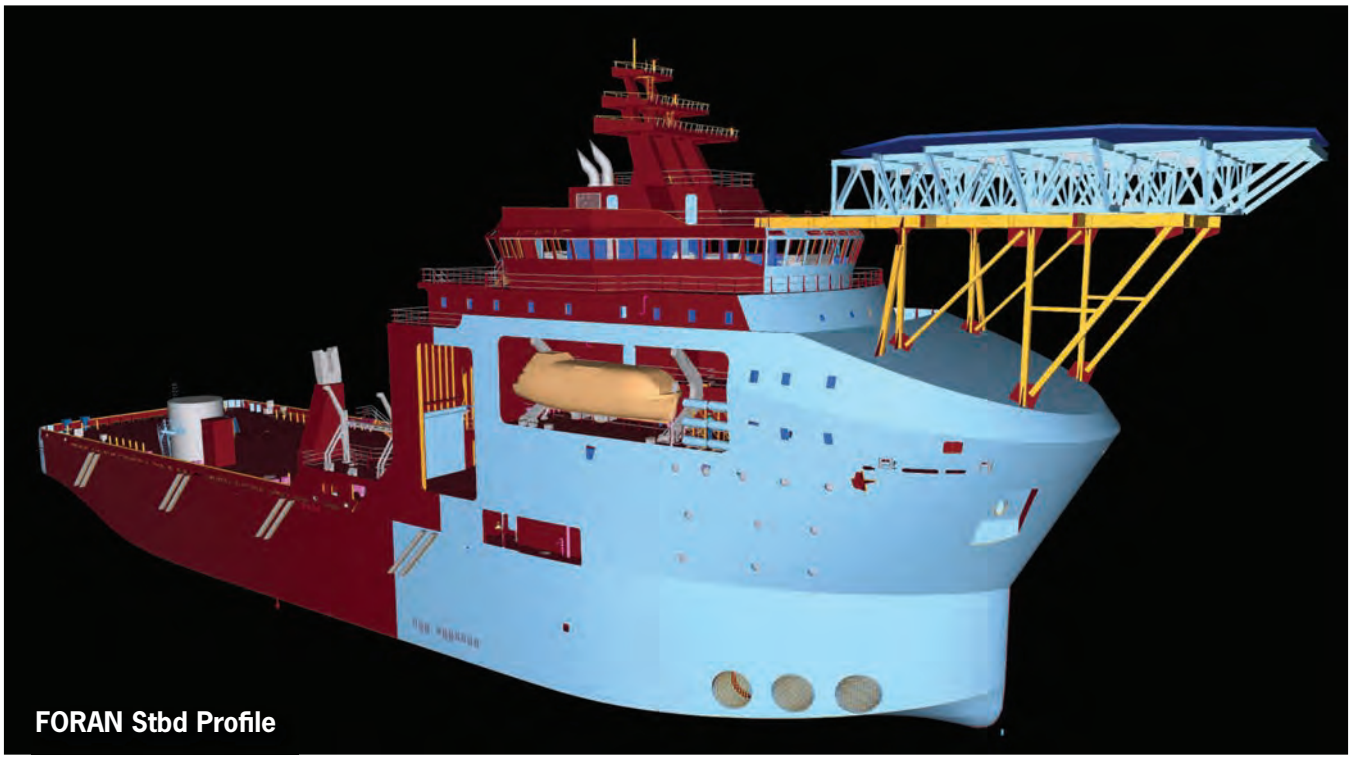
Figure 3 –
Comparison of predicted towpull



Donald MacPherson *is co-founder and Technical Director of HydroComp, Inc., a consultancy established in 1984, specializing in applied hydrodynamics with particular emphasis on the numerical prediction of vessel and propulsor performance. MacPherson is a graduate of the Webb Institute of Naval Architecture, a Fellow of the Society of Naval Architects and Marine Engineers, a member of the SNAME H-8 Propulsion Hydrodynamics Panel, and a frequent author and speaker on ship resistance and propulsion, sea trial and bollard pull analysis, and propulsor design.*

Eastern Shipbuilding Launches First Vessel Using Sener's FORAN

By Joseph Keefe



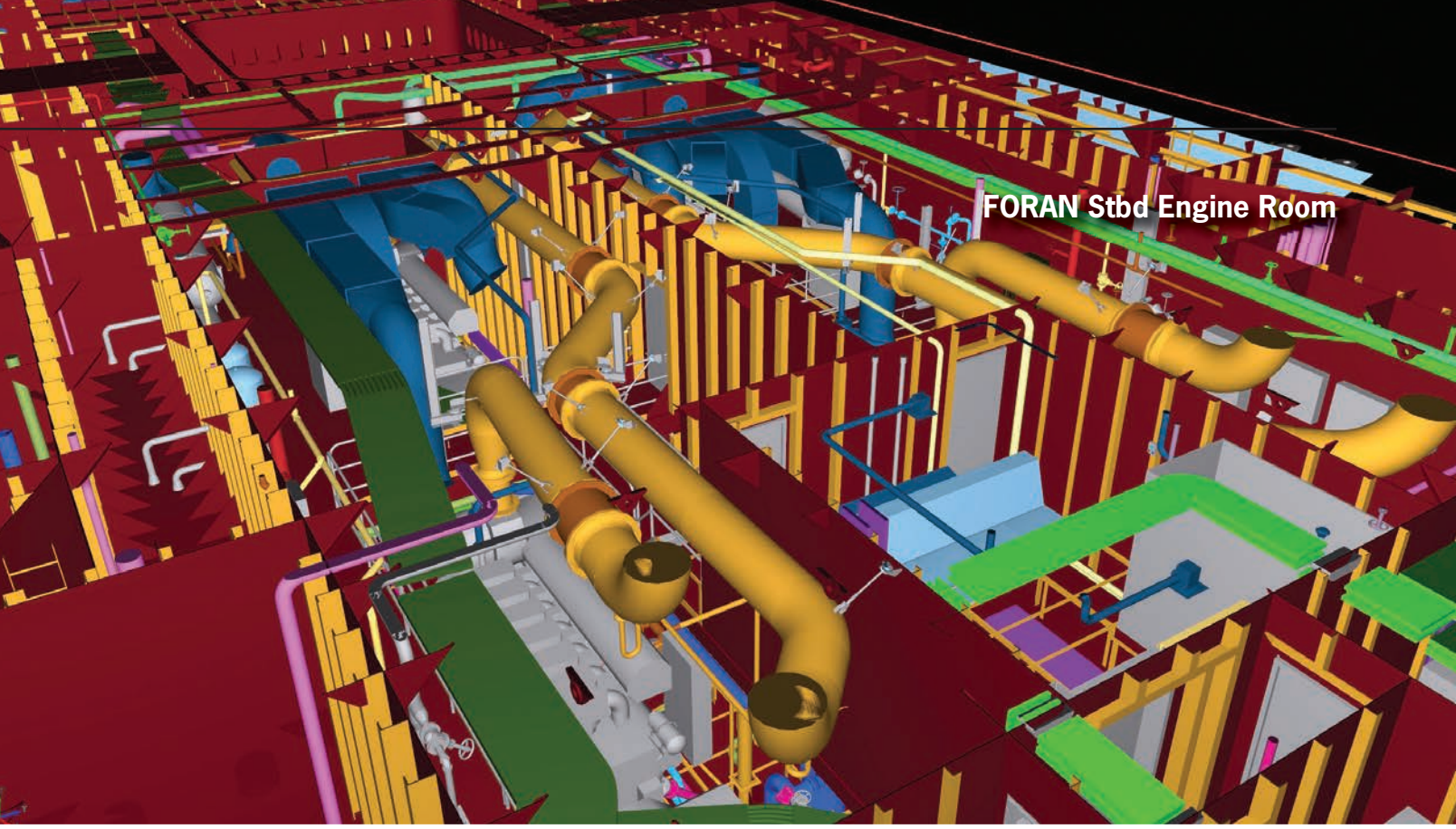
FORAN Stbd Profile

When Florida-based Eastern Shipbuilding Group (ESG) launched the HARVEY SUB-SEA in November, the routine event for this busy and successful yard also marked the first time that ESG had produced a vessel designed in the Sener CAD/CAM package FORAN. The Multi-Purpose Support Vessel (MPSV), the first of a series of two, will operate in the US Gulf of Mexico for HARVEY Gulf International Marine.

The process began in June 2013 when Sener and ESG signed an agreement for the complete implementation of FORAN in June 2013. The ESG decision, in part made to improve the yard's overall design and production processes, nowadays sees FORAN in several projects, where the shipyard has improved their production time and quality performance.

According to ESG Vice President Steve Berthold, ESG chose FORAN after analyzing and researching a host of other, similar Software products. He explains, "It worked well for this project because of the ability to reduce Modeling Time considerably, which allowed our Engineering Department to share the decision making process with the Production department, and hence adapting the design to our preferred, efficient and well known fabrication methods and not vice versa."

The switch to FORAN was important for other reasons, as well. For example, says Fernando Malabet, ESG VP of Engineering, "Eastern Shipbuilding Group received a regulatory design package with minimal details and extensive areas to be defined and refined during the 3D development of the model. This task needed to be accomplished not only with experienced 3D modelers, but also allowing the Naval Architect to be part of the modeling process, this way filling in the blanks and properly complete the design of the vessel. This can only be achieved by using a Software like FORAN."



FORAN Stbd Engine Room

FORAN not only cut the modeling time by 50% as compared to other software packages, but allowed different disciplines and people with different levels of training in modeling ability, to become part of the process, which made it more efficient. Once the output presentation and process was agreed to with the Production side of the yard, and with Sener's help, the yard automated much of the creation of Nests and Assemblies, creating a full package in about 75% of the time that it took with other Software packages. Since the original packages from both design firms for Hull 249 and 234 were "Regulatory" only, ESG was able to complete the design and detailed sufficiently for production purposes with the use of FORAN, for all areas.

ESG's Berthold also told *MarineNews* that FORAN is particularly well suited to fulfill design requirements for US shipbuilding practices. "Like all sophisticated and complex software, improvements depend on input from users. Sener has been very recep-

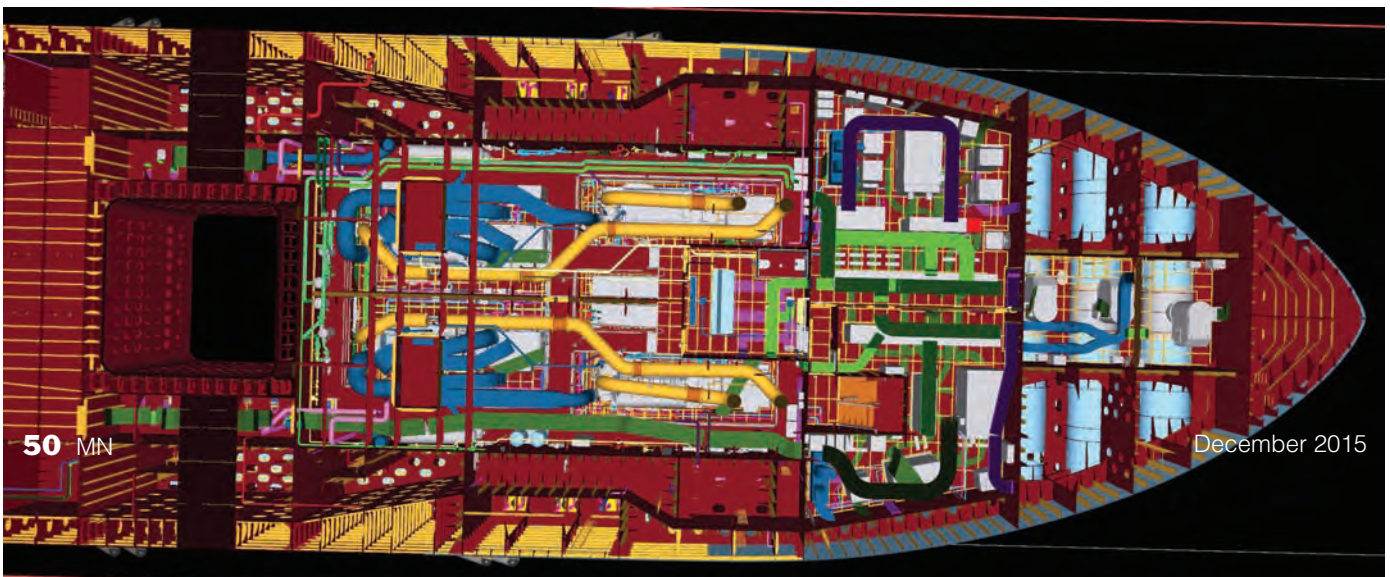
ESG FORAN launch

tive to U.S. Shipbuilding techniques and has made modifications and/or improvements to their software to accommodate this need."

While ESG is using FORAN in several projects now, it also owns other software licenses of other software and will continue to use all of them as necessary to maintain its engineering schedules and workload demand. But the real utility for ESG in the case of their most recent launch revolved around the fact that the yard received a regulatory design package with minimal details and extensive areas to be defined and refined during the 3D development of the model. This task, using FORAN, was accomplished not only with experienced 3D modelers, but also allowed the Naval Architect to be part of the modeling process. According to Berthold, this reduced the Modeling Phase time considerably.

FORAN provides for the ability to look at the Model while it's being developed not only by a Designer, but also by Naval Architects or whoever may be assigned to check, correct, and suggest modifications or improvements to the Model. He explained further, "This is achieved either by creating an export within FORAN and checking it through a FORAN viewer, or by viewing the same database as was developed." This allowed Eastern to get Engineers and Naval Architects involved in the process of developing the Model, not waiting until the assemblies/arrangements are completed, and waiting for the outputs to be check.

For their part, Sener continues to collaborate closely with ESG and at the same time, continues its own efforts internally to improve FORAN in order to help shipbuilding stakeholders to develop better projects and to be more competitive. That process, at ESG, is already well underway.



Marine News 2016 EDITORIAL CALENDAR

JANUARY
Ad Close: Dec 14

Passenger Vessels & Ferries
MARKET: Training & Education
TECHNICAL: Thrusters & Inland Propulsion
PRODUCT: Interior Design, Outfitting & HVAC
REGIONAL FOCUS: U.S. West Coast

PVA Maritrends: January 22-26, Washington, DC

FEBRUARY
Ad Close: Jan 15

Dredging & Marine Construction
MARKET: U.S. Coast Guard
TECHNICAL: Naval Architecture
PRODUCT: Fire & Safety Equipment

ASNE Day: March 2-3 Arlington, VA
Inland Rivers, Ports & Terminals: Mar 1-3, St. Louis, MO

MARCH
Ad Close: Feb 15

Pushboats, Tugs & Assist Vessels
MARKET: Fleet Optimization & Navigation Software
TECHNICAL: Marine Coatings/Corrosion Control
PRODUCT: Water Treatment & Technology
REGIONAL FOCUS: U.S. East Coast

CMA Shipping 2016: March 21-23 Stamford, CT
Port Security Operations: March 17-19, Tampa, FL
NACE Corrosion: March 6-10, Vancouver

APRIL
Ad Close: Mar 14

Boatbuilding: Construction & Repair
MARKET: Marine Cranes & Deck Machinery
TECHNICAL: Communication Technology for Workboats
PRODUCT: Electronics & Navigation Equipment

Workboat Maintenance: April 12-14, New Orleans, LA

MAY
Ad Close: Apr 15

Inland Waterways
MARKET: Barge Building & Outfitting
TECHNICAL: OSV & Offshore Vessel Trends
PRODUCT: Cordage, Wire Ropes & Rigging
REGIONAL FOCUS: Inland Waterways

Inland Marine Expo: May 10-12, St. Louis, MO

JUNE
Ad Close: May 13

Combat & Patrol Craft Annual
MARKET: Shortsea Shipping Solutions
TECHNICAL: Lubricants, Fuels & Additives
PRODUCT: Oil Pollution Prevention & Response

SeaWork: June 14-16, Southampton, UK

JULY
Ad Close: Jun 13

Propulsion Technology
MARKET: ATB's
TECHNICAL: Safety & Fire Protection
PRODUCT: Shafts, Seals & Bearings

AUGUST
Ad Close: Jul 15

MN100 Market Leaders
APPLY AT: http://mn100.maritimemagazine.com

MARKET: Workboat Boatbuilding & Repair
TECHNICAL: Marine Operators
PRODUCT: Marine Diesel Engines & Gensets

SEPTEMBER
Ad Close: Aug 15

Offshore Annual
MARKET: Barge Loading & Offloading Equipment
Technical: Push Boats & Barges
Product: Winches, Ropes & Cranes

OCTOBER
Ad Close: Sep 13

Salvage & Spill Response
MARKET: Market: Special Purpose Workboats
TECHNICAL: Arctic / Cold Weather Operations
PRODUCT: CADCAM Software

SNAME: November 2-4, Providence, RI
Arctic Technology Conference: October 24-26, St. John's
Clean Gulf: November,New Orleans, LA

NOVEMBER
Ad Close:Oct 14

Workboat Annual
MARKET: Outfitting the Modern Workboat
TECHNICAL: Pumps, Pipes & Valves
PRODUCT: Deck Machinery/Cargo Equipment
REGIONAL FOCUS: Gulf Coast

Workboat Show: Nov 30 – Dec 2, New Orleans, LA

DECEMBER
Ad Close:Nov 14

Innovative Boats of 2016
MARKET: Fire, Patrol & Escort Craft
TECHNICAL: Emissions Control / Compliance
PRODUCT: Pumps, Pipes & Valves

*may be subject to change


Martin


de Rubertis


Smith


Mayhall


Roth


Brann

Martin, Carlson Join Harley Marine

Harley Marine Services said that **Don Martin** has been named Vice President and General Counsel and **Steve Carlson** has joined the company as Vice President of Engineering. Prior to joining Harley Marine, Martin was the Vice President and General Counsel for Delta Western and Hawaii Petroleum. He attended the University of Washington, California Maritime Academy, and holds a Juris Doctorate degree from the University of the Puget Sound. Carlson joins Harley Marine Services from Alaska Marine Lines (AML) where he served as General Manager of Marine Engineering. Prior to joining AML, Steve held senior leadership positions with Kvichak Marine and the U.S. Coast Guard. He is a graduate of the U.S. Coast Guard Academy.

de Rubertis Joins EBDG

EBDG recently announced the hire of Human Resources Generalist, **Carolyn de Rubertis** in its Seattle office. She brings more than 20 years of experience to her role, as well as a proven track record of strong leadership. A graduate of Occidental College, de Rubertis has a BA in American Studies and a MS in Industrial Relations from the University of New Haven.

OMSA Names Smith as President, CEO

The Offshore Marine Services Association (OMSA) appointed **Aaron Smith** as President and CEO. Smith's appointment follows the resignation of Ben Billings, who led OMSA since 2013. Smith was instrumental in the development of OSVDPA, a dynamic positioning certification authority for the OSV industry. Prior to that, he served in Washington, D.C. as Deputy Chief of Staff to Congressman Jeff Landry.

Bollinger Adds Mayhall

Bollinger Shipyards has added **Joe Mayhall** to its corporate sales and marketing team. Mayhall is a veteran of new construction and ship repair sales and has worked in increasingly responsible positions, overseeing blue water ship repair and new construction sales in the oilfield and passenger vessel markets as well as coordinating advertising and marketing.

Signal Names Roth VP

Signal International, LLC named **Ryan Roth**, P.E. as vice president of sales and marketing for its Signal Ship Repair division in Mobile, Alabama. Since joining the organization in August 2010, Roth has held several positions as engineering manager, estimating manager, and director of business development for Signal. He is a licensed professional engineer and holds a Bachelor of Science in Mechanical Engineering from Auburn University, as well as a Master of Business Administration from the University of North Carolina at Chapel Hill.

Brann Joins The Shearer Group Team

The Shearer Group, Inc. (TSGI) has added to its naval architecture, marine engineering and marine surveying practice. **Harrison Brann** joined TSGI in October of 2015 as a naval architect. Harrison graduated with a bachelor's degree in naval architecture and marine engineering from Virginia Polytechnic Institute and State University. Prior to ABS, Harrison worked at ICI Services Corporation as an associate naval architect working on systems design and integration for various marine projects.

AEU's Stuardi Appointed to SCA Committee

The American Equity Underwriters Vice President of Business Development, **Rob Stuardi,** has been appointed to the Shipbuilder's Council of America's (SCA) Industry Partners' Committee. AEU is a member of this nationally prominent association based on its longstanding support of the nation's shipbuilding and repair industry.

Quinn New MLA Proctor

Lori J. Quinn of Marshall Dennehey Warner Coleman & Goggin, has been named a "Proctor in Admiralty" by the Maritime Law Association of the United States (MLA). The Proctor in Admiralty designation reflects the organization's most distinguished class of membership for those who have met stringent professional and educational


Stuardi


Quinn


Ridge & Crowley


Roca & Crowley

requirements. Quinn is a member of Marshall Dennehey's Maritime Litigation Practice Group and manages the firm's New York maritime subrogation practice. She is a graduate of St. John's University and New York Law School.

Crowley Employees Honored

Crowley Maritime Corporation awarded two employees with the firm's highest honor, the 2014 Thomas Crowley Award. **David Ridge**, director, marine operations, was presented with the award at the company's Anchorage, Alaska, office. **Kyra Roca**, vice president, customer care, was presented with the award at the company's Jacksonville, Fla., office. Ridge, a 30-year Crowley employee, was selected for the award because of his reputation for high performance. Roca was selected for the award because of her remarkable team-building capabilities and leadership skills. The exclusive employee recognition program was created in 1985 and only 60 of the company's more than 5,300 employees have received the award.

Damude, Rodriguez Join Emco Wheaton Sales

Emco Wheaton has added **Holly Damude** in the role of DRY-BREAK Product Specialist and **Eric Rodriguez** has been appointed as Territory Sales Manager. A graduate of the University of Toronto, Holly has been with Emco Wheaton for eight years. Rodriguez will focus on the development of the Emco Wheaton Marine Loading Arm aftermarket business. A Graduate of Texas A&M University, Eric has more than five years' experience sales experience with Baker Hughes and FTS.

Paulson Joins Duluth Seaway Port Authority

The Duluth Seaway Port Authority has named **Jason Paulson** as its new facilities manager. He will serve as a liaison with tenants, service and governmental agencies, private contractors and other property users to derive maximum safe and efficient use of Port Authority-owned land, structures, facilities, equipment and other assets. Most recently, he was operations manager at Lake Superior Warehousing (LSW). He graduated from the University of Minnesota.

Ocean Signal Names Bzauschka

Ocean Signal has appointed its first dedicated US Sales Manager to manage the company's expansion in the country. **Joe Bauschka** is now handling Ocean Signal's rescueME and SafeSea ranges of recreational and commercial communication and safety products in the USA. Joe previously worked as regional manager for Navico Inc for 17 years, before moving on to key sales roles at Pure Fishing and Simrad Fisheries.

SCA Taps Brooks as Senior Defense Advisor

Rear Admiral Jeff Brooks (Ret.) has been named Senior Defense Advisor at the Shipbuilders Council of America. He joined SCA in October and will focus on advocating, communicating and representing the ship repair industry to all stakeholders and to the U.S. Navy. Throughout his 38-year Navy career, Admiral Brooks served in key maintenance assignments, culminating in promotion to two-star flag rank and the Navy's top maintenance position as Fleet Maintenance Officer.

Tortorich Joins AEU

The American Equity Underwriters (AEU) last month announced that **Kayla Tortorich** had joined the AEU team as Vice President of Claims Medical Management. Prior to joining AEU Kayla spent more than 10 years working in the insurance industry and she has been a speaker at several national conferences on industry trends and best practices including the 2014 Loyola Law School's Annual Longshore Conference.

Caldwell is 2015 BIC Award Winner

The Bureau International des Containers (BIC) named **Stephen Caldwell** as the winner of the 2015 BIC Award, in recognition of more than 30 years' dedication to improving international security, including more than a decade focused on intermodal supply chain security and resilience. The BIC's Board of Directors cited Mr. Caldwell's promotion of strategic, risk-based, and co-


Bauschka


Damude


Rodriguez


Paulson


Brooks


Tortorich

operative container security programs on behalf of the US Government and the broader international maritime supply chain system, when making the selection. He has worked closely with the U.S. Congress and federal agencies, and various other stakeholders involved in cargo container and intermodal transportation security.

Sen. Murray Honored

The Daniel K. Inouye Institute honored U.S. Senator **Patty Murray** on Tuesday, November 17 for her longtime support of the American maritime industry. Dozens of maritime and Senate leaders gathered on Capitol Hill to honor Sen. Murray as the first recipient of the Daniel K. Inouye Maritime Guardian award – an award given to a recipient who embodies strong leadership and commitment to the U.S. maritime industry. The award was presented by Irene Hirano Inouye, widow of Sen. Inouye, to Sen. Murray.

Port Projects Win $44m in TIGER Grants

After evaluating 627 applications, 50 of which were from ports, for the FY 2015 Transportation Investment Generating Economic Recovery (TIGER) grants, U.S. Department of Transportation (USDOT) last month announced 39 awards for $500 million in funding. Of those, five awards totaling $44.3 million, or about 9 percent of total funding, are going to commercial seaports. American Association of Port Authorities (AAPA) President and CEO **Kurt Nagle** lauded DOT grants but also said, "AAPA urges that 25 percent of TIGER grants be provided for port-related and connector infrastructure, since ports are one of the four eligible areas (along with highways/bridges, transit, and freight/passenger rail) for the TIGER program."

Crowley Breaks Ground on San Juan Terminal

Crowley Puerto Rico Services has broken ground on a $48.5-million construction project for a new pier at its Isla Grande Terminal in San Juan, Puerto Rico. The project includes the development of a new 900-foot-long, 114-foot-wide concrete pier and all associated dredging to accommodate Crowley's new liquefied natural gas (LNG)-powered, Commitment Class ships. In all, Crowley is investing about $500 million in its Puerto Rico. The firm has served the Puerto Rico market since 1954, longer than any other carrier in the trade.

Ingram Wins EPA Award

Ingram Barge Company was honored today with a SmartWay Excellence Award from the U.S. Environmental Protection Agency as a true industry leader in freight supply chain environmental performance and energy efficiency. **Chuck Arnold**, Ingram's VP of Business & Strategic Development said, "For Ingram and for our barging customers, it means moving more cargo over greater distances using less energy and water and creating less waste." Ingram Barge Company is the first barge carrier in the history of the Partnership to receive this distinction, representing the best environmental performers of SmartWay's nearly 3,000 Partners.

NOIA Comments on Statoil Alaskan Pullout

NOIA President **Randall Luthi**, recently remarked on Statoil's decision to exit the Alaskan Arctic markets, saying, "Statoil's decision to withdraw from the Alaskan Arctic is disappointing yet understandable given current tough economic and regulatory conditions. These are challenging times for the oil and gas industry with continued low commodity prices making for hard choices, and I know this was a difficult one for Statoil. The company has a substantial investment in the U.S. Arctic and had hoped to become a producer of both energy and economic growth there for Alaskans and for our nation. Hopefully, another company will step in to fill the void left by Statoil, but given the harsh economic climate and the difficulty obtaining lease extensions, the outlook is rather bleak."

SCA Pans Jones Act Linkage to El Faro Tragedy

Claims of a causal link between the Jones Act and the loss of the cargo


Caldwell


Murray


Nagle


Arnold


Luthi


Paxton

container ship El Faro in Hurricane Joaquin earlier this year sparked a firm response from **Matt Paxton**, President of the Shipbuilders' Council of America (SCA). As Jones Act opponents leveraged the tragedy, Paxton said in a prepared statement, "To imply that vessels that do not have to comply with rigorous U.S. safety standards are safer than those that do, defies common sense. To try and connect a law that works to protect our economic and national security to this tragedy, particularly during a period when our industry family is mourning such a loss is not only incorrect, but shameful."

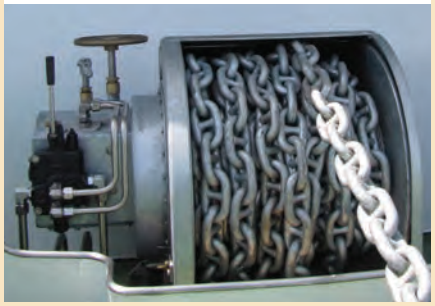
ARTCO: Cairo Harbor Barge Fleeting Ops

American River Transportation Company (ARTCO) announced plans to launch new barge fleeting and switching operations in the Cairo, Illinois, harbor starting January 1, 2016. The new operation will provide fleeting and switching operations from mile 948 on the Lower Mississippi River to mile 29 on the Upper Mississippi and mile 974 on the Ohio River. **Jason Porter**, vice president, ARTCO operations said, "This new location provides strategic access to the Lower Mississippi, Upper Mississippi and Ohio Rivers and will allow ARTCO to directly provide a complete range of services in the Cairo market without relying on any third-party support, giving our customers a truly one-stop solution to meet their worldwide transportation demands."

JK Fabrication Deck Equipment

J.K. Fabrication, Inc. manufactures hydraulic marine deck equipment in Seattle WA. Products range from commercial fishing equipment, anchor and research winches for all vessels. The firm has expanded its footprint into hose storage reels for petroleum platforms as well as emergency towlines storage reels for retrieval of ocean going barges. The towline storage reel is a proven means of saving a loose ocean going barge.

www.jkfabrication.com



Trelleborg Rubber Compound Tug Fenders

Trelleborg's marine systems operation has launched a new High Performance Super Abrasion Resistant (HPSAR) tug fender, which utilizes an innovative, superior rubber compound. The application of this distinctive and improved compound not only significantly increases the service life of the fender, but also gives the fender a lower density than traditional solutions, contributing to reduced weight and increasing potential savings.

www.trelleborg.com/Marine-Systems/

Ocean Signal's new rescueME MOB1

Ocean Signal's rescueME MOB1, is designed to attach to compact life jackets, ready for automatic activation in the event of a man overboard situation. The MOB1 device communicates the location of a person in the water with accurate position information on the vessel's chart plotter, and distance and bearing to the person in distress. The Digital Selective Calling (DSC) VHF alarm will also be triggered.

www.oceansignal.com

Videotel's Enclosed Space Management System

Videotel launched the Enclosed Space Management System, designed to effectively assess, and manage safety of enclosed spaces and combat the number of accidents and fatalities that occur when problem areas are overlooked. The computer-based system enables compliance with IMO's "Revised Recommendations for Entering Enclosed Spaces Aboard Ships.

www.videotel.com

GE's Tier 4 Marine Diesel Engine has EPA Certification

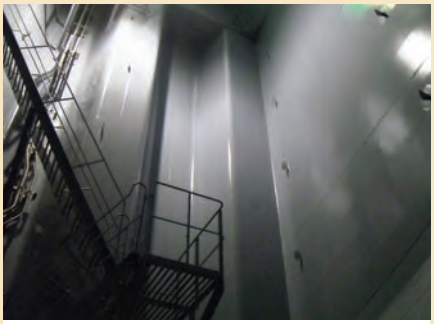
GE Marine's 12V250 marine diesel engine has received U.S. EPA Tier 4 Certification. GE met the emissions requirements through non-Selective Catalytic Reduction (SCR) technology that requires no urea-based after-treatment. The company is also working towards U.S. EPA Tier 4 and IMO Tier III Certification for additional models.

www.ge.com

BlueTide Launches iOS App

BlueTide Communications Corporation's BlueVision is a proprietary app developed to monitor vessels. Video streaming, deck snapshots and instant contact make the BlueVision app a central touch point for fleet communication. Users can access 24/7 live video or request recorded video history of the deck, take screenshots of any potential concerns and e-mail the images directly from their iPhone, iPad or iPod touch device.

www.bluetidecomm.com



Interline 9001 Tank Coatings

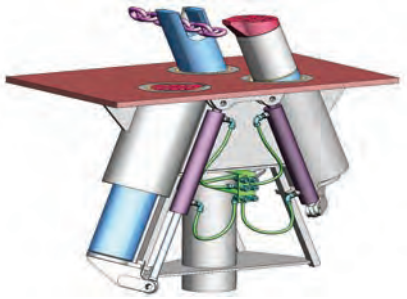
Interline 9001 is a Bimodal Epoxy coating for cargo tanks. With enhanced cargo resistance, near zero absorption for many cargoes and fewer cycling restrictions, Interline 9001 simplifies the carriage of a wide range of liquid cargoes, optimizing vessel earning potential. It reduces contamination risks between cargoes with its smooth, glossy surface, and cuts cleaning time by up to 70%.

www.international-marine.com/interline9001

Marine Keyboard for Demanding Jobs

NSI's 103 key backlit keyboard with integrated ergonomical trackball and scroll wheel promotes easy typing, scrolling and rolling throughout all applications, even in the harshest of marine environments. This keyboard is available with or without IEC 60945 marine certification fourth edition as required for use with ECDIS & Radar systems. This keyboard is highly suited for marine environments thanks to its robustness and ease of maintenance.

www.nsi-be.com



Omega Towing Pin

Kooiman Group's stainless steel deck chock – the 'Omega-pin' – allows tugs to tow with the towing line at angles up to 135 degrees from center line and 45 degrees from deck. Designed with a SWL of 125 tons and design load of 400 tons (LR certified), its stainless steel finish is ideal for use with synthetic ropes. When not in use, it can be retracted.

www.thekooimangroup.com

RockFLEET Vessel Tracking System

Iridium partner Rock Seven has released a new firmware update for its RockFLEET vessel tracking system. The RockFLEET system obtains a position using the GPS satellite network and transmits that position to shore systems using Iridium Short Burst Data (SBD) at user-defined intervals. The new motion-based transmission function enables cost-effective vessel tracking, reducing the amount of data sent when a vessel is on station or dockside.

www.rock7.com

ELASTEC Introduces 1.5 Meter BoomVane

ELASTEC'S 1.5 meter ELASTEC BoomVane is designed to quickly deploy heavier oil booms in coastal and open waters in advancing sweeping and skimming applications – with only one towing vessel. No longer limited by the length of a sweep arm, wider boom swaths can be configured with the unharnessed power of the BoomVane to tow the boom into position. BoomVane also solidly holds the swath configuration in place, maneuvered by the boat's captain.

www.elastec.com

Caterpillar Propulsion's Azimuth Tug Thrusters

A new range of azimuth thrusters Caterpillar Propulsion targeting the tug market, developed to match high performance with competitive cost. The 60 ton bollard pull Cat Propulsion Marine Thruster Azimuth (MTA) is the first model in what will become a new family of rotatable units optimized for tug operations, with an initial unit expected to be delivered into a commercial trial by the end of 2015.

www.MARINE.CAT.COM/pr

Cavotec's MoorMaster Mooring Technology

MoorMaster is a vacuum-based automated mooring technology that eliminates the need for conventional mooring lines. Remote controlled vacuum pads recessed in, or mounted on docks or pontoons, moor and release vessels in seconds. To date, 200 MoorMaster units are installed at 28 locations around the world and have completed more than 130,000 mooring operations at bulk handling and lock applications.

www.moormaster.com

BlokCam Crane Camera Systems

Compact Lifting Group's BlokCam delivers live video from the hook block to the operator in the cabin. BlokCam Limited will provide camera systems available in four versions, including one for explosive environments. The ATEX Ex rated system is tailored to the requirements of Zone 1 explosive environments, particularly in the offshore and petrochemical industries. Compact Lifting Group provides "eyes where you need them."

www.compactlifting.com

Earthwise EAL Wire Rope Grease

Lubrication Engineers Earthwise EAL Wire Rope Grease (3353) meets the rigorous performance demands of EPA and industrial applications. This soft, semifluid coating grease is a certified Environmentally Acceptable Lubricant, recommended for use in applications on or near waterways.

www.LElubricants.com

Viega SeaPress Piping System for Marine

Viega SeaPress provides fast, flameless connections in a variety of pipe applications from potable water, to fuel, to fire sprinkler. A 90/10 copper-nickel alloy suited for sea-water systems, it is the only copper-nickel fitting with a double-press connection.

www.viega.us

SCHOTTEL EcoPeller – a Highly Efficient Thruster

SCHOTTEL's highly efficient thruster is optimized for open sea and coastal operating conditions, combining the latest hydrodynamic insights from CFD simulations and model tests. The SRE enables owners to achieve lower fuel consumption and low emissions. The SRE employs a vertical electric motor integrated into the Rudderpropeller, eliminating any necessary shaft lines. On board, the EcoPeller offers unbeatable comfort with low vibration and low noise.

www.schottel.com

Chafe-Pro FS Available Through Samson Rope

Providing critical protection for high-performance mooring lines, the Chafe-Pro FS employs the same great Chafe-Pro material, but is custom designed specifically for Samson to have a free-sliding fit. Durable and easily installed either before or after deployment, the Chafe-Pro FS is easily positioned wherever lines are subject to abrasion. A simple hook-and-loop closure allows Chafe-Pro FS sleeves to be quickly installed or repositioned.

www.ChafePro.com

Tenneco's SCR System Achieves ABS PDA

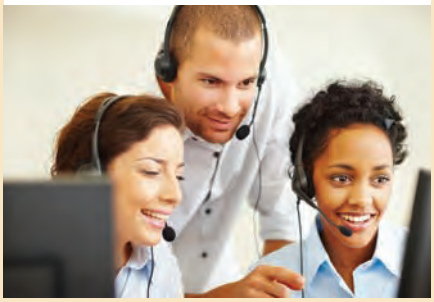
Tenneco, a global supplier of Clean Air aftertreatment technologies, has been awarded three product design assessment (PDA) certificates from the American Bureau of Shipping for its new selective catalytic reduction (SCR) system for large engines. Tenneco's SCR aftertreatment system features a complete dosing control solution specifically designed for marine engine applications up to 7,500 kW or 10,000 hp. The PDA certificates cover key components of the system.

www.tenneco.com

Shell's Marine APP Availability, Lubricant Delivery

Shell Marine Products (SMP) has expanded the availability of its Shell Marine Products app to 40 markets, more than double its original footprint. The app is available to customers on both iOS and Android mobile platforms in many countries, including the U.S. SMP's global port network is now up to 532 ports in 40 countries. Customers are supported by a 24/7 Service Center.

www.shell.com



Alphatron, JRC Integrated Pushboat Bridge

JRC and Alphatron Marine have introduced a pushboat bridge dedicated for American inland waterways. The bridge has two ergonomic and dynamically designed consoles with a central captain's chair mounted on rails. Controls and instruments are all within easy reach. Besides controlling the vessel from a single chair, the captains can now feel the power of the main and flanking rudders while holding the joystick.

www.alphatronmarine.com

Sennebogen 870 Material Handlers

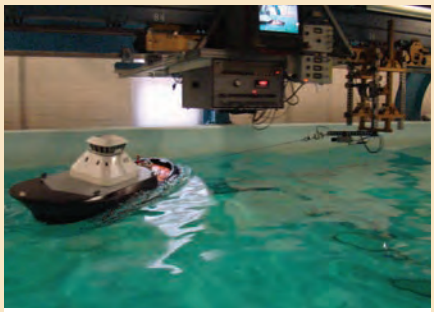
Purpose-built material handlers from Sennebogen – 870 R-HD and the 870 M – can each move 2,500 to 3,000 cubic yards of sediment per day from hopper barges filled with dredged sediments and water removed from the river. The machine moves quickly to keep pace with dredging operations and it accurately removes all sediments from the barge, without spillage. The 870 R-HD is a 200,000-pound, crawler-mounted material handler.

www.sennebogen-na.com

Tank Coating Applications with PPG's Novaguard 810

NOVAGUARD 810 from PPG Protective and Marine Coatings is a specialized tank storage coating providing outstanding resistance to a range of chemical and oil products. The solvent-free coating minimizes application hazards is suitable for newbuild or refurbishment of existing tanks. Rapid curing of a single coat means fast return to service. Smooth, light-colored finish enables easy cleaning and inspection.

www.ppg.com



U.S. Patent for JonRie Marine Winch

A US Patent has been issued to Brandon Durar and Gregory Castleman for a Staple Torque Aligning Winch System for Escort Tugs. This Auto Position Escort Winch becomes one with the tug with its ability to align forces to create maximum steering effort to assist in an emergency and aligns forces to safely increase righting forces during an Escort.

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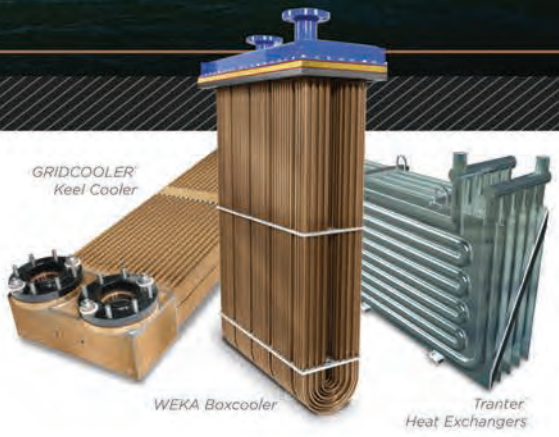

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