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Marine News

SEPTEMBER 2013
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Workboats

Blasting Off!
The Red Hot U.S. Gulf of Mexico
Page 52

Propulsion
Full Speed Ahead with Gas
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Vessel Design
The AT/B Comes of Age
Page 104

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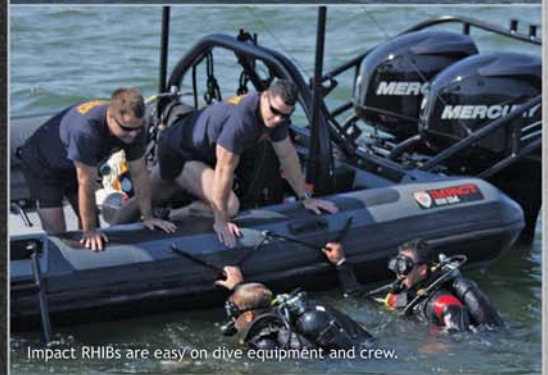

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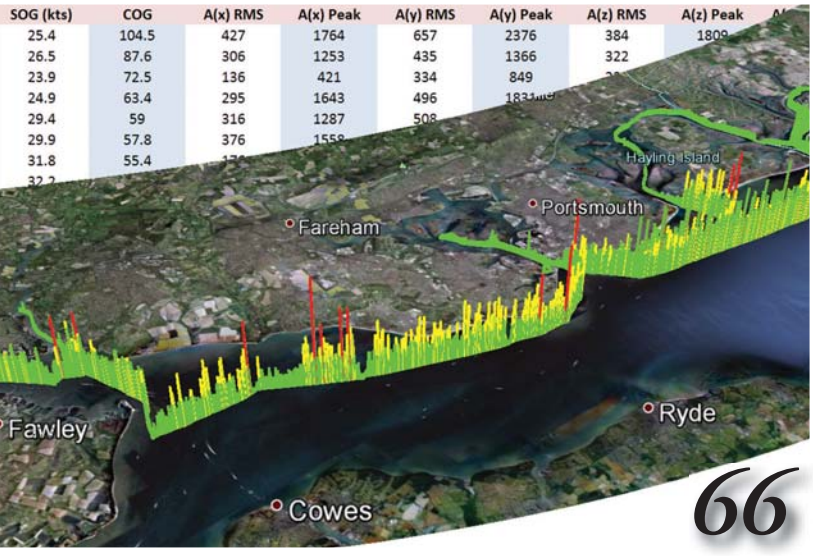

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On the Cover

52 Offshore GoM SITREP

The HOS Red Dawn, the first 300 class HOSMAX vessel, is shown on her sea trials. Delivered from the Eastern Shipbuilding Group in June, the vessel is one of dozens of OSV hulls being built or on the backlogs of Gulf Coast shipyards. Starting on page 52, Susan Buchanan chronicles the robust activity underway along the U.S. Gulf of Mexico.

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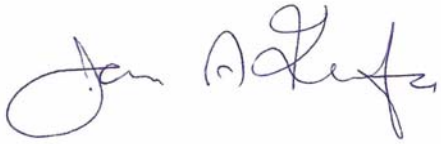
Pop Quiz: Think back to the last time that U.S. Shipyards were operating at the breakneck pace now being seen from coast to coast. Now, think about that in context of slowing global demand brought on by overbuilt bluewater sectors. Next, factor in the breathtaking newbuild programs underway in the offshore support, inland marine and Jones Act sectors. And, don't forget the increasing demand from foreign operators who, more and more, are beginning to understand that U.S. shipyards can build economically in series, for export and with quality that matches or exceeds global standards. Finally, plug in the shrinking trade deficit represented by energy that could eventually eliminate our dependency on foreign oil forever, powering prosperity that could last for a generation.

If you are at a loss for an answer to this month's *MarineNews* brainteaser, then you will find yourself in good company. It has been a long time since the stars were aligned quite as nicely as today's domestic marine markets seem to be. Although a little out my wheelhouse, I could also throw in the hefty charter rates being paid to Jones Act operators to move all of that new domestic energy. I don't think it any coincidence, therefore, that this money is being redistributed into domestic newbuild tanker programs. Starting on page 104, you'll find out why the AT/B will have a prominent role in that piece of business. Indeed, things are so good, apparently, that shipyards and operators alike are having a difficult time finding competent help to keep this economic juggernaut moving.

These are good problems to have. That said; it's no time to take our foot off the gas, nor is it a good time to forget where we came from, why, and what to do to ensure that the current boom doesn't become just another cycle rather than a sustained period of prosperity. John F. Kennedy said it best when he insisted back in 1963, "A rising tide lifts all the boats." This month, Susan Buchanan's report on the U.S. Gulf Coast's building boom aptly describes what oil and gas producers can expect for support in coming years, and why. As the domestic offshore support fleet becomes more modern and sophisticated, two things will likely occur next: first, the arrival of the long-awaited two-tier charter market and the "flight to quality" envisioned by operators – like Todd Hornbeck, for example – will finally come to fruition. Secondly, partly because of the first supposition, the specter of overbuilt Gulf of Mexico OSV market will not. That's my take.

Finally, and since this is after all our Workboat Annual edition, the pages of this, our largest *MarineNews* edition ever, also contain the full spectrum of all things "workboat" and the service and OEM sectors that support it. Headlong into the 4th quarter of 2013, I might be accused of being a bit too optimistic about the current state of the domestic waterfront. I like my chances about being right. Turn the pages to find out why.



Joseph Keefe, Editor, keefe@marinelink.com

See us in booth 3159 at the International Workboat Show, New Orleans, October 9 - 11, 2013.

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The Economic Importance of the U.S. Shipbuilding and Repairing Industry

This summer, the U.S. Department of Transportation's Maritime Administration (MARAD) asserted that domestic shipyards annually support $36 billion in gross domestic product. The report, entitled *"The Economic Importance of the U.S. Shipbuilding and Repairing Industry,"* aptly laid out how U.S. Shipyards create quality jobs and support economic growth far beyond our nation's ports and waterways. The report also notes the U.S. shipbuilding industry, unlike the rest of the nation's consumer-based model, has run a trade surplus in six out of the last ten years. In fact, and *BY THE NUMBERS*, domestic boatbuilders pack a ferocious economic wallop:

Total GDP National Impact ($): ... 36 billion
Shipbuilding Gross Domestic Product (GDP $): ... 9.8 billion
Shipbuilding Labor Income ($): ... 7.9 billion
Cumulative Trade Surplus ($): ... 410 million
DOT Dollars spent in U.S. Shipyards Since 2009 ($): ...150 million
Number of Direct Jobs from Shipbuilding: ... 107,000
Average Shipbuilding Incomer (annual $): ... 73,000
Number of vessels delivered in 2011: ... 1,457
Average Number of Vessels Delivered Annually: ... 1,200
Number of U.S. Shipyards: ... 317+

Economic activity directly associated with the U.S. shipbuilding and repairing industry is primarily captured in government data under the North American Industry Classification System (NAICS) sector 336611, Shipbuilding and Repairing. Shipyard activities include ship construction, repair, conversion, and alteration. They also include the production of prefabricated ship and barge sections, and other specialized services. The government says that about 90 percent of revenues were derived from routine repairs and maintenance of maritime vessels.

Of particular interest to *MN* readers, U.S. shipbuilders delivered 1,260 vessels of all types in 2012, down from 1,457 vessels in 2011. Notably, more than 80 percent of vessels delivered in the last three years have been inland tank and deck barges. Deliveries of tugs and towboats, passenger vessels, commercial fishing vessels, and inland tank barges increased from 2010 to 2012. While recent deep draft orders – particularly in the resurgent Jones Act tanker trades and Tote's order for 2 LNG-powered containerships – are encouraging, the backbone of the U.S. merchant marine and the shipyards that supply them, continues to be, and will remain, its inland, energy and offshore sectors.

Table 3. -- Deliveries by U.S. Shipyards, by Type of Vessel, 2010-2012

Type of Vessel	2010	2011	2012
Large Deep-Draft Vessels	16	11	11
Offshore Service Vessels and Crew Boats	38	21	28
Tugs and Towboats	81	109	118
Passenger Vessels (>50 feet)	22	30	33
Commercial Fishing Vessels (>50 feet)	8	20	15
Other Self-Propelled Vessels (>50 feet)	19	23	25
Large Oceangoing Barges	14	6	2
Inland Tank Barges	142	184	279
Inland Freight and Deck Barges	861	1,053	749
Total Delivered	**1,201**	**1,457**	**1,260**

Source: www.shipbuildinghistory.com
Note: The delivery date for a vessel was determined by the date on which its Certificate of Documentation was issued, which should be, but may not be, the date on which the shipyard made delivery.

Smaller hulls remain the staple for domestic shipbuilding, but the federal government (U.S. Navy, Army, and Coast Guard) remains an important customer for U.S. shipbuilders. While only 15 of the 1,459 vessels delivered in 2011 were delivered to the U.S. government, nearly all (8 out of 11) of the large deep-draft vessels were delivered to U.S. government agencies. The report also revealed that total revenues for U.S. shipbuilding and repair industry amounted to $21.9 billion in 2011, down slightly from $22.1 billion in 2010. Initial estimates for 2012 from industry sources indicate total revenues of $19.7 billion with 60.3 percent coming from military shipbuilding, 21.7 percent from commercial shipbuilding, and the remaining 18.0 percent from ship repairs.

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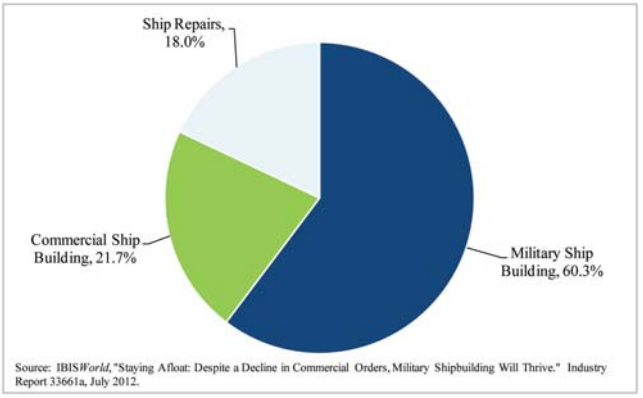
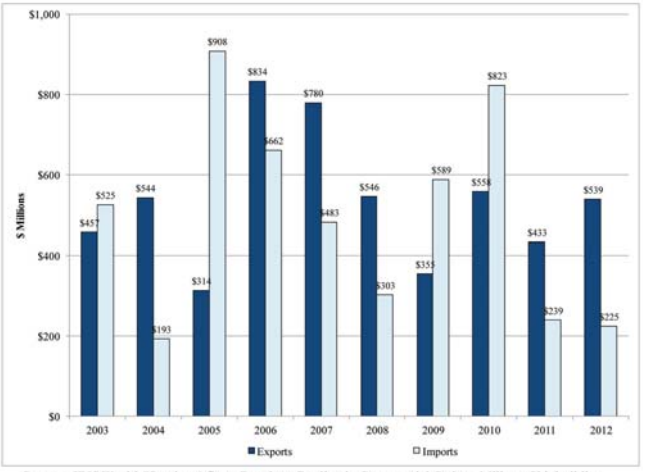
Figure 5. -- Industry Revenues by Product Type, 2012



Source: IBIS*World*, "Staying Afloat: Despite a Decline in Commercial Orders, Military Shipbuilding Will Thrive." Industry Report 33661a, July 2012.

Figure 8. -- Imports and Exports for the U.S. Shipbuilding and Repairing Industry, 2003-2012



Source: IBIS*World*, "Staying Afloat: Despite a Decline in Commercial Orders, Military Shipbuilding will Thrive." Industry Report 33661a, July 2012.

Despite an increase in foreign competition, exports by U.S. shipbuilders have strengthened in recent years, rising to $539.1 million in 2012 (representing 2.7 percent of industry revenues). As a result, the U.S. shipbuilding industry has run a trade surplus in six out of the last 10 years. In fact, combined over the last 10 years the industry has run a trade surplus of $410 million.

Employment in shipbuilding and repairing is concentrated in a relatively small number of states. In fact, 62 percent of all private direct employment in the industry is located in just five states: Virginia, Louisiana, Mississippi, Connecticut, and California. These numbers do not include federal government employment. According to the U.S. Bureau of Labor Statistics, total employment at federal government-operated shipyards was 29,452 in 2011, up from 28,234 in 2010. As a result of the global recession the industry contracted, losing more than 9,000 payroll jobs between 2008 and 2011, before rebounding in 2012. Payroll employment averaged 98,070 over the first half of 2012.

Currently there are 117 active domestic shipyards, spread across 26 states. In addition there are more than 200 shipyards engaged in ship repairs or capable of building ships but not actively engaged in shipbuilding. Of the 117 active shipyards, five are public yards operated by the U.S. Navy or U.S. Coast Guard, six are major shipyards capable of building large naval vessels and/or deep-draft ocean going commercial ships, 20 are large shipyards capable of building mid-sized to large merchant ships, mid-sized to large naval vessels, offshore drilling rigs and high-value, high-complexity smaller vessels. The remaining 86 are relatively small shipyards, capable of building smaller commercial vessels, such as tugs, towboats, offshore service vessels, fishing vessels, ferries and barges. In addition to these shipyards, there are nine shipyards currently producing large yachts and 13 occasionally producing larger vessels. Marad says that another 293 shipyards and boatyards are classified as inactive.

Get the Report

The Marad report, in our estimation, is one of the finer efforts to come out of DOT in a long time. This is what Marad should be doing. Nicely summing up the importance of U.S. boatbuilding, there is much more to the report than what you find on these pages. Access the report at:

www.marad.dot.gov/documents/MARAD_Econ_Study_Final_Report_2013.pdf

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Sea Trial Performance Analysis Redefined

By Don MacPherson

KND Naval Design of Cape Town, South Africa successfully completed its first in class 10M Advanced Life Support Ambulance and Rescue vessel for Africa. This vessel was designed and built entirely in Cape Town. This project used HydroComp propulsion software to analyze and examine sea trial performance.

Naval architect Kobus Potgieter captured a USA styled 1960's retro ambulance look-and-feel for the boat. He also used "Batmobile" oversized fenders and flowing lines which can be seen in the vessel's coach and shape of the hull.

The KND Fast Advanced Life Support Ambulance (FALSAV) boasts a 500 HP outboard engine configuration which can be tamed to 400 HP. The vessel can reach a max speed of 40 knots and is configured to carry two patients with four crew members. She can also carry up to 16 more people for rescue operations. There are two patient benches with floating spine boards and spider harnesses, a wash basin, and toilet equipment lockers all contained within an air conditioned environment. Special attention was given to the medical needs of the patient with the fixed placement of all equipment and benches, and to have all equipment operating off 220V AC for operation (or in storage while charging). In this way, the medical workflow around the patient is uniform and efficient.

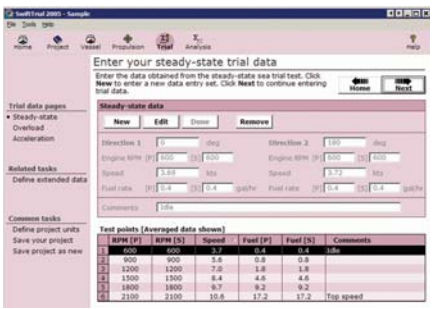
The coach has two doors port & starboard at midship and double doors at the aft of the vessel. Special attention was made for easy loading by adding a rescue door below the port access door and above the waterline. This vessel will be used to transfer patients from remote areas in the Sub-Sahara's greater lakes region where there is a lack of medical services but a major demand.

The vessel's final service area is East Africa, thereafter traveling 1600 km inland before reaching her final destination. Kobus Potgieter is proud of this initiative, which took over 4 months to develop, and 60 more days to build.

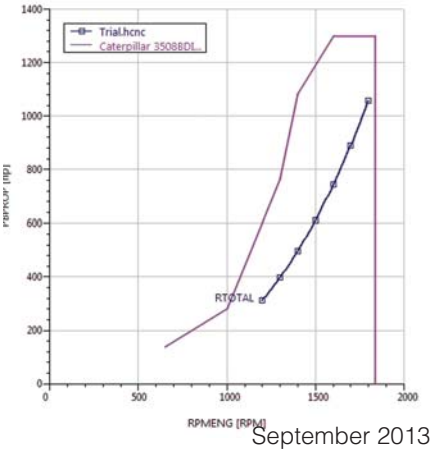
KND Naval Design acquired both HydroComp NavCad and SwiftTrial software in early 2012. After running a couple of projects with the assistance of HydroComp's Technical director, Donald MacPherson, KND quickly mastered the use of the software programs and the programs have now become their primary performance assessment software. According to Mr. Potgieter, "I found SwiftTrial very useful the first time it was used on the Ambulance Boat. Sea trials have always been an important task, but we never really used the data before to analyze the performance in any real detail."

"Using SwiftTrial, we quickly analyzed the performance and immediately picked up a big difference in the set-up of the two engines. In our case, the overload on the one engine could immediately be identified and we found out that the supplier had sent the wrong props. At WOT, it is really difficult to analyze whether the engines are really over loading or cavitating – especially if the boat is doing the anticipated speed. As we dug deeper with SwiftTrial, however, we pinpointed and corrected the problem. This was only achieved by using the SwiftTrial data and analyzing it. I can't wait for our next design so that we can become the sea trials experts again."

Both SwiftTrial and HydroComp NavCad offer the ability to "back-engineer" sea trial data (i.e., boat test figures) to analyze the underlying aspects of vessel performance. SwiftTrial provides an easy-to-use and inexpensive documentation and analysis utility.



While the boat's look is 1960s retro, its propulsion performance is thoroughly modern.



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Steve Dickey

Global Marine Market Director, Sherwin-Williams Marine Coatings

If lifecycle asset management is at the very forefront of an economically driven shipping company, then marine coating have to be a part of that discussion. That, in part, is because the global regulatory scheme is now impacting everything from marine propulsion, vessel discharge protocol, ballast water management and everything in between. The fact that marine coatings can be at the very heart of any and all of these discussions shouldn't surprise anyone. Stephen F. Dickey, Market Director – Global Marine for Sherwin-Williams Protective & Marine Coatings, knows that as well as anyone. Previously, Dickey was the Director of Marketing and Business Development at PPG Industries Protective & Marine Coatings. Prior to that, he was the Group President for Ameron's Protective Coatings Group. Dickey has been involved in the heavy-duty coatings market since 1981 in various technical, sales, marketing, operations and executive management positions. He has also served as the Senior Vice President of Marketing and Strategic Planning and General Manager for Product Finishes at Ameron International. Dickey holds a degree in Business Administration. This month, his take on the rapidly evolving world of marine coatings hits home in a red hot offshore rebuilding era right here at home, even as the global boatbuilding markets cool off.

Tell our readers about the biggest challenge in marine coatings today.

There are two major marine market coatings challenges currently – (1) developing and qualifying products for ballast water tanks that both meet IMO PSPC and can perform long term in a ballast water treatment environment, and (2) developing effective and durable underwater hull systems. The difficulty is creating products that can meet the performance expectations of vessel owners and the increasingly demanding regulatory constraints on the materials we can use in formulating antifoulings or foul release products. Sherwin-Williams is working hard to meet both of these challenges by working with technical partners to create new approaches, and looking at new uses for existing products and materials. We are also challenging our technical teams to create solutions that will revolutionize the coatings market.

Do the shipyards drive coatings selection or is it the owners?

In reality it is both, depending on the type of application. In newbuildings, while coatings selection is influenced by the owner, the decisions are generally made by the shipyard. That selection is often based on the level of technical support the shipyard has received on past projects, the history of successful applications, and value. For vessel drydockings and repaints, the decision is almost always made by the owner. This selection is driven by historical fleet coating performance, local product availability, and the level and quality of technical service provided by the coatings manufacturer.

Pricing: competitive pricing is important in any busi-

ness – how much does it matter in coatings? In other words, is quality King?

While having competitive prices is an imperative, there are many other factors that drive the overall value proposition. The factors include quality, product availability and delivery, highly trained and experienced field technical services, and project follow-up. In today's market, good quality is assumed; what separates suppliers is consistent, outstanding quality, that means delivering product that handles and performs the same every time and everywhere it is purchased. Product availability and delivery means that the coatings suppliers must have inventory at the correct locations and staffing to ensure it can be delivered when required, because the marine business is 24/7/365 globally. One of the key factors in the value proposition is the availability of highly trained and experienced field technical service staff to ensure that proper procedures are followed and the correct coatings chosen for specific uses. Many owners would rank this as just as important as the price they are paying.

Ballast Water Treatment is here. Sometimes that involves chemicals. Many stakeholders – the IMO for example – are concerned about the effect that may have on ballast tank coatings. Is Sherwin Williams addressing that concern? If so, where are you in that process?

Sherwin-Williams is well aware of the IMO's concerns, and is working through IPPIC and its PSPC Working Group with the various IMO committees to determine what levels of the various treatment chemicals we will be comfortable with. The best solution for all parties will be for the IMO to regulate the concentrations of chemicals used in approved treatment equipment and for coatings suppliers such as Sherwin-Williams to confirm that our PSPC-approved ballast tank linings can tolerate those exposures.

Do brown water (inland), energy (OSV / rigs) and/or larger blue water vessels tend to have different needs when it comes to coatings? If so, what drives those decisions for each?

The marine market continues to become more specialized; each of these vessel types requires entirely different approaches and coatings solutions. Inland marine requires coatings that offer ease of application, good short term durability and ease of repair. OSVs require outstanding appearance, recoatability for at-the-pier maintenance, cleanability, and thinner films to control weight. Larger vessels (20,000 ton+) require tank and underwater hull systems that have extreme endurance, and topsides designed for in-service crew maintenance – and the whole system needs to be designed to the vessel's drydocking cycle. All of this drives the marine coatings market to be highly technical and consultative, so that the coatings supplier can fulfill the exacting requirements of the owner.

What's been your most recent rollout of a new product?

Sherwin-Williams recently received U.S. Navy approval of our commercial Ultra High Solids NSF Std 61 potable water tank lining, SherPlate PW. Approved for tanks as small as 25 gallons, SherPlate PW represents the first single coat, rapid return to service potable water tank lining. Originally introduced in 2012 to the water storage market, SherPlate PW is now available for marine applications globally.

What's next? Does Sherwin-Williams have a new product coming out and if so, when can we expect it and can you tell us your targets (type of improvements and intended uses)?

Sherwin-Williams will introduce SeaVoyage, a new line of antifoulings beginning late in 2013. The line consists of six new products ranging from proven self-polishing copolymer (SPC) technologies to high performance copper silyl acrylate copolymer coatings designed to provide long term performance and fuel savings. These products will be available globally as local registration rules allow.

Dial Subchapter 'M' for Money

CFR 46 Subchapter M is on track and heading for you. Neither the U.S. Flag inland vessel industry, nor the United States Coast Guard knows for sure where or when, but it is coming. One thing is for sure, however, it is going to be expensive – very expensive.

By Richard Paine

Subchapter 'M' has been cooking for over a decade and is meant to address a segment of the U.S. commercial inland marine industry that currently carries the moniker of "uninspected" vessel. Far from truly uninspected, responsible operators, in consort with the Coast Guard, The American Waterways Operators (AWO), insurers, lenders and classification societies, have for many years – for safety and liabilities sake – addressed a considerable number of issues now scheduled to be codified under Subchapter M. Through Notices of Proposed Rulemaking, public comment periods, and industry input, the final version is due out—sometime soon. Your guess as to when is as good as anyone's.

In the meantime, consider this: Industry statistics and various publications (*including a September 2012 article in **MarineNews***) claim that the number vessels that will be subject to Subchapter M regulations could be in the range of 5,000 vessels. A highly respected and well accredited safety program developed over a decade ago by the AWO, the Responsible Carrier Program (RCP) has 241 current RCP-Certified and Provisional Operators. While these 241 operators represent about 1600 self-inspected vessels, that number leaves a lot of vessels that may or may not be in compliance with the new regs.

Options for compliance include developing a Towing Safety Management System (TSMS) with scheduled periodic dry-docking/internal structural inspections and third party compliance audits or the more traditional approach of United States Coast Guard (USCG) inspections. The latter will still require annual and periodic inspections plus scheduled dry-docking with internal structural examinations. The former allows two years to develop a TSMS after the final rule is issued.

Passenger vessels have long been subject to inspections similar in many ways to the requirements proposed in Subchapter M. You can ask any passenger vessel operator whose vessel carries more than a six-pack how much fun it is: between the cost of developing safety management programs, attendant written documentation, periodic haulouts and inspections, requirements for onboard electrical and machinery systems, and other potentially huge expenses in maintaining a vessel's Certificate of Inspection (COI), compliance is prohibitively expensive.

With the new proposed dry-docking intervals (based on area of operation) it may be difficult just to get dry-docked, inspected or repaired. Competition for available services will be fierce—let alone costly. It is estimated that after the first two years of COI compliance, as much as 25% of the inland fleet will be up for dry-docking each year. That number, plus the already existing dry-dock, inspection and repair demand, will make for interesting times.

The U.S. Maritime Administration (according to a 2011 Survey) insists that there are 117 active shipbuilders in 26 states. There are another 200 or so more businesses with the capability of building and repairing marine vessels. The study does not indicate what number of tugs, barges, passenger vessels; commercial fishing vessels, recreational vessels or other types are being built or repaired. Furthermore, this study does not enumerate the number of facilities with dry docks, heavy lift cranes, travel lifts or other means to haul out large vessels.

With the increased requirement for periodic haulouts, possible sidetracking for hull and machinery repairs, probable lost revenue from downtime, some operators are left to wonder where the additional money to comply will come from. The obvious answer is from increased day-rates, but unless the increased rate complements an already established pool of maintenance and repair funds, increased rates are a cumulative fix to what might be an urgent and timely problem. Hence, and for the larger and more cash-flow positive operators, rising costs of increased maintenance, compliance, inspections and repairs might not present an immediate problem. But to the smaller operator, it could signal the death knell.

This industry was built largely on the backs of so-called "mom and pop" operations. The Gulf of Mexico is full of countless stories of how some of our industry's largest operators got started. The generation that came out of the bayou to fight the good fight in Europe or Pacific theatres then came home to buy and operate the first of what might become a mighty fleet of boats. I know of operators in the Northeast whose great grandfathers rowed and sailed cargo across New England's harbors, rough and tumble men who did not know how to quit. And, in the Pacific Northwest, many began their empires running steamboats carrying miners to the Alaska gold rush. And now, it is today's smaller, start-up operators who are at greatest risk from the cost of compliance with Subchapter 'M'. That said; there are some survival strategies that might make some sense:

- ***Evaluate the amount of equity that you have accumulated in your vessels. You might find that a significant amount of cash can be available for compliance by refinancing the existing mortgage on your vessels. If your loan is more than halfway through its life, given amortization of the principal, appreciation of the vessel's value and other factors, as much as 40% to 50% of that value may be available to you as capital for compliance issues.***
- ***Reduce the size of your fleet. Determine what vessels are now in excess of your workload and monetize them. Cash at hand is often more valuable than a vessel with 75% utilization.***
- ***Utilize the benefits of membership in a recognized commercial marine association like the AWO or the Offshore Marine Services Association. Why reinvent the wheel if it's already rolling?***
- ***Work early on with a competent professional that can help you develop your TSMS and engage a qualified, recognized third party auditor or utilize the USCG as your inspection "service."***
- ***For shipbuilders and repairers who are preparing for the possible onslaught of compliance related work, contact a qualified commercial marine lender to buy a dry-dock. Loan packages can offer terms and amortization up to 15 years. If you are the recipient of a Maritime Administration small shipyard grant, contact a lender who will augment the grant amount with a term loan to help you acquire the equipment you need.***

The "M" in Subchapter M arguably stands for money. There is no escaping that fact, but to survive the challenges the new regimen brings, be smart. Consult your financial professional, your accountant and your banker to see what options are available that can help ease the pain.

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Bridging the Trip Preparation Gap

Precision Is Imperative.

By Randy O'Neill

"Your true pilot cares nothing about anything on earth but the river, and the pride in his occupation surpasses the pride of kings."
– Mark Twain, Life on the Mississippi (1883)

The statement made by the great chronicler and river pilot himself over 130 years ago is arguably as true today as it was then. But what has changed dramatically in the six score and 10 years since is the variety and complexity of the daily challenges that river pilots confront in our modern world. The sophistication of locks, dams and the proliferation of bridges, the mercurial fluctuations in water levels and the consequences to those who fail to factor in all of the above when planning their commercial river trips can be career killers.

Even in Twain's day, one key concern of any experienced river pilot was the depth, width and height of his own vessel and, as importantly, what his vessel was pushing or pulling. While those measurements were a constant for his vessel, the variances of the sizes of that day's job were unpredictable. And, while water levels change and navigable channels widen and narrow, bridge heights don't. It's up to the pilot to make adjustments to his calculations and safety margins according to that day's river conditions. If that isn't done, the consequential bridge allision could be the beginning of a very long and difficult battle to defend a pilot's license, career on the river and professional reputation. The case highlighted herein is not at all unusual in the set of facts, and sadly in its outcome as well.

A case in point

In late fall of 2011, our pilot was serving on board a towboat on a Midwest river and towing a 50' x 50' flexifloat spud barge astern. On board the barge were two observers and a deckhand. The towboat captain had towed flexifloat barges previously, but it was his first time towing this specific flexifloat spud barge. The trouble began when he 'eye-balled' that the spud height above the water was 35 feet. Unfortunately, he did not directly measure the spud height, inquire about the exact height or go on board the barge to check the height himself. What made matters worse, was the fact that these particular spuds could be positioned either all the way up or all the way down.

The captain commenced what was planned to be a four-mile transit route requiring passage under a vertical lift railroad bridge. The bridge, which has a vertical clearance of 35' when down and 135' when raised, was manned 24/7, and the operator could raise it partially or complete-

ly depending on the circumstances and communications received from approaching vessels via marine radio.

Seeing that the bridge was in the down position as he approached, the captain judged that "he could make it under the bridge without problems." It was daylight; weather conditions were favorable with an ebb current and four nautical miles visibility.

The towboat passed under the railroad bridge with no problem, but as the flexifloat spud barge being towed astern was proceeding underneath the bridge, the spuds on the barge came in contact with the lower railroad steel beam of the bridge, resulting in damages to the spuds.

20/20 Hindsight

While the captain was assessing damage to the barge and attending to other onboard safety issues, like flooding and pollution, the bridge operator reported the incident to the Coast Guard which contacted the captain for confirmation that his tow had struck the bridge. The pilot confirmed the allision and reported that the lower two bolts of the forward spud well bent over but were still in the well, and the aft spud well's upper bolts broke, causing the aft spud and well to bend backwards. He further reported no damage to his vessel or, to the best of his knowledge, the railroad bridge.

He promptly reported the incident to his license insurer and was immediately assigned a local maritime attorney who assisted in the completion and submission of the Marine Casualty Report (2692) and subsequently accompanied the river pilot to his Coast Guard interview.

The meeting was short; the licensed master was charged with negligence for both failing to check and verify the height/draft of the barge's spuds, and failing to request the operator to raise the bridge. He was then offered a Settlement Agreement stipulating an outright 3-month license suspension with an additional 9-month probationary period following the completion of his 'beach' time.

After debating the merits of contesting the terms of the Settlement Agreement, both the captain and his attorney agreed that, given the absence of mitigating circumstances, the most prudent, yet painful, decision was to accept the suspension with probation offer.

Because he had wisely opted for income protection on his license insurance policy, he received his insured wages for the duration of his suspension, but no amount of money could compensate the hit to his professional reputation caused by two fleeting lapses in judgment: not verifying the spud's height and/or not requesting the bridge to be raised.

Since we began this column with an upbeat quote from Mark Twain, it's only fitting that we go back a little further in time to ancient Greece and the sobering yet thoughtful words of Sophocles: "Men of ill judgment oft ignore the good that lies within their hands, till they have lost it."

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

Beyond Your Control: Minimizing Exposure

Planning Ahead Can Help You Use the Act of God as a Defense

By Larry Demarcay

In the marine industry, the management of risk is an everyday concern. We attempt to minimize risk by maintaining seaworthy vessels, properly training crews, entering into agreements that allocate risk and buying insurance. Despite those best efforts and intentions, events may occur that are beyond our control; events that could possibly cause damage that we may be responsible for. These events are often referred to as Acts of God. These events are important for two reasons: One, when these events occur, they often trigger contractual provisions pertaining to such situations. And, secondly, when damage is caused by your vessel or equipment during the event, vessel owners can, in certain situations, assert an Act of God defense to avoid liability for such damage.

Some advance planning and an analysis of your hurricane procedures could protect you from future liability.

Act of God Defined

An Act of God is defined as an accident that is caused directly and exclusively by natural causes without human intervention, and one which could not reasonably have been expected or prevented. Federal Courts have expanded upon this definition and defined an Act of God as "a disturbance ... of such unanticipated force and severity as would fairly preclude charging a [defendant] with responsibility for damage occasioned by [the defendant's] failure to guard against it in the protection of property committed to its custody." The Courts have expanded this concept by including similar likeminded defenses such as "force majeure" and "peril of the sea" to the mix. A "peril of the sea" is said to occur when conditions "are of an extraordinary nature or arise from irresistible force or overwhelming power, and which cannot be guarded against by the ordinary exertions of human skill and prudence."

Courts have also expanded upon the no-fault concept and used the term "inevitable accident" to describe certain accidents, whether or not caused by an Act of God, in which all reasonable precautions had been taken and the accident occurred anyway. An inevitable accident, unlike an Act of God, can start with human action just as readily as it can originate with a natural force.

Burden of Proof

The burden of proving an Act of God defense rests on the party asserting it and includes the added burden of establishing a lack of fault in order to be exonerated from liability for damage caused to another's property. Thus, if your vessel causes damage due to an Act of God, you have a duty to prove that the event caused the damage and that you are free from fault in preventing the damage from occurring. Essentially, you must prove that the force of the storm, or other natural event, was truly overpowering and that all reasonable precautions had been taken.

Vessel owners have been attempting to use Act of God as a defense for a long time. As one court explained: "[T]he federal courts' "weathered" experience with [the Act of God] defense has produced one crucial principle: if a defendant has sufficient warning and reasonable means to take proper action to guard against, prevent, or mitigate the dangers posed by the hurricane but fails to do so, then the defendant is responsible for the loss; however, if there were insufficient warnings or insufficient means available to the defendant to protect the cargo from the Act of God, then they are not responsible for the loss."

The original cases simply required that a vessel owner have taken reasonable precautions under the circumstances to avail itself of the defense. However, in practice, courts often require that the vessel owner affirmatively prove that the vessel owner did everything in its power to avoid the casualty. Essentially, the courts have found that a casualty cannot be considered an Act of God if it results from or is contributed to by a vessel owner's negligence.

When damage occurs due to a natural event, the first question to be answered is whether the event is an Act of God. We can use weather as an example because it is a natural event that seriously impacts our industry. Storms that are usual for the region and the time of year are not Acts of God. For example, high winds or waves in the Gulf of Mexico during the months of January or February or violent summer thunderstorms are normal and would not be considered an Act of God because they are reasonably expected. On the other hand, although they can be ex-

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pected, courts generally consider hurricanes to be an Act of God because a hurricane causes unexpected and unforeseeable devastation with unprecedented wind velocity, tidal rise, and upriver tidal surge. Additionally, forecasting the tracks, speeds and tidal surges of a hurricane are one of the most challenging and difficult tasks encountered by meteorologists, and despite aircraft, land, and shipboard reconnaissance, weather satellites, and other data sources, exact hurricane paths and associated flooding are rarely predicted with precision. As such, even though we can reasonably expect hurricanes, they are usually considered an Act of God that provides some insulation from liability.

Once it is determined that damage originated with an Act of God, the next step is to determine if the vessel owner took reasonable precautions to prevent the damage from occurring. Determining liability for a loss resulting from an Act of God is highly fact-specific and determined on a case-by-case basis. In a nutshell, you must prove that you took all reasonable precautions to prevent the harm.

Reasonable Precautions

Using a hurricane as an example, if you chose to moor your vessel in a port that was within the path of a hurricane and it breaks free of her moorings and causes damage, you could be found liable for the damage because there was a reasonable precaution that could have been taken to prevent the damage. You could have (perhaps) easily moved the vessel further inland or selected a port that was out of harm's way. As such, courts would not allow you to use the Act of God defense because your hurricane precautions were not reasonable.

Although this is a simple example, these determinations are usually much more complex. We recently litigated a case that involved an Act of God defense where the factual evaluation of the reasonable precaution test centered upon the selection of the lay angle for a drilling rig's mooring lines. Essentially, the claimants argued that we should not have used this rig in the Gulf of Mexico during hurricane season because of the potential for bolster contact when the lines were set at pre-hurricane tensions.

Thus, it is important when evaluating your pre-hurricane procedures to make sure that you look at your plan in great detail and that you are taking all reasonable precautions considering the size and scope of a potential hurricane. Unfortunately, what may seem reasonable to you as a storm approaches may not seem reasonable in hindsight when tested by a claimant that suffered damage as a result of your vessel.

Although evaluating the potential ability to use an Act of God defense long before a natural disaster occurs may seem like a waste of resources, it may reap you and your company significant rewards if and when such an event occurs. Like so many elements in the marine business, a little time spent on the front end can save you quite a bit of time and resources later.

FOWLER RODRIGUEZ VALDES-FAULI
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Where is Government Transparency?

President Obama pledged in his first four years of office to have a more transparent government. He issued a memorandum on transparency and open government on his second day in office directing agencies to make information more available to the public in a timely manner. Sadly, the Administration has failed to achieve this goal and its decision making processes have become more opaque. The public has a right to know how the Administration develops its policies and this can only occur if the Administration is open and transparent.

Transparency is most lacking in the Federal Advisory Committee Act committees. The government spent almost $3.5 billion over the past 10 years on these groups which were established to provide objective and publicly accessible advice to Executive branch agencies. One such committee is the Shipping Coordinating Committee (SCC) led by the State Department and U.S. Coast Guard. The group provides advice on international maritime and environmental matters but determining membership is like finding a needle in a haystack. The committee membership is not posted on the Coast Guard or State Department websites so it is unclear on who is advising the government. The only readily accessible information is that the committee charter was renewed in February 2013.

In addition to not knowing who is on the SCC, it is also difficult to research past meetings because transcripts and audio recordings are not posted on the Coast Guard or State Department websites. The only way to gain information is to have attended these meetings or go to Coast Guard headquarters in Washington to listen to the audio recordings in person. The Coast Guard was recently asked transcribe the meetings and post the notes on its website but declined to do so because of lack of funding. Similarly, the Coast Guard also denied a request to post public comments related to the SCC meetings on its website. Absent in-person attendance, the average American doesn't know how the SCC developed its guidance and whether or not the public agrees with it.

Public participation at the SCC meetings is actively discouraged. During a recent meeting, government representatives – sitting on the dais ostensibly to listen to public comments – talked with one another instead of paying attention to those critiquing the SCC guidance. The State Department representative who was supposed to be providing a briefing on an environmental matter told public attendees that she didn't want to bore them so she skipped over the relevant details. After her cursory briefing, she told public attendees that they could talk with her at a later date. The purpose of the SCC meeting is to share information with everyone at the same time – it is not to omit details, especially when the Administration is not forthcoming about posting meeting notes. The problem is further compounded by the Administration's haphazard approach in retaining the public comments that are provided at the SCC meeting. The Coast Guard and State Department did not ask public participants at the meeting to provide them with written copies of their statements. If the Coast Guard does not collect written statements and does not transcribe the meeting events, then why is it asking for public participation? People spend a lot of money to attend these meetings and provide their comments; this money could be better spent elsewhere if the government isn't going to accept and retain them. Ignoring the public's comments allows the Coast Guard and State Department to take positions that are counter to U.S. business interests. In the recent public meeting, comments were given questioning the government's position on the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships. U.S. ship recyclers oppose this convention because it contains standards that are inconsistent with current U.S. law. Foreign recyclers under this convention are held to a lesser standard than their U.S. counterparts. Despite this inconsistency and vocal opposition from U.S. ship recyclers, the government is leading efforts to develop international implementation policies. These efforts are occurring without a clear explanation from the government on why it is has taken a leadership role and how the convention will impact U.S. businesses.

The Obama Administration must re-examine its transparency policies. Billions of dollars have been spent funding FACA committees. Surely, some of this money could be spent transcribing meetings so that individuals outside of Washington, DC will know who has provided advice to the government and how it was developed. The public and U.S. businesses want to know that the government is looking out for their interests and that they are part of the team – not a nuisance placed in a back corner to be forgotten.

K. Denise Rucker Krepp began her career as an active duty Coast Guard officer. After 9/11, Krepp was a member of the team that created the TSA and DHS. Krepp also served as Chief Counsel at the U.S. MarAd and Special Counsel to the General Counsel at the U.S. DOT during the first Obama administration.

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From Bow to Stern: Performance & Sustainability

Understanding On Board Lubricants – examining impact on performance and the environment, too.

By Mark Miller

Performance and sustainability—two words with growing importance in the marine industry, especially when it comes to lubricants. Performance is a must-have for a wide range of components to function properly aboard any ship, while regulatory vessel oversight and greater corporate understanding is providing an opportunity for enhanced sustainability. From bow thrusters to stern tubes, onboard lubricants are seeing the convergence of performance and sustainability. A wide range of products are available for vessel hydraulic and propulsion needs. Each category of products differs in its relative performance and ability to meet environmental regulations, such as the Vessel General Permit (VGP), in an effort to safely reduce spill impact on the environment.

Marine vessels contain a variety of equipment and machinery that require lubricants, oils or greases. The list includes bow thrusters, stabilizers, the stern tube and continuous pitch prop, deck hydraulics (wenches and cranes), stern and elevator ramps, water-tight doors and even anchor equipment. Each of these equipment type tests the performance and sustainability of onboard lubricants.

Challenges for Onboard Lubricants

Oddly enough for equipment in a marine application, the biggest challenge faced by onboard lubricants is water. The chemical makeup of many lubricants changes or is damaged by water ingress, and subsequently affects the lubricant's performance. Another challenge for onboard lubricants is their compatibility with the variety of seal types that exist for onboard hydraulic systems. If a fluid is not compatible with the seal, the hydraulic system cannot effectively function and the equipment could be damaged or malfunction. Depending on the equipment, the downtime or end result could be very costly or damaging to the ship itself. Finally, the VGP 2013 issued from the U.S. Environmental Protection Agency (EPA) states that all vessels constructed on or after December 19, 2013, must use an environmentally acceptable lubricant in all oil-to-sea interfaces. This regulation has a significant effect on the use of onboard lubricants and provides an insurmountable challenge for petroleum-based lubricants.

The VGP outlines "environmentally acceptable lubricants" as readily biodegradable, non-toxic, and non-bioaccumulative. This definition is in close keeping with the Clean Water Act, which determines whether an oil spill may be harmful to public health or welfare. The Act reviews whether a spill causes a sheen or discoloration on the surface of a body of water, violates applicable water quality standards or causes a sludge or emulsion to be deposited beneath the surface of the water or on adjoining shorelines.

Defining Sustainable On-board Lubricants

With the advance of sustainable operations, many products claim to be "green," but fall short, both on performance and true sustainability and do not meet the regulatory standards or the performance needs of marine applications.

In terms of degradation, claiming a product is biodegradable means next to nothing in terms of its realistic impact on the environment. Many people often say a product or substance is biodegradable, thinking that such a term indicates it is less damaging to the environment, but in fact, oil and other potentially harmful things for the environment are biodegradable too—just after a long period of time. Biodegradation is when a given substance or fluid's chemical bonds break apart. The opposite of biodegradation is persistence, and oil-based products have a high level of persistence in the environment.

Technical terms like inherently biodegradable and readily biodegradable are used to describe the rate at which a substance or a fluid degrades and is broken up by the natural environment. That rate of biodegradation is driven by a number of factors, including the makeup of those original chemical bonds, the temperatures that the substance is being exposed to, the available natural enzymes to work against the chemical bonds and the presence of water and oxygen. All of these factors are present in biodegradation.

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fluid or composition that will degrade 60 percent or greater within 28 days or less. There are several internationally recognized tests that confirm this degrading ability of a given product and allow companies to back up a readily biodegradable claim. In fact, the Federal Trade Commission (FTC) even requires companies who use the term readily biodegradable in describing their products to state the test (for example, "ASTM 5864 or OECD 301B compliant") in validation of the claim.

Onboard Lubricants

According to ISO standards for hydraulic fluids, there are four different types of lubricant oils available to meet the specification needs for environmental acceptability. With ISO 6743/4 in reference, the categories are HETG, HEPG, HEES and HEPR. While these categories may be unfamiliar to some, the typical fluids that fall into these categories will be more familiar, and it quickly becomes apparent which options are available to marine-based hydraulic applications.

- **HETG**

This type of environmentally friendly fluid is better known as conventional vegetable oil-based fluid. While these fluids are readily biodegradable and deliver a lower impact on the environment, enhanced frictional characteristics and improved viscosity index at high temperatures, in a marine setting this category's performance can be limited due to oxidative and hydrolytic stability. With the demands of certain applications, HETG lubricants' limited temperature range reduces the performance they can deliver and, often, their life cycle expectancy. These types of fluids are compatible with most seal types.

- **HEPG**

Polyglycol synthethic (PAG) lubricants deliver a fire-resistant option. The downside is that they frequently are not compatible with conventional seals or filters. In switching to or from another type of lubricant, HEPG fluids are also typically not compatible with petroleum- or vegetable-based fluids, which could add significant maintenance costs to flush or remove the previous fluid before introducing the replacement fluid. These synthetic lubricants absorb water over time, which can dilute the performance and lead to the formation of rust or acid and damage equipment.

- **HEES**

Synthetic ester-based lubricants make up the HEES type of onboard options for vessels to review in terms of ISO types. HEES fluids are also hydrolytically unstable. Their composition essentially "unzips" when water is introduced. These lubricants are also susceptible to acid formation and subsequent seal deterioration.

- **HEPR**

Poly Alpha Olefins (PAOs) and related products, in particular bio-polyalphaolefin (BPO) fluids, deliver the best option for most marine hydraulic applications. These fluids are more durable and able to operate in a wide range of temperatures, which leads to longer fluid life and often a lower total cost. HEPR-type fluids offer good seal compatibility and deal well with water ingress, as they separate from water and other contaminants without losing their performance ability or chemical make. This separation also allows for the fluid to be filtered and returned to use.

The Performance of Onboard Lubricants

From a performance standpoint, many of these eco-friendly products will meet ISO performance standards in the laboratory, but because of the operating environment in the marine industry would not perform well. These fluids or degreasers provided a trade-off between performance and sustainability. That trade-off has been eliminated by some companies, who are now able to produce readily biodegradable products that match or, in some cases, even exceed the performance of their petroleum-based counterparts in viscosity levels and wear performance, but provided the required environmentally sensitive chemical makeup. Marine original equipment manufacturers (OEMs) and hydraulic suppliers continue to give approval to these products because they meet the OEM's outlined performance standards.

For example, the EnviroLogic 3000 series from RSC Bio Solutions is a high-performance line of readily biodegradable, nonhazardous hydraulic fluids. These HEPR fluid products can perform in extremely high temperature (250ºF), low temperature (-40ºF) and high pressure (5000+ psi) applications. With the ability to work in extreme temperatures, winter downtime can be diminished. The EnviroLogic 3000 series of products are ideal for marine hydraulic systems as they operate in environmentally sensitive areas. These types of readily biodegradable

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products allow marine vessels and operators to maintain or improve their performance levels with the added benefit of a safer, more sustainable product.

Bottom Line Benefits: Onboard Lubricants

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As the marine industry pursues greater sustainability, companies should consider every part of their operation and equipment—from bow thrusters to stern tubes—as an opportunity for analysis and improvement. Within that equipment, readily biodegradable products stand ready to deliver those two key words that go straight to the bottom line—performance and sustainability.

RSC Bio Solutions

Mark Miller *is executive vice president of marine sales of RSC Bio Solutions. He is responsible for creating and implementing market strategies, maintaining and growing strategic relationships specific to marine-based markets including offshore oil and gas, marine transport and construction. Prior to joining RSC Bio Solutions, Miller founded Terresolve Technologies, Ltd. Miller has a B.S. in chemical engineering from Tufts University and an M.B.A. from Manhattan College.*

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Waiting for the Windfall

The momentum for wind power continues to gather on the domestic waterfront. U.S. boatbuilders anxiously await the coming gale.

By Joe Hudspeth

The formation of the U.S. offshore wind farm industry is a lot like the wind itself. You can see things stirring and hear a rustling commotion, but if you are looking for something tangible and physical it's just not there. We've all been told it is coming and have been waiting patiently. We've seen the successes in Europe and the forecasts for America look promising if the fairy tale can only turn the corner toward reality. In fact, the U.S. commercial marine industry could be blown away by the economic thrust of a new offshore wind market. The windfall could come in the form of higher day rates for tugs, supply vessels, cable laying vessels, and jack-up barges; as well as plenty of orders for new construction purpose-built work boats.

So what's been the hold up? Offshore wind is a 'green' initiative and green always means go. Creating a new industry from scratch is no easy task. During the past twelve years, we've been waiting on the power consortiums to form their plans, the U.S. Government to create leasable plats, and for impact studies to be complete. Of course, all the stakeholders also get to have their say inclusive of the ocean freight lines, fishermen, beachfront hotels, air traffic controllers, the military, and even the voices of the whales and birds surely gets an ear. Finally, with the hashing out nearly complete, the constituents are coming together, leases are being let and the probability of blades buzzing at sea seems to be drawing near.

Keeping up with the Joneses

While the Merchant Marine Act of 1920 still remains a topic for political debate, it continues to provide a great shadow that American boat builders and U.S. flagged fleet owners love to seek refuge behind. This shadow has cast somewhat of a gray area when it comes to applicability for installing U.S. offshore wind farms located in the Outer Continental Shelf. The installation process requires some unique and extreme vessel specifications which only a handful of U.S. flagged vessels can currently meet. The stringent requirements have persuaded Europeans to construct purpose built installation vessels. If available for hire, these European installation vessels could be allowed to assist in the U.S. farm installations, perhaps even accelerating the process.

In a few instances, the Customs and Border Protection Agency (CBP), charged with administrating Jones Act applicability, has ruled that foreign vessels may engage in equipment installations on the Outer Continental Shelf. CBP could also determine that driving a pole into the sea bed constitutes a point in the U.S., therefore upholding Jones Act authority for point to point commerce. In the end, farm developers may build U.S. vessels or turn to MARAD seeking exemptions. That said; it is apparent that the Jones Act will apply to all support and supply vessels.

Brace for Impact:

If we look to the lessons learned from European wind farms, the picture is clear that it will take many workboats to not only get the U.S. farms up and running but these craft must also remain exclusively available for repair and maintenance. Fleet owners, builders, and suppliers are all bound to benefit from a piece of the wind farm workboat pie. The first two projects likely to come online, Cape Wind and Bluewater Wind Delaware, are planning to install 130 and 150 turbines respectively. Right on their heels is Deepwater Wind which is recently the apparent successful bidder on two plots of sea floor located off the coast of Massachusetts and Rhode Island that have the potential capacity for 500 to 600 turbines.

Not to sound like a bad riddle, but how many workboats does it take to create an offshore wind farm? The boat builder's rhetorical answer is always "it depends." Each wind farm installation can vary from farm to farm depending on what type of foundation is selected: monopile, jacketed/tripod, or tethered and what type of installation vessel will be used. The varying foundations will affect how much work is performed on site and the materials needed. The distance from the port of supply and instal-

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lation location will also influence the number and types of installation vessels needed. Preliminary indications from the developers indicate that both monopile and jacketed installations will be used and multiple options for installation vessel designs are being considered.

When will the farms start putting our work boats to work? In a nearly covert fashion, workboats are slowly being employed in anticipation of the wind farms. Buoy tenders have been deploying weather buoys and wind anemometers, hydrographic survey vessels have been mapping the sea floor, and geophysical research vessels have been analyzing the substrate. Wildlife researchers have also been out studying the impacts each farm location may have on the avifauna. The fleet will really get called to action once the first piece of steel is ready to hit the sand. On average, it will take 4 days to install each monopile plus an additional 4 days to set each tower and turbine into place. Once the turbines are in place, it takes nearly 1 full day per km to run connecting array cables.

The number of support vessels for installation will depend on the type of installation vessel employed. Towed Jack up barges will certainly need tug assistance as well as support from 3 to 4 crew and supply vessels. If a self-propelled installation vessel is employed, there is still a possible need for tugs and barges depending on hauling capacity. 3 to 4 crew and supply vessels will still be required. Once commissioned, approximately one support vessel will be required for every 20 to 30 turbines. By 2023, Germanischer Lloyd has estimated that 300 to 500 wind farm support vessels will be needed for Europe alone.

Blown out of Proportion

European insights are also giving rise to a new era of wind farm vessel technology. The installation vessel designs are getting larger and more sophisticated in an effort to reduce on site assembly time and cost. The trend is for a single vessel to transport fully assembled towers or carry sub-assemblies inclusive of tower, nacelle, hub, and blades

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In a few instances, the Customs and Border Protection Agency (CBP), charged with administrating Jones Act applicability, has ruled that foreign vessels may engage in equipment installations on the Outer Continental Shelf. CBP could also determine that driving a pole into the sea bed constitutes a point in the U.S., therefore upholding Jones Act authority for point to point commerce. In the end, farm developers may build U.S. vessels or turn to MARAD seeking exemptions. That said; it is apparent that the Jones Act will apply to all support and supply vessels.

for 6 to 8 complete turbines. Likewise, the maintenance support vessels are also taking on a new dimension with an increased focus on safety and seakeeping ability. These vessels, almost exclusively catamarans, are the back bone of the offshore wind farm and where investments will be made specifically for long term benefit over construction cost. For example, it is too costly to pay for technicians who arrive on the site fatigued or suffering from sea sickness and cannot perform their repairs.

IncatCrowther, BMT Nigel Gee, Teknicraft, Austal, and Damen have all proposed a variety of configurations with unique attributes for keeping the crew comfortable and safely getting crew and supplies to the platforms. The designs have slowly been growing in size too, starting at 49' to now over 85'. IncatCrowther's latest design for Supacat features a pass through cargo bay in which containers with supplies can be loaded, unloaded, or moved between either the fore or aft deck. Repositionable cranes, resiliently mounted cabins, and gps/gyro stabilized crew transfer platforms are also being fit on the newest vessels to ensure the job gets done and safety is ensured.

If the momentum continues, U.S. builders will soon be constructing their own state-of-the-art wind farm work boats. With a robust workboat building boom already in progress, the only question left to answer is when it will all start to happen. When it does, a re-tooled and well trained domestic boatbuilding force will be ready to make it happen.

Joe Hudspeth *is Vice President of Business Development at All American Marine, Inc., a manufacturer of high speed passenger ferries, excursion vessels, and work boats, in Bellingham, WA. Hudspeth has been involved with maritime sales, marketing and product development since 2000. He currently serves as a regional co-chairman for the Passenger Vessel Association and participates on several committees concerned with marine industry issues. Reach him at* ***jhudspeth@allamericanmarine.com***

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Competence:

the Key to Safe and Efficient Offshore Operations

A competent workforce is a productive one, and operates with fewer risks, meaning shorter downtimes and fewer injuries.

By Chris Charman

Effective competence schemes established by companies of all sizes ensure confidence in the offshore industry, and that all people appointed to safety-critical positions can carry out their jobs in an effective manner. To that end, the International Marine Contractors Association (IMCA) has established a highly effective competence assurance and assessment framework. As part of this month's Central & North America (CNA) Section Meeting, IMCA ran a Competence Seminar 'Building for the future: advancing competence assurance.' Open to members and non-members alike, IMCA's Technical Director Jane Bugler, and IMCA Technical Advisers Neil Evans and Peter Sieniewicz attended the important meeting and seminar.

Asset Protection: that means people, too

Asset protection is core to all businesses, but what greater asset is there than the people working within an organization? IMCA member companies' demonstration of competence in safety-critical positions is absolutely vital. It's all about managing risk to protect brand and reputation. Competence is very much a word of our era, and we are firmly committed to ensuring that it is more than 'just a word', and very much a 'given' throughout the offshore marine contracting sector, measured and appreciated throughout the industry.

The IMCA competence assurance and assessment framework enables contractors to develop in-house schemes to demonstrate the competence of their safety-critical personnel; these are designed to improve operational practice throughout the industry, while also encouraging both upward and lateral career progression.

Importantly, we are seeing a growing interest in competence assessment schemes around the globe. Earlier this year we held successful competence workshops in Aberdeen; and Kuala Lumpur, and now we have brought it to Houston, where of course we also covered the need to demonstrate competences as required by SEMS/SEMSII (Safety and Environmental Management Systems, as laid down by the Bureau of Safety and Environmental Enforcement (BSEE)).

Communicating the Core Message

The focus of these seminars, which are aimed at contractors' competence and training representatives and their offshore personnel, as well as oil company representatives, is to deliver a program to ensure that the core messages are consistent around the world. We link the internal processes by which a company delivers its competence programs to both internal quality systems and external standards, such as ISO 9001.

The free 4½-hour seminar included a networking lunch, led by Gavin Smith of Subsea 7, Chairman of IMCA's Competence & Training Core Committee, spoke to the

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seminar theme and covered the Committee's role and an overview of its work program. Ken Wells of Safe Gulf then gave a SEMS/SEMS II overview, highlighting key differentials, including an update on Safe Gulf safety orientation training requirements; while Charlie Williams of the Center for Offshore Safety looked at 'Impacts of SEMS/SEMS II on competence assurance'. The session also included a facilitated discussion session entitled, 'One year on -SEMS/SEMS II' led by Phil Miller, Subsea & and Chairman, IMCA CNA Safety Environment & Legislation Subgroup.

Additional presentations included 'Using IMCA's framework to demonstrate competence of employees and contract workers,' given by David Moxey, ACE Winches and Vice Chairman, IMCA Competence & Training Core Committee; and the second, on 'Positive impacts of career development and competence assessment on personnel shortages,' which saw Neil Evans of IMCA in the spotlight.

A framework, not rules

IMCA first developed a competence framework in 1999. It was, and remains, very definitely a framework, not a set of rules or standards. Since then we have seen acceptance and understanding of competence assessment grow globally. No longer do we have to spell out what it means in detail – although having said that, earlier this year we produced a DVD available in English, Arabic, French, Indonesia, Italian, Malay, Brazilian Portuguese, Russian, Latin Spanish and Tagalog, that looks at the 'Why?', ' What?', 'When?', 'How?', 'Where?' and 'Who?' aspects of competence (and we have also produced a poster echoing these six key points).

As the DVD explains "Competence assurance is a continual process, it starts when you begin your career and continues until your retirement, it includes your training, your day to day work and may involve formal assessment in the workplace. Knowing your competence levels at any one time means you can demonstrate, maintain and further develop your proficiency through targeted training and on-going education."

IMCA has produced guidance documents for the assessment of over 50 positions, with additional guidance on assessor training. Freelance and agency personnel form an important part of the offshore workforce. IMCA helps

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these individuals to develop a portfolio of work records and competence assessments that can be transferred from one company to the next – a full suite of nearly 60 publications has now been published for freelancers. Based on the core IMCA frameworks, the IMCA freelance materials come complete with introductory guidance, worked examples and supplementary sections to record both assessor and verifier details and comments.

We keep the competence documentation live and relevant with regular revisions; for example a revised version of our 'Guidance on assessor training' was published in April, offering up-to-date guidance on criteria to build in to tailored company assessor training programs. Work is also under way on a new collection of competences entitled 'Offshore Project and Supporting Roles'. Previously any role that had not fallen within one of IMCA's four technical divisions had been issued an as information note. These guidance documents are free for members and non-members alike to download from our website. A variety of logbooks and competence records is also available for purchase.

Competence assurance is for everyone, whatever the offshore sector. Contractors are required by clients, regulators and others to demonstrate that the individuals working for them – particularly in safety critical roles – are competent, whether experienced, new to the industry, freelance or agency personnel.

Competence schemes based on the IMCA framework ensure that no matter where, when, or who you are working with, you will be seen as a valued member of an efficient team. Good delivery relies on teamwork and trust – everyone needs to feel they are working alongside someone they trust. Any team is as strong as its weakest link, and that weak link has to be encouraged to become stronger and thus more competent and more trustworthy for the good of the whole team.

IMCA on the Web: www.imca-int.com

Chris Charman *is the Chief Executive of International Marine Contractors Association (IMCA).*

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15 Minutes *with OMSA's Jim Adams*

By Joseph Keefe

A tumultuous 3 years for the U.S. Gulf of Mexico, starting with the disastrous Macondo Oil Spill in April of 2010, has come full circle, arriving at a buoyant period for Gulf Cost boat builders, oil & gas developers and the maritime professionals who make it all happen. At the center of all of it is the Offshore Marine Service Association (OMSA) and its President and CEO, Jim Adams.

OMSA bills itself as the leading national association of, and spokesman for, the offshore marine transportation service industry. As a central tenet of its existence, OMSA vigorously defends the cabotage laws of the United States and encourages and promotes high standards of safety training and environmental protection. Listen in as Adams weighs in on the past, present and what's in store for the most vibrant, and arguably the most important sector for domestic maritime interests today.

Current Conditions – Unlimited Opportunity

According to Jim Adams, one of the greatest challenges facing industry today is to match the growing crewing requirements with a qualified workforce. He explains, "To meet the realities of an aging mariner population and the introduction of a new fleet of larger more capable ships, many of our companies are engaged in comprehensive mariner training programs. Smart companies are applying the resources necessary to build a new workforce from the ground up." Beyond this, he says that the word needs to get out to every region of the United States that abundant opportunities exist right now in the U.S. maritime industry on the Gulf Coast. And, he adds, "Mariners working in the Gulf energy sector can live anywhere in country, earn very attractive compensation packages and enjoy a unique amount of time off when not working at sea. Many of the OMSA members are actively recruiting for qualified, credentialed mariners for staffing their current vessels."

Adams next points to the immediate benefit of a nation striving to become energy independent. Quite simply, exploration and development create jobs. "Whether its Bakken crude in North Dakota or the offshore service vessel fleet based in Port Fourchon, it's clear that domestic energy activity provides full employment for those willing to work. Looking back to the enormity of the 2010 moratorium, when the entire industry was idled, the challenge of workforce development is put into perspective."

The offshore service vessel industry is characterized by constant change and technological innovation. No other sector of the maritime industry recapitalizes its fleet and adopts advanced technology at a pace close to that which we have seen in today's offshore service market. Jim Adams says that there is a perfectly good reason for all of that. "Over eighty years ago, when our industry's pioneers converted their shrimp boats and small tugs to serve near shore platforms in the marshes of South Louisiana, they almost immediately recognized that a customized and innovative boat could do a better, safer job. From that realization, the OSV was born and some of the descendants of those pioneers lead OMSA today."

Expanding Fleets – and Reasons Why

The American maritime market is an extremely competitive environment and our offshore maritime companies are investing in the future. There is no other sector of the global maritime industry where customer requirements drive reinvestment and innovation at the pace we see in our own backyard. The demand for domestic offshore energy is driving investment in new ships, constructed in U.S. shipyards around the country, employing tens of thousands of Americans.

Jim Adams explains, "Our industry's fleet of new U.S. flag offshore service vessels is truly remarkable. They are remarkable for their size, power, precision and application of advanced technologies. Many of the new U.S. vessels are maximizing their competitive advantage by delivering and installing the merchandize needed for deepwater development. In today's environment, energy companies embrace an absolute

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commitment to safe operations and strict regulatory and tax compliance. It is simply good business to maximize compliance and minimize risk by utilizing U.S. vessels that can reliably deliver and install deepwater infrastructure."

Defining the Jones Act in the GoM

Adams distills the Jones Act discussion down to some key metrics, but also brings up some new and interesting language.

"First let's look at why its sound public policy to promote our domestic maritime industry. From the founding of our nation, the United States Congress has recognized that ensuring our national security requires a vibrant, competitive domestic maritime industry. Without active commercial shipyards and a robust fleet of U.S. flag vessels employing professional mariners, our country simply could not mobilize our defenses in times of national crisis. The Jones Act serves as a national insurance policy for wartime preparedness."

Adams continues, "We also should recognize that the U.S maritime industry supports over 500,000 jobs nationally. By utilizing vessels built in American shipyards, and operated and owned by U.S. citizens, we leverage the opportunity of maritime transportation to benefit businesses and employees in every state in the Union."

Along the way, Adams and OMSA advance an unusual but effective boost for the TWIC concept and what it does for industry and security: "We should know who is operating in our domestic waters and have confidence that they operate using high standards of safety, security and environmental protection. The U.S. Coast Guard has complete jurisdiction over U.S. flag vessels. That's not true of foreign vessels. Because of their concern for promoting national security in domestic maritime markets, Congress mandated that U.S. flag mariners carry credentials vetted for security by the Department of Homeland Security and vetted for proficiency by the Coast Guard. The Coast Guard has much lower information about the operator and crew on foreign flag vessels operating in our domestic waters."

As for how the Jones Act applies to the offshore industry, Adams insists that the Outer Continental Shelf Act is pretty clear. "The Act says that, the laws of the United States are extended to the seabed of the outer continental, shelf and to all installations and other devices permanently or temporarily attached to the seabed for the purposes of exploring, developing or producing resources on the OCS. It's simple, coastwise trade occurs when passengers or merchandise are transported between two points in the United States. The definition of merchandise is simple as well. It's anything that requires transportation between two points in the United States. Because Congress wanted any item that requires maritime transportation to be considered as merchandise, even "valueless material" is

included in the statutory definition. Again, it's simple, a point is a point and merchandise is merchandise."

All of that said; Adams has real world advice for those looking to save a few bucks or skirt the law: "While the statutory language is clear, real world interpretations may be based on bad information and penalties for violation can be severe. If an operator has a specific question about the application of the law to a real situation, risk can be avoided by asking Customs and Border Protection (CBP) for guidance. Many in the industry rely on logistics specialists to make their Jones Act compliance decisions. Without authoritative guidance, a questionable move that appears to be convenient at the time can lead to expensive delays and penalties. In all cases, risk can easily eliminated by asking CBP for direction."

The Jones Act and the ultra-deepwater play – a different playing field?

OMSA's take on the increasingly far-flung and deep water activities now developing in the Gulf of Mexico is also illuminating. Cloaking his arguments in risk-based language, Adams says, "Since the east coast and west coast are currently closed to exploration and development on the OCS, I can't see an energy company successfully going beyond our OCS in order to circumvent government oversight. Deepwater exploration is simply too expensive to embrace a business plan that invites political risk. Political stability and predictability provide an essential foundation to justify the expense of deepwater energy activity, so it makes sense that an operator will demand a clear understanding of who is regulating the market before making an investment."

OMSA's take on the new 'normal' offshore U.S. Gulf in terms of BSEE regulations/enforcement, the evolving safety culture offshore, and the speed of permitting and sales of offshore lands

and projects puts the current business climate in sharp focus. Starting with the Bureau of Safety and environmental Enforcement (BSEE), Adams and OMSA weigh in on all things offshore.

"As you know, our domestic maritime industry is pervasively regulated by the United States Coast Guard, not BSEE. While the BSEE SEMS (Safety and Environmental Management System) rule has tasked the lease holder to more closely monitor the operations of boat operators and other third party partners, BSEE has stated they are not interested in attempting to duplicate the regulatory regime of the US Coast Guard. So, for our members, this is currently a contractual issue with their customers.

Regarding the permitting process, I have to hand it to the smart people who work for the energy companies who have achieved success in obtaining permits by navigating the extremely complex regulatory regime that governs offshore drilling. The industry at large greatly benefited from RADM Jim Watson's collaborative approach in his leadership as Director of BSEE. Jim's service is appreciated and, at the same time, we welcome the appointment of RADM Brian Salerno to replace him, as Jim moves on to his new position. We expect a smooth transition and a continuation of the progress made under RADM Watson's watch.

It is my hope that as the multitude of new regulatory and technical improvements have been applied to exploration and development with success, we will see the permitting process improved. Overtime, I am confident that smart regulations can be effective without being overly obstructive. Energy independence requires that we keep the Gulf safe and clean as we continually strive for the smartest regulations and operations possible. I am certainly optimistic – just look at how much the industry has accomplished in the last two years.

Offshore Service Providers Drive Robust GoM Boom

Ongoing infrastructure and newbuild activity not expected to let up. Modern, sophisticated and quality tonnage arrives at just the right time.

By Susan Buchanan

Vessel builders are ramped up for strong demand from the Gulf of Mexico, where oil drilling is very soon expected to return to pre-Macondo levels. Utilization rates for offshore vessels are rising in the GoM, along with associated dayrates. Three Louisiana leaders--Edison Chouest Offshore in Cut Off, Hornbeck Offshore Services Inc. in Covington and Harvey Gulf International Marine in New Orleans--are engaged in aggressive newbuild programs. Next year should be particularly busy for the Gulf oil and gas sector, company executives say.

Chouest's More Than 40 Newbuilds Are Mostly For the GOM

Privately-held Chouest announced plans in July to expand its fleet and terminal facilities. Chouest's newbuild order book contains more than 40 vessels to be produced mainly at its four southern U.S.-affiliate shipyards, along with its Navship yard in Brazil. "Delivery times on most of these vessels will be over the next two to three years," Lonnie Thibodeaux, spokesman for Chouest said last month. "The majority of these vessels – and certainly those built in Houma and Larose, Louisiana and in Gulfport, Mississippi and Tampa, Florida – will be for Gulf of Mexico service."

"In terms of our biggest presence, the GOM remains our largest market," Thibodeaux said. "The Brazilian market continues to be very strong for us, too." Chouest Offshore evolved from a two-vessel shrimping operation in the 1950's into a marine giant that builds, owns and operates vessels, with over 9,700 employees worldwide. Chouest's newbuild program includes 17 platform supply vessels or PSVs, with options for an additional twenty, in a class of 312' x 66' x 26' new-generation, clean design, diesel-electric PSVs.

Chouest also plans to build four subsea construction vessels, slated to work the GOM. Features include Remotely Operated Vehicles or ROVs from Chouest affiliate C-Innovation, along with 400 MT AHC deepwater cranes.

C-Innovation, started in 2007, provides a range of ROV services from subsea construction to field development, engineering and project management.

Other Chouest newbuilds include one 314', 1.5 mil-

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Chouest's C-Port 2 facility in Port Fourchon

lion-gallon refueling vessel; one 318' multi-purpose construction supply vessel, with a150-metric ton motion-compensated deck crane; one 318' diesel electric well-stimulation vessel; five 201' DP-2 fast supply vessels; and two 194' DP-2 fast supply vessels.

Among the new vessels will be five 303' diesel electric 5,150-metric-ton deadweight Brazilian-built PSVs; two 316' 26,000 HP hybrid propulsion Brazilian-built AHTS with 300-metric-ton bollard pull; and five 304' clean design, 5,500-deadweight-ton Polish-built PSVs.

In July, Chouest President Gary Chouest characterized his firm as "customer-centric," one which provides state-of-the-art vessels, along with subsea services, fully-integrated logistics, expanded terminal facilities and shorebase support. The company's worldwide fleet includes nearly 250 specialized offshore service and support vessels. Notably, Chouest is also the largest U.S. designer, builder, owner and operator of ice-breaking vessels. Two new ice-class vessels for Arctic service are under design now in Louisiana. They will be the fifth and sixth ice-break vessels in the company's fleet.

Hornbeck's HOSMAX Newbuilds

Covington-based Hornbeck Offshore also expects Gulf of Mexico deepwater drilling activity to grow. A total of 37 deepwater units are working in the GOM now, President and CEO Todd Hornbeck said during the company's Aug. 1 report on quarterly earnings. "Two of these units are transitioning between drilling locations," he said. "We anticipate an incremental four to six units to commence drilling by the end of this year," with an additional, 14 deepwater drilling units likely to be delivered through 2014.

In addition to impetus from future drilling, demand for vessels is driven by activities that follow a drilling campaign, including fuel development, production, IRM or Inspection, Repair and Maintenance and decommissioning. "A number of significant, ongoing and planned projects in the Gulf are offsprings of past drilling activity," Hornbeck said on Aug. 1.

Roughly 115 U.S.-flagged, high-specification OSVs are operating in the GOM, and 20 of those belong to Hornbeck. The company is currently building 23 HOSMAX 300 class OSVs and MPSVs, under its fifth OSV newbuild program, for service in the GOM on dates extending through 2016.

In late June, Hornbeck delivered its first HOSMAX OSV 300 class newbuild, which was chartered in the Gulf right from the shipyard. Four, additional HOSMAX 300 class vessels should be ready later this year. At the beginning of August, the first three of five HOSMAX OSVs to be delivered in 2013 were chartered for periods ranging from six months to three years, and the company was close to finalizing a customer for the fourth vessel of the five. "We're pleased with the charter rates that we secured for these three initial deliveries from our current

newbuild program," Hornbeck said.

In May, Hornbeck contracted for the construction of two additional HOSMAX 310 class MPSVs, bringing its total Jones Act MPSVs vessels under construction now to four. "These U.S.-flagged MPSVs are diversified marine platforms that will enable our customers to obtain Jones Act-compliant services to support their subsea operations," Hornbeck said on Aug. 1. HOSMAX class DP-2 vessels are being built 300, 310 or 320 feet long. They have a cargo-carrying capacity of between 5,650 to 6,200 deadweight tons and can hold more than 20,000 barrels of liquid mud.

Hornbeck in June agreed to sell most of its downstream segment vessels--the company's active fleet of nine ocean-going tugs and nine double-hulled tank barges. These boats are to be sold to Genesis Marine LLC, an affiliate of Genesis Energy LP, for $230 million. "We plan to re-deploy the cash proceeds from the sale into our core up-stream segment," CFO Jim Harp said in the company's August report on its earnings. Upstream revenue in sec-ond-quarter 2013 was more than $5 million higher than in the previous quarter because of greater utilization of and dayrates for the company's high-spec OSVs and MPSVs in the GOM, Harp said. Average new-generation OSV day-rates, primarily in the GOM, in second-quarter 2013 were about $26,000, or $1,000 more than in the first quarter.

Utilization of Hornbeck's fleet of 50 new-generation OSVs in second-quarter 2013 was 88% versus 87% in the first quarter. MPSV utilization was 99% in the second quarter, exceeding 95% in the prior quarter and 91% in the year-earlier quarter. MPSV effective dayrates of about $89,000 in second-quarter 2013 were $1,600 higher than in the previous quarter. Reflecting those encouraging metrics, Hornbeck shares traded on the New York Stock Exchange last month approached their all-time high, set in 2007.

Harvey Gulf Orders LNG-Fueled OSVs

Harvey Gulf has committed $400 million to build, own and operate liquefied natural-gas-powered offshore sup-port vessels, as well as two LNG-fueling docks, CEO Shane Guidry said in June. The entire Harvey staff is committed

to reducing negative impacts on the environment, he said. Founded in 1955, Harvey Gulf provides offshore supply and multipurpose support vessels, mainly to the GOM.

Last spring, Harvey placed three newbuild orders for two STXCV heavy-lift construction vessels, along with as a sixth dual-fuel OSV. Once these boats are built, Harvey will own the biggest fleet of LNG-fueled OSVs in the world. The new heavy-lift construction vessels are to be called the Harvey Sub-Sea and Harvey Blue-Sea, with dimensions of 340' x 73' x 29.5'; 12,000 square feet of usable deck space; 250 metric-ton active-heave compensated cranes; and accommodations for 120 crew, fitness centers and a 48-person theater.

The vessels are in addition to an STXCV 310 light-construction vessel, the Harvey Deep-Sea, built by Eastern Shipbuilding Group. Harvey took delivery of the Deep-Sea on July 22 under a four-year charter to DOF Subsea, saying the boat is "a first of its kind for the Gulf of Mexico." The 690v, diesel electric Deep-Sea, designed by STX Marine, is 302x64x24.5 feet, with four Cat3516C Gensets providing 9,000kW of installed power, powering two 2,500kw z-drives and three 1,180kw transverse thrusters, with fuel oil capacity of 453,000 USG, liquid mud capacity of 15,500 bbls, dry bulk capacity of 8,200 cubic feet and methanol capacity of 1,700 bbls, supporting a working deck of 10,400 square feet.

In early June, Harvey announced the order of a sixth OSV to be built at Gulf Coast Shipyard Group, formerly Trinity Offshore, in Gulfport, Miss. This group of LNG-fueled OSVs represents collaboration between Harvey, the American Bureau of Shipping and the U.S. Coast Guard to develop the most environmentally friendly OSVs for the GOM, Harvey said.

In addition, Harvey signed an agreement last spring to purchase eleven Gulf Offshore Logistics DP 2 offshore supply and fast supply vessels.

In early June, Harvey Gulf got its first public rating from Moody's Investors Service for a new $1 billion cred-

The HOS Red Dawn: first 300 class HOSMAX vessel delivered in June 2013 under the current OSV newbuild program, on her sea trials.

it facility. Moody's assigned a corporate family rating of B1 to Harvey and a B1 rating to the company's proposed credit facility--which consists of a $250 million revolver and $750 million term loan. Proceeds from the financing transaction will be used to refinance $534 million of existing debt, acquire nine OSVs and fast service vessels from Gulf Offshore Logistics for $189 million, adjust for acquisition-related excess working capital, and pay related fees and expenses. The company expects to close on two additional GOL vessels next spring, for a total transaction valued at $268 million.

"The public rating will assist me in continuing to grow Harvey in order to meet our client's demands, while increasing our EBDITA to over $500 million in 2016 through additional newbuilds and acquisitions," Shane Guidry said in June. EBITDA is a measure of a company's operating cash flow.

Moody's said Harvey's B1 rating reflects Harvey's modest size, its GOM concentration, a relatively short track record as a company with sizable assets and fleet size, the fact that its top three customers account for over 60% of total revenues, and its exposure to oil and natural gas price cycles. But, Moody's said, the B1 rating also recognizes Harvey's significant position as a provider of Jones Act OSV and ocean-towing vessel services in the GOM, where activity is expected to remain robust through 2015. Moody's cited Harvey's long-term charters for most of its fleet, the quality of its vessels with an average OSV fleet age of four years, its good EBITDA margins and its deepwater focus. Currently strong fundamentals in the GOM are likely to keep demand high for Harvey's OSV services, Moody's said.

Port Fourchon: Also Expanding To Service Rigs

Louisiana's southernmost port of Fourchon continues to grow to meet offshore needs. Ninety-three percent of all GOM drilling rigs operate out of Port Fourchon, and 85% of that total is serviced by Chouest facilities. Chouest affiliate C-Port opened at Fourchon in 1996. Since then,

Shipyard launch of the HOS Renaissance, yet another HOSMAX newbuild OSV.

additional Chouest affiliate and support companies, including C-Port 2, Martin Terminal, Clean Tank, Fourchon Heavy Lift, C-Logistics and C-Terminal, have been added at Fourchon. Chouest is the leading terminal support provider to the deepwater Gulf.

Chouest affiliate C-Port 3, under construction now, will have six covered slips to transfer cargo and provide support for deepwater vessels. The multi-service terminal is slated to open by March 2014. Meanwhile, design is underway on C-Port 4, which should contain nine covered slips at Fourchon. This year, Chouest purchased the C-Terminal facility at Fourchon, containing 2,000 linear feet of bulk-headed waterfront property and loading and storage facilities. The company plans to expand its C-Terminal site, adding to storage, warehouses, bulk, cement and barite plants, and expects to increase its fuel, mud and drilling fluid sales.

Separately, Harvey Gulf plans to build and run a liquefied natural-gas, marine-fueling operation at its vessel facility in Port Fourchon, with two separate fuel docks capable of storing 270,000 gallons of LNG. The first dock should be completed next February. Each dock will be capable of pumping 500 gallons of LNG per minute. In addition to Harvey, Chouest will provide LNG fueling at Port Fourchon. In March, Shell announced a deal with Chouest to supply LNG to vessels in the GOM. Under that agreement, Shell will produce LNG at a unit to be built in Geismar, La. Barges will move the fuel from Geismar to Chouest in Port Fourchon, where the barges will refuel customer vessels.

In late 2005, Hornbeck acquired a facility in Port Fourchon and named it HOS Port. The 88-acre site, with nearly 3,000 linear feet of dock space, serves as the company's GOM marine base and provides logistics support for drilling, production and construction in deep and shallow water. HOS Port has crane, forklift and labor services for cargo staging and transfer; indoor and outdoor storage; office space and trailer housing; vessel dockage and vehicle parking. HOS Port is aligned with other, on-site oilfield service firms to provide fuel and lube distribution, liquid mud production and distribution, and waste removal and tank cleaning.

Gulf's Second-Quarter 2014 Outlook Is Strong

Yards are busy on the Gulf now. A year ago, Executive Vice President Dino Chouest said the company's international order book was growing in Poland and Brazil to replace Jones Act tonnage that was returning to the GOM, after leaving two years earlier.

In the GOM, the big bulk of rigs will come on line in the second quarter of 2014, Hornbeck said on Aug. 1. "That's when we're delivering the bulk of our fleet as well." A customer ordering a vessel from Hornbeck now would probably have to wait 26 to 28 months for it. Moreover, that boat will cost 20% to 25% more now than it would have in late 2011 because "all of the integral parts and pieces that are built globally have gone up substantially" in price since then, he said. That's heady talk, perhaps, but the pace of activity in virtually all offshore operations and support sectors would seem to support that optimism.

For now, all leading indicators point to a busy 2014, and beyond. The U.S. Gulf of Mexico markets, now more highly regulated than ever, are also supported by some of the most modern equipment on the planet, with more on the way. The long anticipated "flight to quality" for this sector may finally be here. If so, that's a good thing.

***Susan Buchanan** is a New Orleans-based business writer, specializing in energy, maritime matters, agriculture, the environment and construction. She holds a master's degree from Cornell University in agricultural economics and an undergraduate degree from the University of Pennsylvania.*

Sequestration? What Sequestration?

Smaller boatyards carve out a profitable niche in this challenging, yet target rich maritime environment. For Kvichak and USMI; so far, so good.

By Joseph Keefe

The May edition of ***MarineNews*** brought analysis of possible downstream consequences of the U.S. federal government's ongoing austerity measures, especially where it could impact U.S. boatbuilders with backlogs tied to government funding. Susan Buchanan's *"Budget Battles Bumping Backlogs"* piece brought out the good, bad and potentially ugly realities of the new normal in Washington, DC, where lawmakers tussle over spending priorities, while also leaving various casualties in their messy wake. The August announcement that the U.S. Navy would forego as much as $500 million in needed repairs on the fire-damaged nuclear submarine USS Miami is ample proof of the impact of such cuts. And yet, many yards, in the face of such news, are doing just fine.

Coast to Coast

Located on the U.S. West and Gulf Coasts respectively, Kvichak Marine Industries and United States Marine, Inc. are separated by about as much real estate as is possible here in the continental United States. Beyond this physical distance, their individual business plans are probably about as different as the real estate on which their boatyards sit. What they do have in common has more to it than their mutual skillsets in the aluminum boatbuilding trades and goes more towards the collective ability to transcend a perceived problem that potentially could affect both bottom lines. It turns out that neither group is particularly worried about sequestration; albeit for different reasons.

Kvichak Marine Industries

Founded in 1981, Kvichak Marine Industries quickly established itself as one of the nation's most widely recognized aluminum boat builders. The diverse Kvichak portfolio includes workboat platforms that include law enforcement, firefighting, passenger ferries, piloting, and general commercial boats. The Seattle-based workboat builder was a recipient of an ARRA small shipyard grant awarded in August of 2009 which in part allowed funding of a state-of-the-art cutting table and brake. This equipment provides KMI the ability to control the schedule of its cut parts being delivered to the production floor. Just In Time ("JIT") delivery of the cut & formed parts reduces the use of valuable boatbuilding space in the Company's two main production facilities for parts storage thereby in-

creasing manufacturing capacity. This vertical integration of all plate processing operations reduces overall production costs, trucking costs, carbon emissions and increases quality control of the finished product.

Over time, Kvichak has shown itself to be one of the nation's most prolific yards, delivering since 1981 548 vessels from the Seattle yard, including 63 Response Boat Medium (RBM) craft for the U.S. Coast guard from their Kent, WA facility. The government business remains as an important part of the Kvichak mix, but not the critical element that some other yards might depend on as a primary staple. That's because the west coast builder sees diversification as an important survival strategy.

The Kvichak Work Split Formula:

Commercial: 50%	Municipal (law / fire, etc.): 25%	Military (Navy, USCG, etc.): 25%

Today, Kvichak continues to look for new and complementary markets that fit core capabilities – high quality aluminum fabrications for industries other than commercial boats among them. The ideal split in today's markets, at least for Kvichak, probably hovers around 50/50 between Government and commercial business. And, while that isn't always the case, the split varies but generally averages out over time.

Many smaller U.S. yards – so-called second tier establishments – are experiencing robust workloads at present; series-build and some delivering foreign. Kvichak is seeing demand there as well, and is currently working on overseas opportunities. Recent overseas deliveries include three 75' Pilot boats to the Netherlands, a 54' patrol boat to Nigeria, an oil skimmer to Russia and one to Italy. All that and in a market atmosphere that is certainly more competitive in some segments than it was five years ago, especially in the smaller patrol/utility boat markets. Kvichak's current backlog remains robust with a good mix of committed work extending out to the second quarter of 2014, with a typical progression of builds slots opening up for new projects as mature ones deliver.

United States Marine, Inc. (USMI)

Founded in 1971 by the late Tom Dreyfus, USMI's present management includes Chairmen John Dane III and CEO Barry Dreyfus Jr. Originally focused on building world class racing sailboats, since 1987 USMI has designed and built military, patrol and special warfare boats ranging in length from 21 feet to 90 feet, constructed of high performance composites or aluminum. As a fully integrated manufacturer capable of designing, building, and testing boats in house, a good percentage of their present workload also includes ongoing, regularly planned maintenance on many of its previously delivered hulls.

Located in Gulfport, MS and New Orleans, LA, on-site facilities provide space for welding, electrical, outfitting, upholstery, and painting. Climate-controlled facilities for lamination and a separate oven for post curing epoxies are a part of the advanced lamination processes used at USMI. In 2010, USMI also successfully applied for a Marad grant to help it purchase the epoxy oven, composite freezer and CNC material cutter.

USMI yards have extensive dockage and cranes for launching boats and water based activities. All facilities connect to the Intracoastal Waterway, Lake Pontchartrain, or the Mississippi Sound providing riverine and littoral type environments, as well as varying water conditions for trials and training. The open waters of the Gulf of Mexico are nearby and are used for deep or rough water testing.

USMI's Barry Dreyfus, unlike others who in May claimed that demand from U.S. FMS clients had declined and timelines delayed, reports a brisk pace of business. Boasting a current backlog which entails virtually 100 percent government contracts, this sort of mix might make other yards somewhat nervous, given the current political winds. Not so for Barry Dreyfus and the USMI team. Indeed, and while others fret about sequestration, Dreyfus insists, "USMI has not seen a decrease in FMS contracts. What we have experienced is interest from new potential FMS clients who have observed USMI craft in use by current clients. The speed, quality and mission successes of these craft have generated much interest in foreign navies

2013: Kvichak Deliveries / Backlog

Deliveries		Scheduled (2013)	
Vessel Type	*Customer*	*Vessel Type*	*Customer*
RB-M C	NYPD	RB-M C	L.A. County Sheriff's Dept.
19' Tuna Skiff	Commercial Buyer	64' Pilot Boat	Savannah Pilots Ass'n
30' RRS Skimmers (15)	U.S. Navy	33 deliveries (RB-M)	USCG RB-M program
Patrol 28	Boston PD		
50' Pilot boat	SW AK Pilots Ass'n		

90' (27M) MKV-Patrol Boat and 11 M NSWRIBs

LA County Sheriff RB-M C (delivered in August)

around the world. We currently have two FMS programs in progress, with discussions in progress for an additional two potential contracts." He adds, "We have not encountered any delays in timelines, including delivery and acceptance schedules, due to issues with NAVSEA PMS 325."

Other USMI customers include the U.S. Special Operations Command, U.S. Dept. of Defense, NAVSEA PMS325, Navy Expeditionary Combat Command, U.S. Navy, U.S. Army, U.S. Customs Service, NAVO and MSRC. With 200+ vessels delivered 1987, the yard today continues to be fully engaged. With ten vessels recently delivered to Kuwait under the FMS program, Dreyfus says his foreign military sales (FMS) work is steady, with the biggest region for those deliveries being the Middle East. And, he insists, "In terms of FMS dollars, 90 percent of that money is spent right here in USA. Sequestration is simply not involved."

USMI Deliveries … at a Glance

Approximately 650 craft delivered	Over 240 NSW RIBs, 87 Riverine (4 designs)
203 delivered since the move to Gulfport, MS	47 SOCRs
Over 500 delivered to DoD Agencies	117 total FMS boats
21 MKV type hulls for US Navy and FMS contracts	3 types of craft; 9 different countries

It is arguably a good time, sequestration fears aside, to be building riverine and other smaller scale boats for global navies. That's because the era of the 600' platform as the primary weapon of maritime power and law enforcement is rapidly coming to an end. That's good news for USMI and its 25 years of experience in developing, delivering and supporting combatant craft for the both the United States Navy and Foreign Military Sales Customers. During that time, USMI has designed and delivered eleven different types of craft (over 600 boats in total). These craft include but are not limited to the 82' MK V SOC, 90' MKV-PB(C), 90' MKV-PB, 11 meter Naval Special Warfare Rigid Inflatable Boat (NSWRIB), 33' Special Operations Craft Riverine (SOCR), and the 33' Riverine Assault Boat (RAB). Significantly, USMI owns the designs of the majority of the craft it has delivered.

USMI facilities are rarely idle, says Dreyfus. In between projects, employees work on upgrading and improving infrastructure. Maintenance of previously delivered units – Dreyfus calls it 'cradle to grave work' – account for as much as 30 percent of this builder's man hours. In fact, USMI is currently providing a port engineer to support

FMS customers. Since the move to its current facilities, the company has doubled in size – physical size, employees and business backlog. Dreyfus reports a stable, well-trained workforce of about 200 employees. And, as a builder for the military, ISO 9001 certified USMI arguably does as much as any other domestic contractor.

The USMI business plan is built upon zero debt – long and short term. Dreyfus explains, "We build only what we can afford to build." Like other domestic builders, USMI hedges its bets by actively seeking overseas work and is actively pushing its products to a number of foreign countries, including Kuwait. The USMI resume includes deliveries to at least nine foreign entities and says Dreyfus, the USMI backlog extends well into 2015.

No Magic Formula

In a seemingly rare era where U.S. shipyards find themselves, by and large, far busier and more profitable than many of their foreign counterparts, Kvichak and USMI are two yards that seem to be riding the current wave nicely, despite having some or all of their eggs in the government basket. The boom in domestic oil production has fueled a resurgence of the Jones Act tanker trade, and the resultant demand in replacement tonnage. Crowley's August announcement that it had entered into an agreement with Philadelphia-based Aker Shipyard (APSI) for up to 8 additional tankers more than underscores that trend. Separately, a robust offshore support vessel building program is underway from any number of domestic operators and the repowering plans for all domestic fleets, consistent with newer and more stringent emissions standards, also continues at a brisk pace.

The newfound domestic boatbuilding boom seems unlikely to end tomorrow. Hence, any worries about government sequestration issues, for the time being, are being eclipsed by increased commercial sector work. Beyond this, the quality and price of U.S. output is attracting many foreign orders. Kvichak and USMI, of course, are part of that metric, but countless other yards are getting the job done, too. Each has its own way of doing it, but a major theme beginning to emerge is the rapidly diversifying portfolio of U.S. yards – across vessel types, domestic and foreign deliveries, and, of course, government and commercial sectors. Sequestration? What sequestration?

Duty of Care

Data collection and monitoring helps measure the impact exposure of Workboat crew and passengers.

By James Glover

Professional powerboat users face an increased risk from injuries associated with the constant impacts they receive during their daily activities. It is not hard to imagine that constantly driving a rigid hull through a choppy sea will result in some uncomfortable moments, but much of the professional marine industry continues to pretend that there is no problem.

The term 'Professional' is important. If someone in their spare time wants to drive at maximum speed, exposing them to a risk of injury, then so be it. But the Professional user is not working for fun. They are out in all weathers using the boat as a tool to get them from A to B or to perform tasks. They should be protected from harm the same as a worker in any other industry.

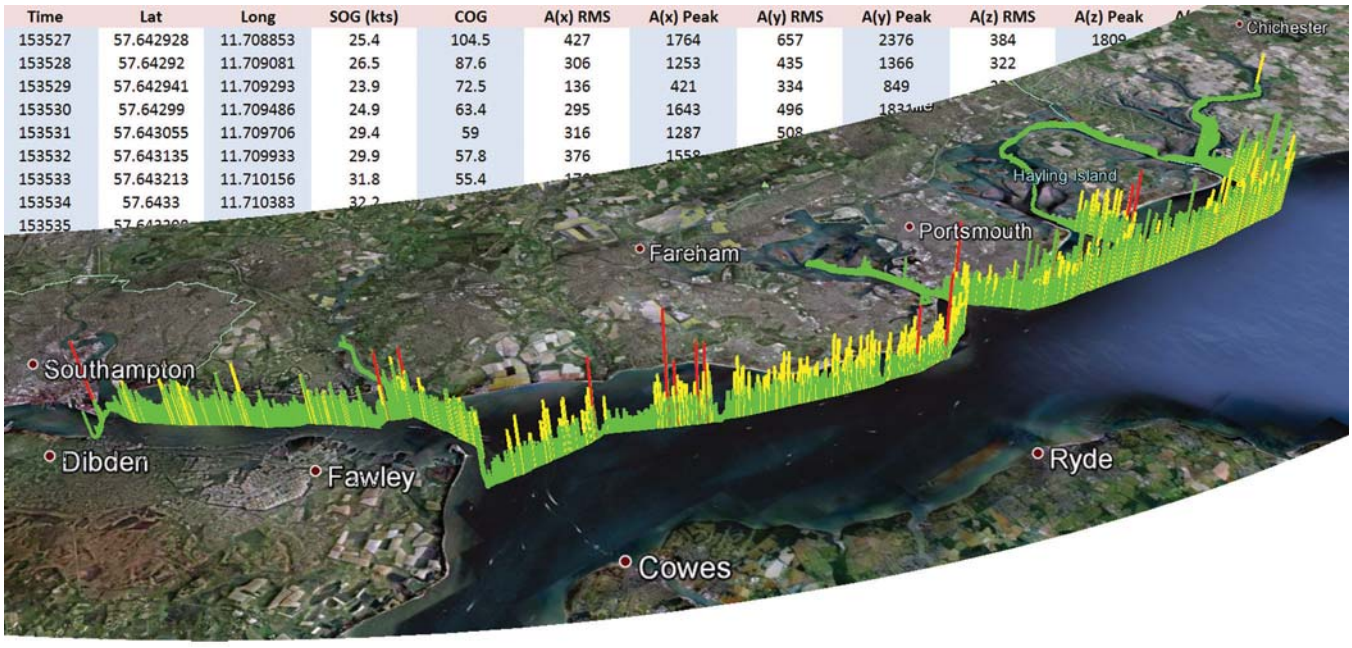
In recent years, there has been plenty of discussion on the latest legislation that sets limits on the worker or paying passenger's exposure to Whole Body Vibration (WBV) and Hand Arm Vibration (HAV), which in Europe is defined by EU Directive 2002/44/EC. Applied to all industries, including Construction, Mining and Maritime, this directive focuses on chronic conditions caused by long term exposure to vibrations which we define as those that infiltrate your bones and shake apart your cartilage.

The EU directive is undeniably essential. Advocators of improving health and safety for professional marine workers used the EU directive as the driving force for the introduction of better personnel management or the use of shock mitigation equipment to reduce injuries. Having been introduced and accepted in other industries, it was deemed to be the solution.

However, with the EU directive now in force it appears that the legislation could be construed as being flawed for use in the maritime industry. The required method of calculating WBV exposure is complicated and requires sophisticated mathematics. The vibration exposure limits seem unrealistic; by trying to enforce apparently unachievable targets, many in the industry now oppose the law.

Carl Magnus Ullman, CEO of Ullman Dynamics has recently published an article addressing the failings of the existing measuring standards. Visit www.hsbopro.com for further information.

The headline is that acute injury does not come as a re-



sult of vibration, but as a result of impact. The ISO standards chosen by the EU committee were used as they were the closest available, but they were developed for forestry machines and lorries where vibration is the major issue. We need to forget about whole body vibration and focus on impacts.

Protection From Prosecution

The UK Health and Safety Executive (HSE) recognises the perceived shortfalls with the EU directive and the problems in applying the stringent WBV exposure restrictions in the marine environment. The HSE will accept improvement to impact exposure when investigating compliance with the regulations, but this requires evidence that the employer has acknowledged the risks and taken steps to reduce their staff's exposure to harmful impacts.

In conjunction with the HSE, the UK Maritime and Coastguard Agency has introduced a scheme that will provide exemption from prosecution to employers that cannot meet the exposure limits required by the EU directive, providing they can supply evidence of monitoring and an attempt to reduce their workers exposure to WBV and other harmful impacts.

Monitoring and Reducing Impact Exposure

Tracking an employee's impact exposure does not mean that they have to stop working whenever it peaks. Most days it would be hoped that they are safe from risk, but in the event they have a build up of harmful exposure they should be placed on other duties with less exposure for a short period of time. When a crew runs into particularly bad weather and returns exhausted they are more likely to injure themselves on the next shift if they have not recovered in time. Rearranging their shifts will allow them time to recuperate on smoother water

and get their energy back before tackling heavier seas.

Monitoring does not require endless paper work. There are now systems available that will automatically record the impact exposure alongside the vessels position, filing the daily data in a user friendly format. A unit fitted to each vessel allows the Operations Manager to quickly and easily build up a database of the impact exposure the workers receive during different tasks. Over a period of time this can be used to alter their daily routine to ensure exposure is reduced. Implementing small changes can make a significant impact on employee's long term health and maintaining this simple record will allow companies to prove they are engaging with the issues.

Shock mitigating equipment can reduce the crews exposure to damaging impacts. This includes suspension seating, shock absorbing flooring and personal equipment, but it is important to differentiate between comfort and protection. Soft cushions, rubber decks and a good pair of running shoes may improve the crews daily comfort but they won't provide protection from spine damaging slams.

Seat or deck suspension systems need to match their intended environment. You wouldn't expect the shock absorbers on a family car to be suitable for driving along gravel riverbeds; similarly some marine seating systems may be suitable for 25 knots in a coastal rib, but if your crews intend to chase across open water at 50 knots they are going to need a more robust system. As a simple rule, a suspension seat that 'bottoms out' is potentially more damaging than having a non-suspension seat.

Training can offer significant rewards. A single day spent in a group training event learning from other peoples experience can highlight areas where skippers could make improvements. For example, many of us have travelled by sitting on the tube of a rib, but we wouldn't think twice about doing it again after seeing an x-ray of the damage that could be done if the boat were to fall into a single hollow unexpectedly.

A common mistake is to focus only on the skipper. In the marine industry there are often other passengers onboard. The skipper is in control and can better prepare themselves for impending impacts, but the passengers are often less aware of what is coming and may not be experienced seafarers practised at absorbing the bumps. As a result when they reach their destination they may be fa-

tigued and less able to perform their required functions.

Duty of Care

An employer has the responsibility to protect its workers, overriding the employees enthusiasm if required. We would not let a young worker go to sea without a life jacket, even if they maintained that they were a champion swimmer, so why do we continue to let fast boat operators risk serious injury and turn a blind eye towards it?

Historically it has been shown that workers will resist acknowledging the dangers they face, leaving the employer to enforce safety practises until they become common practise. Examples include safety glasses in workshops, hard hats in construction sites and Kevlar clothing for chainsaw operators.

The most severe injuries, seen as a result of bad slamming events, include fractures to vertebrae or other extremities, and rupture of intervertebral discs in the spine and neck. These do not happen to everyone that steps aboard a boat, but neither is everyone

in a car going to crash, yet we still wear seatbelts!

Advances in Data Collection

Monitoring the impact exposure is now more simple than many realize. Previously this required costly data logging equipment with accelerometers fitted to the boat, providing the user with raw data of the hull impacts and vibrations. Accelerations must be measured using a high sample rate requiring frequent downloading of the data due the large memory required to store the values. The daily processing of this data can take considerable time and requires experienced professionals to highlight potential impact exposure risks.

Data recorders designed specifically for monitoring the impact exposure of the vessel, crew and passengers are now available. The DaccR from Dyena measures accelerations simultaneously in 3 axes and performs all processing onboard alongside GPS data to provide accurate information in a user friendly format. The memory requirements are a fraction of standard data loggers and over 600 days use can be recorded before a data download is required.

This is the Future

An employer's duty of care requires them to ensure that all passengers and crew are safe and it is in their interests to monitor the situation not only from a health and safety perspective, but also to expose any driving habits or situations that may be putting other staff at risk. A crew member or passenger with an injury caused by an overzealous or unlucky skipper could result in a financial loss for the company and a subsequent investigation by the relevant Safety Executive and insurers.

Now that impact exposure is an acknowledged danger and subject to legislation, employers are required to prove that their staff are not at risk, or that they have taken steps to reduce their impact exposure. Either a daily health questionnaire or an automatic impact exposure recorder is a cost effective first step before investing in more expensive shock mitigation equipment and provides a metric of before and after conditions.

With boats becoming faster and personnel resources reduced, there is even more pressure on professional marine operators to push the limits of their craft and crew. Unless they can invest in more boats and staff, the ability to monitor the health of their workers is paramount. Impact exposure and WBV are not going away and ignoring them will increase the chance of human injury or commercial liability. So it should be addressed now before it is too late!

Time	Lat	Long	SOG (kts)	COG	A(x) RMS	A(x) Peak	A(y) RMS	A(y) Peak	A(z) RMS	A(z) Peak	A(xyz) RMS
153527	57.642928	11.708853	25.4	104.5	427	1764	657	2376	384	1809	872
153528	57.64292	11.709081	26.5	87.6	306	1253	435	1366	322	1336	621
153529	57.642941	11.709293	23.9	72.5	136	421	334	849	235	799	430
153530	57.64299	11.709486	24.9	63.4	295	1643	496	1831	279	1168	641
153531	57.643055	11.709706	29.4	59	316	1287	508	2154	217	1055	636
153532	57.643135	11.709933	29.9	57.8	376	1558	572	2748	295	1837	745
153533	57.643213	11.710156	31.8	55.4	176	920	443	1455	194	954	514
153534	57.6433	11.710383	32.2	52.5	647	3017	685	3067	390	1669	1019
153535	57.643398	11.71061	33.2	51.4	473	2599	677	2114	275	1819	870
153536	57.6435	11.71084	34.7	49.5	320	1785	506	1795	205	1140	632
153537	57.643621	11.711076	37.5	47.6	696	2849	714	3160	516	2134	1122
153538	57.643733	11.711318	37.1	49.8	431	2344	770	5278	403	2726	970
153539	57.643846	11.711546	35.1	47.6	261	1255	922	4629	370	1744	1027
153540	57.643958	11.711766	35.3	48.1	534	2379	1041	4878	457	2415	1256
153541	57.644071	11.711988	36.5	47.7	348	1300	441	1241	209	986	599
153542	57.644188	11.712225	38	47.7	370	2094	481	2092	255	1344	658
153543	57.644313	11.712466	38.8	45.1	411	2391	821	3140	419	1991	1009
153544	57.644445	11.712705	37.7	44.2	584	3158	1011	5868	522	2635	1278
153545	57.644576	11.712931	36.9	42	700	4662	1314	8038	734	4534	1659
153546	57.6447	11.713171	40.8	42.2	271	999	526	3128	279	1294	654
153547	57.64485	11.713418	39.3	41.9	394	1483	1079	4534	425	1809	1224
153548	57.64499	11.713648	39.8	39.7	1223	8989	1156	7848	744	4472	1840
153549	57.645131	11.713875	38	42.7	298	1104	621	5138	269	1894	739
153550	57.645261	11.714106	39.7	44.1	423	2031	633	3597	338	1663	832

Full Speed Ahead with Gas

Dutch-based Peters Shipyards introduces revolutionary Inland Shipping concept.

By Peter Pospiech

Planned, developed and built by Dutch Peters Shipyards, located in Kampen, a unique inland tanker is now the world's first river vessel driven by combustion engines consuming purely natural gas. In April, the innovative new vessel was handed over to its time charterer, Shell Netherlands, who will operate the "MTS Greenstream," via Interstream Barging, between the Netherlands and Germany; primarily on the river Rhine.

The vessel is the brain child of Geert van Voorn, CEO of Peters Shipyards, who masterminded the design of a new type of inland vessel for the next future. He explained, "After almost three years of development we see the result: The natural gas powered Greenstream Tanker is a gas-electrically powered ship and that leads to much less impact on the environment. This is a milestone that could bring about a revolution for inland and coastal navigation. For example, natural gas will help shipowners meet increasingly stringent emission standards, some of which already apply to the river Rhine. That was one of the key drivers of the project."

Regarding the principals behind the development of the natural gas powered inland tanker, Geert van Voorn continues, "We wanted to make several more steps forward in the areas of sustainability, safety and efficiency. Therefore, we skipped the step of propulsion based on 'dual fuel'; the combination of diesel and gas. We see 'dual fuel' as an interim

Image above: The GREENSTREAM's front-positioned wheelhouse is unusual for an inland ship.

solution. Beyond this, natural gas the engines easily fulfill IMO Tier III emission levels and because the propulsion drive line is fully gas-electric, it also provides for a quieter ride. In inland waters, this can be a big advantage."

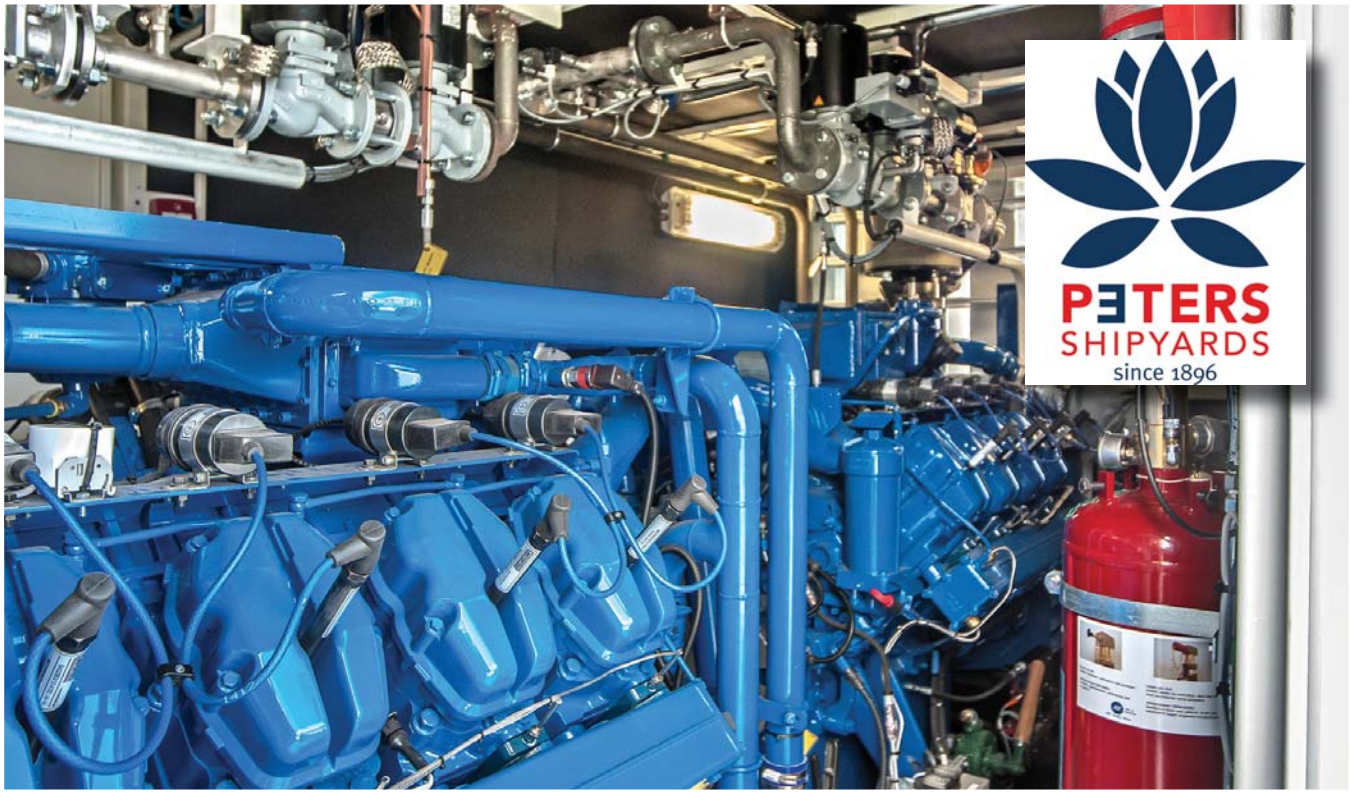
Striking Design – MLC Compliant…

The design of the LNG Greenstream Tanker is striking. Aside from the environmental advantages, much attention was paid to energy efficiency and a comfortable working environment for the crew. The wheelhouse located at the bow is unusual in European river trades and enhances the pleasing lines of the vessel. According to Geert van Voorn, the design allows for more efficient propulsion through better trim and optimal weight distribution. In increasingly crowded inland waters, the forward-positioned wheelhouse also provides deck officers with a better view of what's ahead.

The spacious interior of the cockpit adds to the comfortable and well-designed workspace. Geert van Voorn, with an eye towards the MLC 2006 rules, adds, "In the past, this was always neglected. A pleasant working environment shows respect and has a positive influence on the motivation and productivity of people."

Lower Energy Consumption with LNG-Packs

Located on the ship's stern are two modules, the Peters LNG-Packs, containing four gas engines. This arrangement provides both capacity and more flexible power consumption. When moving downstream, for example, less power is needed and the two modules ensure safety, redundancy in case of an engine failure and efficient maintenance. The modular arrangement of the gas engines allows easy removal and prompt exchange of the Peters LNG-



View in one of the Peters LNG-Packs with two Scania-Sandfirden gas engines.

Packs, which means that the boat is not idled due to maintenance and can remain in operation almost continuously.

Two double-walled gas storage tanks, with each a capacity of 40 cubic meters and containing liquefied natural gas under a pressure of around 4 to 6 bar, are placed aft on deck. Liquefied gas cannot be used to operate the engine – first it must be changed into gaseous condition by an evaporator at a temperature of around 30 to 40 degree centigrade. In this gaseous condition, the gas passes the gas train into the engine under little overpressure. The vessel's bunker capacity allows for a range of about 1,600 kilometers or around 1,000 miles. Refueling is done, until more permanent bunker facilities can be arranged, by truck. That said; refueling takes less than 2 hours.

Approval ABC's: ADN, CCNR & LR, too …

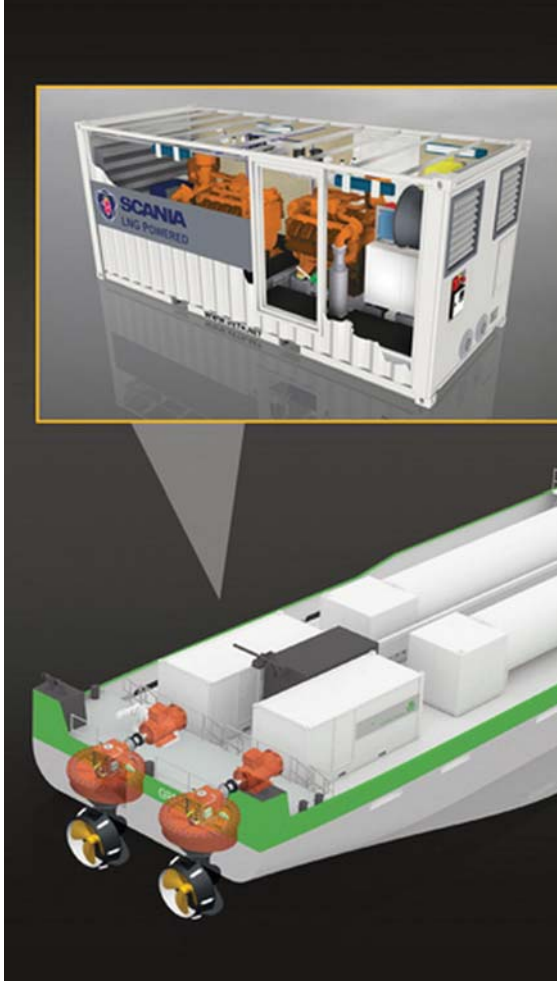
The Greenstream Tanker design was partly produced in cooperation with others, including the Central Commission for Navigation on the Rhine (CCNR), which granted its approval for the concept. CCNR inspects every new

vessel designed for use on the Rhine. Additionally, approval has also been granted under the ADN, the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways. According to van Voorn, the regulatory approval process was no easy bar to clear. Also involved with the design and approval process were the Dutch Government, Lloyds Register and various other local authorities. The "MTS Greenstream" LR –classed as follows: LR+A1 i.W.W. Tanker Type "C", p.v. +50kPa, S.G. 1.00.

Scania: a pure gas engine

Scania, with its Dutch partner, Sandfirden Technics B.V., began to develop a pure gas engine at about the same time as Peters began to move its inland tanker concept forward. A series of special Scania gas generator sets for marine use, each with a power output at 285 kWe, runs on 100% natural gas. Classed by Lloyds Register of Shipping, these are among the very first natural gas engines which have been marinized and classified in this power range. They also have been designed according to the ESD regulation (ESD= emergency shut-down).

The engines are based on Scania's diesel engine design. Modified in close cooperation with Sandfirden the SGI-12 and SGI-16 gas engines feature single cylinder heads with 4-valve, heavy-duty industrial glow plugs. With an approximate durability of 2,000 operational hours, ensuring reliable service and lower maintenance costs, the mechanical output, available at the flywheel, is between 205 and 300 kW (COP) at 1,500 and 1,800 rpm. Producing lower gas consumption and, of course, less noise, these so-called 'lean-burn' engines operate in an air-rich environment.



This extra air lowers the combustion temperature and the engines emit far less harmful substances, as well as consuming less fuel.

General Sales Manager of Sandfirden Technics, Erik de Wit explained, "Compared to the diesel version, our gas engines deliver a more than 80% reduction in the emission of nitrous oxides (NOx) and a more than 25% reduction in CO2 emissions, with zero emissions of SO2 and particulates. At the same time, the gas engines deliver high output, and the completely new fuel system regulates the gas supply in such a way that the quantity of fuel delivered can be quickly adjusted to the unique propulsion demands of coastal and inland shipping."

A snapshot: The GREENSTREAM

The vessel, managed by Interstream Barging, has been added to the existing Shell Rhine fleet and will sail on the inland waterways of the Nether-

An overview of the ships drive components.

lands, Germany and Switzerland, plying the refined petroleum, diesel and domestic heating oil trades. The 110 meter LOA vessel has a beam of 11.40 meters and draws just 3.45 meters when fully loaded. Its (2,865 tonnes) deadweight capacity incorporates a complete double hull system and allows for 3,132 cubic meters of product in six specially designed tanks in two segregations.

In total the power of the four Scania / Sandfirden units supply 1.200 kWm via generators to the two Veth Z-drive propulsion units (VZ-550 x 500 kW at 1,800 rpm each). With these features, the vessel has a maximum speed of 21 kph in deep and wide waters. For better maneuverability, an additional Veth-Jet bow thruster of type 2-K-1000 (279 kW at 1.800 rpm) has been installed. All in all, the environmentally correct, exceedingly quiet inland vessel could well set the standard for other similar vessels, to follow.

Peter Pospiech *has served as chief engineer in the German merchant marine and additionally done field research on big bore diesel engines for ship propulsion, with additional service as a Service engineer. Today, he is a experienced shipping journalist who frequently contributes to Maritime Professional.*

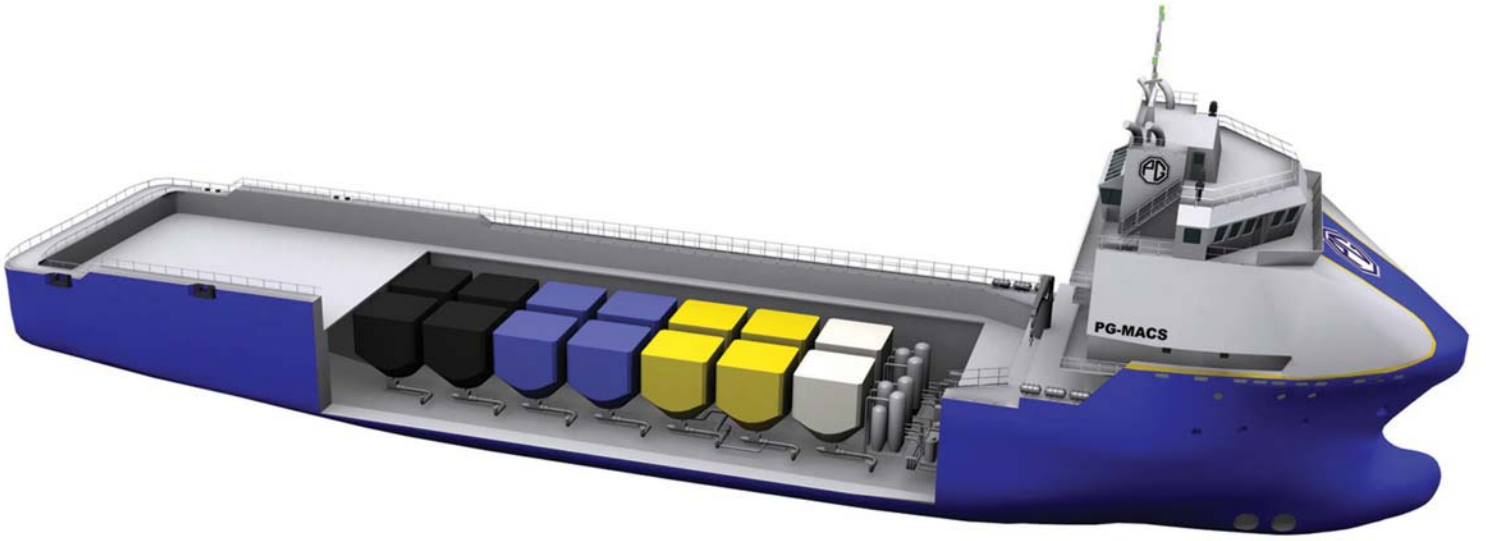
Offshore, Equipment & Partnerships, too

W&O caps a busy year with two additional deals intended to penetrate the busy offshore markets with cutting edge products.

By Joseph Keefe

For many, the recently announced W&O Supply partnership agreements might come as just another piece of news in the busy marine markets. For starters, however, W&O Supply is now the exclusive sales agent for PG Marine Group – Ing Per Gjerdrum AS – in North America. Separately, Bestobell Valves, part of the President Engineering Group (PEGL), also named W&O Supply as its exclusive distributor for Bestobell Valves in North America. Finally, and in concert with PG Marine in a 3-way partnership, W&O was also named as the exclusive North American sales distributor for the Hyde GUARDIAN Ballast Water Treatment solution (BWTS) to the marine industry. That's a lot of digest in one sitting.

Since 1982, PG Marine has specialized in pumping systems directed to the offshore oil & gas industry. PG Marine is a supplier of pumping hardware, but more often a partner to operators, shipyards, naval architects and oil companies providing total system integration. For W&O, this partnership provides a significant opportunity to represent a quality supplier; for PG Marine, it means easier entry into the red hot North American oil & gas markets. And, according to PG Marine's CEO, Roy Norum, PG Marine has two products that are game changers in the industry. The PG-MACS system is a flexible below-deck handling cargo-handling system for all liquid and dry bulk material. PG-MACS allows operators to handle and transport drill cuttings offshore. The other product is PG-Submix; a fully submerged, hydraulically driven (high torque, no gears), slow running, wide diameter agitator that handles liquid mud.



PG-MACS

Previously, drill cuttings were dumped to sea, partially with rather large environmental impacts. As the industry evolved, drill cuttings were transported to shore for processing in big-bags, open containers and more recently in closed-tank containers. The logistics for these processes required significant resources on the rigs, ships and onshore. Massive volumes of cuttings are being handled daily.

Triggered by the strict environmental regulations in cargo and waste handling in the North Sea area, where "zero-discharge-to-sea" was an absolute must to allow exploration and production of oil & gas in these very sensitive regions, PG Marine in 2001 began the development of a below-deck solution for Drill Cuttings. These efforts produced patents in 2006. Initially, it was hoped to have drill cuttings handled as any other liquid cargo, but the mere composition of the material made that path impossible, early on.

Today's version of PG-MACS provides a closed-loop, efficient and safe solution for pumping drill cuttings from the rig down to the vessels' below deck tank clusters – upon which safe transportation (no spillage in rough seas) to shore is made possible. A secondary benefit to the operators is the PG-MACS tanks for drill cuttings are also well suited to carry dry and wet cargo to the rigs, and are large capacity surplus to the ships Recovered Oil Response ability. In addition, by removing the container from the deck, the area is released for other pay-load.

Roy Norum explains, "PG-MACS offers a unique flexibility for various cargos to be handled, as the entire tank cluster can be used for dry bulk, liquid bulk, mud and ORO – or any combination of these. In Brazil we have seen this configuration voiding the need to build specialized tonnage, as all these are covered with one design." The financial advantages provided by PG-MACs are easy enough to see. More importantly; highly versatile, flexible and spacious vessels attract a significantly wider audience globally.

Owners and operators have options, but newbuild installation is perhaps the best way to go. That said; Norum says, "We have done both retrofitting and new builds. Our experience shows that both options are possible, however a retrofit for such features is a major one, taking the vessel out of service for a relatively long period of time with significant additional costs. To help meet our customer's needs we have developed portable PG-MACS solutions


Norum, CEO, PG Marine Group

intended for deck transportation for short term jobs, but find that these cargo demands are rather long-term-oriented. In the end, the best way to target these demands are with dedicated new builds."

PG-Submix

PG Marine's PG-Submix, quite simply, handles liquid mud. Now producing the third generation of PG-Submix agitators, PG Marine is experiencing growth for this working solution in the market. Deep water drilling, enhanced drilling technologies, the development of new composition synthetic mud, longer voyages and extended storage time onboard are all combining to challenge offshore support providers in their ability to keep large volumes of drilling mud in suspension. And, because it is critical to assure that the mud received from the shore base is the same that is

eventually delivered to the rigs, large changes in this field are now being experienced. Roy Norum told MN in August, "As the newbuild market shifts away from traditional pump-re-circulation and electric mixers which are not able to cope with the high SG and viscosity, large, high thrust, high torque "paddle type" agitators are moving in to take there place. PG-Submix is tailor-made for this and several major ship-owners are already running replacement-programs to retrofit with PG-Submix; not only in Europe but also in the United States.

In a nutshell, PG-Submix equipment involves fully submerged, hydraulically driven (high torques, no gears), slow running, wide diameter agitators. These machines generate Primary Pump Flows up to about 16,500 m3/h directed downwards to the bottom of the tank, creating a vertical flow which efficiently lifts the

Todd Nestel, Director of Engineered Solutions, W&O

liquids' solid particles and keeps them in suspension during extended voyages. The agitators may be used during recovered oil operations to ensure the oil/water/emulsion is kept pumpable for short turnaround of the vessels.

PG-Submix units are already here in the U.S. markets. Norum adds, "We have, especially after Macondo, delivered a significant number of PG-Submix agitators to US operators, but are not able to specify U.S. flag tonnage numbers as these ship owners have large fleets both in domestic and international trade. Several hundred are installed in U.S. owned vessels."

Bestobell Valves

Bestobell has more than 40 years' experience in cryogenic valves, with products specialized and approved specifically for use in marine applications. Todd Nestel, Director of Engineered Solutions, W&O, explained the thought process behind the deal. "It is difficult to gauge the current domestic business potential and even more difficult to forecast the years to come. It appears that the current new construction project's (Harvey Gulf) success may be key to answering those questions. We do know that the infrastructure development to support LNG powered vessels domestically is underway, which of course is necessary for market growth. Within the last few months we have been estimating valve packages for existing vessel conversions, new builds and LNG bunker barges that are in the design phase."

In the meantime, Bestobell has already been active in the marine sectors. Having recently supplied as many as 70 valves to what has become the fastest LNG (liquefied natural gas) fuelled ferry ever built, the specialist cryogenic valve manufacturer also boasts over 50 years of industrial gas experience and 15 years of successful-

ly supplying to LNG marine markets. The company's valve technologies are used on LNG Carriers, FLNG (Floating Production & Storage Units) and FSRUs (Floating, Storage & Re-gasification Units).

The latest deal with W&O is intended to penetrate the rapidly expanding domestic interest LNG as fuel in the U.S. OSV markets, and beyond. Nestel adds, "As infrastructure development ramps up in the U.S., it was important for W&O to stay on top of the industry trend and in order to do so, partnering with Bestobell was the best option. We positioned ourselves to support our current and future customer base with the latest technology."

Win-Win

A common denominator for all of these partnerships and deals seems to be innovative, new products, hitting the market at arguably the right time for a customer base that is growing. The OSV / PSV market is booming and U.S. operators have plunged into the LNG markets with tentative steps, while also looking for better ways to service oil and gas clients offshore. As the exclusive North American sales agent for all PG Marine products, Bestobell valves, and Hyde Marine's ballast water treatment solution, W&O will utilize their extensive branch and sales network to represent each to a growing offshore and mariner segment in North America.

For Gulf of Mexico-based operators, the partnership(s) are perhaps less important than the easier access to the equipment that each deal could bring. Coming arguably the right time and – for the right reasons – the three agreements represent a winning combination for the OEM's, W&O and of course, industry itself.

LNG: Now Powering Vessels – and New Safety Regulations

New Hazards, New Regulatory Concerns and New Solutions.

By Joseph Keefe

According to global classification society DNV, as much as 50 percent of the world's maritime fleet could be duel fuel-powered, as early as 2020. The lure of LNG is understandable – cleaner burning fuels, potentially lower maintenance costs, better efficiencies and lower fuel cost all can counted amongst the growing reasons to take the leap. But, owner/operators considering LNG to power vessels must understand the fire hazards present, the various fire protection solutions and the codes that regulate them.

In the rapidly emerging LNG market, it's important for ship owners and builders to understand just how different fire safety standards are for LNG ships versus diesel. With diesel, the primary focus area for protection is the engine room and machinery spaces. With LNG, in addition to those areas, protection also needs to extend to the bunkering stations and deck areas. From foam and dry chemicals to clean agents, each area requires a unique fire suppression agent. Fire protection systems on LNG ships require detailed planning in order to maximize deck space and provide premium fire protection.

Applications of maritime fire protection include high performance systems for LNG bunkering stations and ships that meet performance specifications of IMO, ABS and USCG. Safety, regulations and training all come into play as more players tentatively dip their toes into the LNG waters.

This month, Coast guard veteran Steve Pelletier, business development manager of Tyco Marine brought us up to speed on what's new, what's needed on the new LNG frontier and more importantly, why and how.

Changing Regulatory Landscape

According to Tyco's Steve Pelletier, there are several regulatory factors for the marine industry in flux at this time. As industry continues to adapt to evolving regulations and standards, it is imperative for ship owners to ensure their fire suppression systems provide the best possible protection for the safety of people, cargo and equipment. One regulation that has been proposed by the U.S. Coast Guard (USCG) is referred to as CFR-46 Subchapter M. The intent of Subchapter M is to promote a safer work environment on board towing vessels. One of the newly proposed measures within CFR-46 Subchapter M may require fire protection for all vessels that need a certificate of inspection (COI).

The International Maritime Organization (IMO) has also introduced an amendment known as FSS Code 5.2.2.2, which specifies the activation sequence of the controls that operate carbon dioxide (CO2) fire suppression systems, as well as discharge alarm activation on SOLAS-classed vessels. According to Tyco's Pelletier, This code was developed in response to the inconsistent operation of ball type zone

valves in some fire protection systems. The code is intended to prevent the possible malfunction of CO2 system zone or selector valves by specifying the sequence of system operation. The appropriate sequence of operation prevents CO2 pressure from building up at the inlet of the zone valve by requiring the valve be opened before the CO2 cylinders are opened.

Pelletier told *MarineNews* in August, "Retrofitting a boat for fire protection can present several challenges, such as space and cost, but a vessel owner can address these issues by working with a professional familiar with marine industry applications and requirements. Tyco Marine Services, a division of Tyco Fire Protection Services, has a fire protection solution for every hazard and can be a partner to those who need to retrofit to meet current marine fire protection regulations."

Upon notification of FSS Code 5.2.2.2, Tyco Marine Services took the initiative to develop both cable and pneumatically operated release and control units that meet the requirements of this code. Although FSS Code 5.2.2.2 was approved in October 2011, the USCG, as well as other regulatory agencies, was conscientious of the impact these upgrades would have on owner operators and manufacturers and created a two-year timeline for compliance. Therefore, vessels contracted on or after July 1, 2010, will need to upgrade standard controls to hardware that meets FSS Code 5.2.2.2 no later than November 21, 2013.

Fire Suppression – one size does not fit all

Marine applications for total fire suppression is not limited to a single product, hence a manufacturer should have the ability to offer total fire suppression solutions for any hazard. With the introduction of liquefied

Steve Pelletier, business development manager, Tyco – Marine

tyco Marine Services

natural gas (LNG) as a new, viable source of power for marine vessels, fire protection for the unique hazards presented by this fuel source, including protecting bunkering stations, gas valve areas, LNG tank spaces and machinery spaces must be addressed.

There is a certain level of danger when transferring fuel, regardless of its form. A spill event is a concern when transferring fuel whether it is taking place on board a ship or dockside. Containment of materials at all times is important from both an environmental and fire protection standpoint. The difference between LNG and legacy fuels is that natural gas is a liquid when cooled and stored at atmospheric pressure, but a gas when warmer than -160 degrees Fahrenheit.

Due to its changing properties, it is important to prevent LNG from igniting as it changes state from liquid to gas, which can occur as it is exposed to the relatively warm temperatures of a ship's operating environment. Another potential danger of LNG is that it burns very clean (flames can be invisible), making detection, especially in an open area, a challenge. Leak detection prior to ignition is critical. Traditional fuels, such as diesel, can pose an issue if not properly contained and are subject to possible ignition if a static arc or an errant ignition source is present.

LNG Fire Protection Solutions

Tyco Marine Services offers a variety of products with dry chemical powder, the only agent approved for the protection of LNG bunkering stations. A full product line that includes ABC agent, a multipurpose dry chemical agent used on Class A, B and C fires, as well as Purple-K agent, or PKP, which offers some enhanced performance characteristics, provides an approach that addresses the needs of LNG bunkering stations.

According to Tyco's Pelletier, dry chemical agents also offer a variety of delivery solutions to help provide protection to all bunkering areas. He added, "Traditionally portable wheeled fire suppression units help meet minimum

fire protection requirements, however location of the units can be a challenge at times. To help solve this, Tyco Marine Services also offers a skid type hose reel unit that can be conveniently installed on a bulkhead, which minimizes the equipment's footprint and provides additional fire protection."

Prior Planning is the Key

As the domestic OSV market evolves, it also appears to be leading the charge to LNG. But in a market where every ton and every square foot expended to install new equipment impinges upon the working missions of the vessel, prior planning is critical when addressing fire suppression on board LNG or dual fuel powered vessels. To this end, Tyco's Pelletier says that being able to provide portable as well as permanent solutions is important. He explained further, "Not only does equipment flexibility make planning easier; it provides architects, engineers and shipyards options during the design phase." Pelletier added that Tyco was active in the LNG fire suppression market today, but due to confidentiality agreements, was not able to share the names of current customers. But, he said, "We are working with several shipyards on LNG projects, but are not at liberty to elaborate at this time."

It's a brave new world out there. And while Pelletier conceded that LNG fuel has thus far enjoyed a relatively safe track record at sea, he also cautioned that this may lead some people to feel a sense of security that could prove hazardous if steps are not taken to provide proper fire protection for all areas of an LNG-fueled ship. He added, "Understanding the potential hazards and working with an expert to develop a total fire suppression solution will help maintain the safety of people, product and equipment." That sounds like good advice.

PPG by the Numbers: 580, 690, & 700

PPG caps a busy 2013 by launching three separate coatings; each intended for a specific application. As regulatory and operational requirements drive coatings decisions, it's increasingly clear that, on the water, one size does not fit all, anymore. You can get there, nevertheless, by the numbers.

By Joseph Keefe

It has been a busy year for PPG Protective and Marine Coatings (PPG). With at least three new marine product releases and even a new production plant in Poland, the Pittsburgh, PA-based global coatings and specialty products company hasn't stopped long enough to give the proverbial barnacles the smallest chance to slow its growth. Founded in 1883 and operating in nearly 70 countries around the world, PPG's sales in 2012 exceeded $15 billion.

PPG Protective & Marine Coatings markets its range of global marine coatings under the SIGMA COATINGS brand name, and prides itself on a global organization which matches the wide breadth of the marine industry infrastructure. According to Sijmen Visser, PPG's Global Marketing Manager for Marine Products, the PPG business plan is driven by not only meeting the latest legislative directives and regulatory requirements, but also the need for owners and operators to run more cost efficient operations. This year's new PPG marine coatings include SIGMACOVER 580, SIGMA ECOFLEET 690 and SIGMA SYLADVANCE 700. Each offering was developed with a specific application and market niche.

SIGMACOVER 580

In July, PPG launched SIGMACOVER 580 epoxy anticorrosive/tiecoat, an innovative formulation designed to enable fast turnaround of vessels in dry dock and deliver sig-

nificant cost efficiencies for spot repair work. Engineered to provide ease of use and economical application characteristics, the new product possesses a practical overcoating window and, with its ability to be applied at temperatures down to 5°C (41°F), offers year round application potential. Sijmen Visser told *MarineNews*, "SIGMACOVER 580 provides an outstanding spot-repair solution for the dry dock market, due to its unique functionality. It is an epoxy coating for underwater hulls that functions both as an anticorrosive and also as an antifouling tiecoat. This dual-use formulation means that it can be overcoated directly with a range of antifoulings and is suitable for use during routine maintenance and repair dry dockings. Ultimately, this provides significant budget savings for the shipowner and can dramatically reduce time in dry dock. For areas that need spot blast of 40 percent or less, it gives customers excellent value, superb performance, and an outstanding return on investment."

With shipowners under increasing financial pressure, one source of expenditure for any shipowner after delivery of a vessel is the cost of dry dockings. While paint costs are relatively minor, the total of surface pre-treatment, application costs, time in the dry dock and being off-hire adds up significantly. Visser adds, "SIGMA 580 is a product that can reduce dry dock time and ensure a fast-turnaround in order to reduce some of the above factors."

Once a vessel is in dry dock, SIGMACOVER 580 can be applied to pre-blasted areas for spot repair in a single coat at a dry-film thickness (DFT) of 250 microns (9.9 mils). Once this layer is dry, the antifouling paint can then be applied directly over it. By simplifying the underwater hull specification and eliminating the need for a second anticorrosive or tiecoat layer, application time is reduced and productivity is in-

PPG's 2013 Marine Coatings: ... at a Glance

Product	Introduced	Target Market
SIGMACOVER 580	July 2013	Fast turnaround in drydock, cost efficiencies for spot repair work.
SIGMA ECOFLEET 690	Feb. 2013	High performance antifouling for short sea and coastal shipping.
SIGMA SYLADVANCE 700	May 2013	Antifouling for medium/high rates of operation and medium speeds.

creased – resulting in cost savings of up to 50%.

Additional savings are made on paint consumption as there is less overlapping, less overspray and less wastage. Ultimately, the efficiency that the product provides enables the ship owner to more quickly put the vessel back into service in quickly, maximizing revenue-earning capacity. PPG sales representatives can calculate the numbers for the individual cases on request.

SIGMA SYLADVANCE 700

In May, PPG rolled out SIGMA SYLADVANCE 700, a high performance antifouling designed specifically for ships working at medium to high rates of operation and medium speeds. Based on the already successful SIGMA SYLADVANCE 800 premium antifouling product, SIGMA SYLADVANCE 700 extends the product offer by means of an 'entry-level' SIGMA SYLADVANCE making premium technology available for a different set of requirements. Sijmen Visser explains, "Antifouling coatings have evolved over the past decade, in some part due to technological advances, but also because of the very real need for vessel operators to reduce fuel costs while continuing to optimize voyage efficiency." He continued, "Silyl-acrylate technology is at the forefront of the drive to reduce fuel spend, which in many cases can take up 50% of an entire ships' daily operating costs. PPG has been working hard to develop hardwearing, environmentally-sound products that can offer fuel savings."

SIGMA SYLADVANCE 700 is based on patented silyl acrylate polymer technology and offers self-smoothing properties and outstanding fouling protection. The untainted nature of the binder delivers consistent antifouling performance and an uncompromised, predictable linear polishing pattern which in turn can significantly reduce frictional drag. SIGMA SYLADVANCE 700 is a pure silyl acrylate premium antifouling product from the same family as SIGMA SYLADVANCE 800, an antifouling product with a proven track record across the last 10 years.

SIGMA ECOFLEET 690

First out of the box this year was its SIGMA ECOFLEET 690 range, designed specifically to provide predictable self-polishing antifouling protection at variable operating speeds in aggressive fouling environments. Intended for the dry dock, maintenance and repair market, SIGMA ECOFLEET 690 has been formulated using PPG's unique

patented binder technology ensuring consistent performance levels and fouling control for in-service periods of up to 60 months.

Fully compliant with the IMO AFS Convention, the product is suitable for a wide range of vessel types and contains an ultra-high volume solids content of 70% - thus reducing potential VOC emissions. SIGMA ECOFLEET 690 has been formulated to be easy to apply, increasing productivity and reducing overall maintenance costs.

Specifically addressing the challenges encountered by shortsea shipping, offshore and coastal operators, Sijmen Visser said, "Aggressive hull fouling is a problem for shipowners operating in coastal and short-sea trades where vessels can be inactive more than 50% of the time. SIGMA ECOFLEET 690 has been designed specifically to deliver high-quality, self-polishing antifouling for vessels with low activity and/or those operating in waters where fouling is known to be a particular problem."

PPG: Global Coverage, Full Range of Applications

Whatever your particular coatings challenge, it's a good bet that PPG has a solution designed specifically for that area. Regulations, fuel economy, and operational efficiencies – they all drive the development of today's marine coatings. In a year where all three of those variables have come into play in a big way – PPG has also stepped up with three marine coatings that address each of those challenges in a specific way. And, that's PPG – by the numbers.

Sijmen Visser, PPG's Global Marketing Manager for Marine Products

PPG Protective & Marine Coatings
Bringing innovation to the surface.™

On-Board Testing Services Emerge

Testing delivers data needed to clean up tugs and workboats

As increasingly strict government and international maritime regulations are phased in to reduce harmful emissions produced by workboats and tugs, the need for on board, in-use testing services capable of delivering accurate, continuous emissions data needed has also come about. Monitoring emissions such as NOx, SO2 and particulate matter is fast becoming not just the right thing to do; it will soon become a requirement, as well. Although much work has been done to clean up ports and marine terminals, the next big target involves vessels, harbor-craft, offshore drilling rigs and all manners of workboats. These efforts will require retrofitting existing engines with aftermarket emissions control products or replacement with newer, low emission "green" engines.

The primary regulatory agencies driving this change include the U.S. Environmental Protection Agency (EPA), International Maritime Organization (IMO) with its MARPOL guidelines, and the California Air Resources Board (CARB). CARB, in particular, has taken a leadership role with some of the most stringent emission reduction measures and deadlines. Although similar to the paths taken by other industries targeted by the EPA to clean up diesel engines, the absence of testing services and products specific to the maritime industry has been a roadblock to progress. Until recently, a comprehensive testing service that meets the requirements of every existing regulation has not been available to maritime companies. Neither have the commercial devices required to conduct the testing.

Nuts & Bolts

To meet all the regulations laid out by CARB, IMO and the EPA, an on-board testing service would not just be a snapshot of engine performance, but would include ongoing "in-use" performance testing over time to meet the ISO 8178 testing protocols. This is where difficulty comes in, says Mark Adair, an emissions control product expert for the past 28 years. "The type of technologies used to clean up those industries will essentially be same we use to clean up ships," says Adair. "The difference is all those emission control technologies were developed in laboratory test cells under controlled conditions with engines removed from equipment and sent to the lab. You can't pull an engine off the ship." This means the testing service has to include devices that remain on a ship over time, constantly monitoring emissions ideally with minimal disruption to ships' crew.

Testing Services Emerge

GreenLink Systems, a company that produces high-tech emission monitoring and control products for heavy duty diesel engines, is now offering a comprehensive On-Board Emissions Testing (OBET) service along with the commercial testing products required to conduct such tests. OBET provides CARB, IMO and EPA "acceptable emissions data" that also meets the ISO 8178 standards for in-use emission testing. It can also be used to perform the International Air Pollution Prevention (IAPP) engine re-certification required by the IMO and the EPA.

The OBET testing service utilizes several new commercial testing products from GreenLink Systems to perform these tests: an emission testing analyzer and a continuous NOx emissions monitoring unit that remains on the vessel over time. Information from these units is relayed wirelessly via built-in 4G wireless modems to a secure, online database accessible over the Internet. The emissions testing unit (ETU) component measures eight gaseous emissions, including Hydrocarbons (HC), Nitrogen oxide, (NOx), Nitric Oxide (NO), Nitrogen dioxide (NO2), Oxygen (O2), Carbon dioxide (CO2), Carbon Monoxide (CO) and Sulfur dioxide (SO2).

A key advantage is that the ETU does not need a laboratory technician to perform analyzer calibrations since it is programmed to run in an automatic calibration mode. It can be operated by a crew member after initial set up. The continuous NOx emission monitoring unit (EMU) is installed directly on the engine and exhaust system utilizing sophisticated sensors. The EMU remains on the engine to measure, record and transmit data 24/7, with new updates uploaded every few seconds. According to Greenlink, theirs is the first unit on the market that meets the IMO NOx Technical Code requirements for all on board maritime engines, including auxiliary engines.

The continuous monitoring unit has been designed with both upstream and downstream sensors to satisfy CARB's Title 13 Div. 3 "Verification Procedure, Warranty and In-use Compliance Requirements for In-Use Strategies to Control emissions from Diesel Engines." The Verification Procedure calls for measurements of exhaust before and after treatment by a NOx emission reduction device while establishing in-use performance and durability over an established time period. According to Adair, a testing

system that transmits data wirelessly with remote access capabilities is critical to reduce the time, crew labor costs, equipment transportation and access to a vessel that may only be infrequently docked in port.

Consistent with the rapid penetration of satellite communications into the busy workboat markets, emissions data is acquired and can be uploaded in a secure database that can be accessed through the Internet. The emission data assists in bookkeeping and reporting required by the regulatory agencies, reducing costs. The ability to monitor results is particularly important during the durability step of CARB's verification process.

Testing services will also play a key role in identifying emerging emission control technologies that can be retrofitted on marine platforms. A testing service that can measure emissions before and after the device will allow ship owners to separate emission control products that work as advertised from those that don't.

The Versatile PI 65
Coastal and Offshore Craft

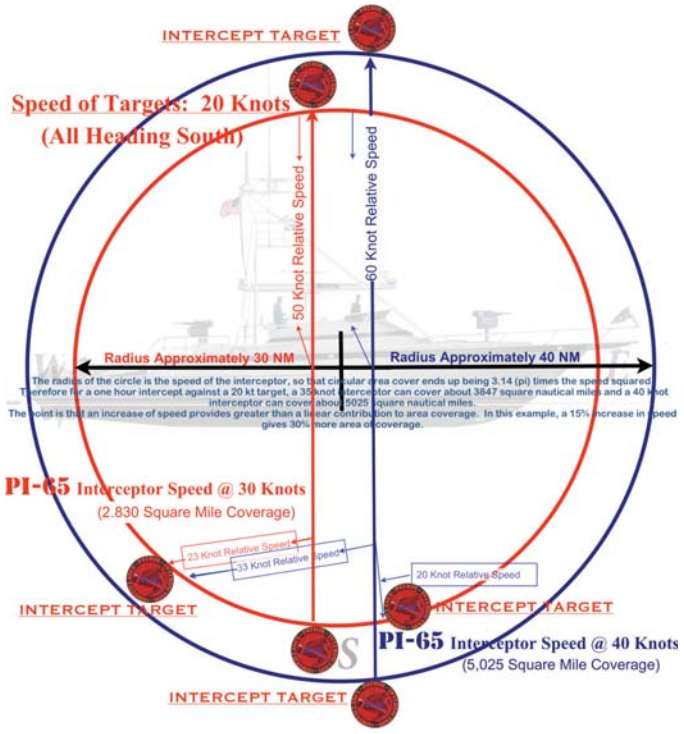
Euro Marine Ltd. answers the call for small, Long-range offshore High-Speed Patrol, Interdiction and Surveillance Vessels, capable of operating in severe sea and weather conditions. These hulls come with an added propulsion twist.

The PI-65 is a tactically sized Coastal and Offshore Craft, designed to be a highly reliable combatant craft capable of operating from land or maritime platforms. The general mission of PI-65 is to provide the operational capability to persistently patrol in shallow littoral areas beyond sheltered harbors and bays, and into less sheltered open water out to and past the Departure Sea Area (DSA), and to safely operate in "Beaufort 10" or less sea and associated wind conditions, for the purpose of force protection of friendly and coalition forces and critical infrastructure.

As the role of the 600-foot warship becomes less effective in these times of piracy, terrorism and other growing security threats, envision a future where a new Naval concept emerges using a large number of small high-speed vessels capable of speeds of 50 knots. Imagine a squadron of four PI-65 vessels, loitering with five-man crews (augmented by special boarding teams) who provide visual confirmation of vessel shipments headed toward Southeastern U.S. ports while providing a visual deterrence for Homeland Security and also be on call for maritime emergencies.

Upon orders to deploy for interdiction, PI-65 gas turbine powered boats can switch from electric APU fuel con-

PI-65 HULL FORM



ONE HOUR
"CONE OF INTERDICTION"

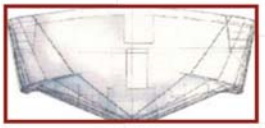
servation auxiliary power to main turbines running at 75% power bringing the craft on plane to 50 Knots for the high intercept speed and to set coarse set course for simultaneous interdiction. This concept, more and more, will become a realistic scenario as the war on terrorism becomes more intensified and as terrorists and other clandestine naval operations against the United States shipping lanes and ports intensifies. When it does, maintaining patrol, interdiction and surveillance programs will require more vessels, extending the area of coverage, using smaller high-speed vessels that are designed to cover large amounts of ocean in rough sea conditions. Enter the PI-65.

Four years in development, the PI-65 is already in production, with two vessels already delivered to undisclosed government buyers and several more are in the pipeline; none, however, with the new Gas Turbine / APU Electric Drive arrangement. That's about to change because the new arrangement saves fuel, increases at sea endurance and produces (very quickly) speeds of up to 50 knots. In essence, there are three options to operate this innovative craft:

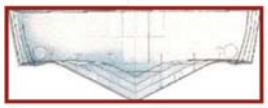
Mode	Desired Performance
Option 1	Running twin Gas Turbine producing >5,000 total Hp., Estimated Speed 50+ knots for high speed interdiction, higher speeds mean extended "Cone of Interdiction" coverage area.
Option 2	Running two small auxiliary fuel efficient (18.2 Gal. /Hr.) Gas Turbine electric generators (335 Hp.) directly running two efficient electric motors for low speed patrol and low fuel conservation, Estimated speed 10-13 knots.
Option 3	Running Single gas turbine producing 2,200 total Hp., Est. Speed 25+ knots; for medium speed and lower fuel consumption.

Euro Marine Ltd. has re-defined a hull-form concept that was originally conceived in the early 1950s, that original concept, had the potential for incorporating advantages of the other popular hull shapes, but eliminated the disadvantages. The craft boasts several other advantages, as well. As the single engine propeller operation of the EML "Hydro-Multi-Lift" hull form does not push against the keel of the vessel, the vessel steering is not effected as in Deep V hull forms, thus the water entering the propeller area is clear of turbulent backwash from the keel. The EML "Hydro-Multi-Lift" hull design is on plane quickly and efficiently, conserving fuel for longer range and extended cone of interdiction coverage. In analysis (see diagram), the forefoot of the "Hydro-Multi-Lift" hull has a sharp, V-shaped entry to cut through seas easily, crisply and with minimal splash. Another important benefit to the "Hydro-Multi-Lift" hull design is its very shallow draft. The low displacement of newly introduced "Alustar" a high strength, light weight corrosion resistant marine aluminum, coupled with the elimination of the deep-V amidships, makes it possible to confidently maneuver the PI-65 in areas far too shallow for other ships, and to follow the bad guys, where larger ships fear to go. In other words, the ideal hull design for oceangoing Patrol / Interdiction / Surveillance Craft.

Very-fine forefoot provides dry entry



Five planing surfaces amidships insure both stability and efficient planing



Flat / Concave aft section assures excellent stability and efficiency

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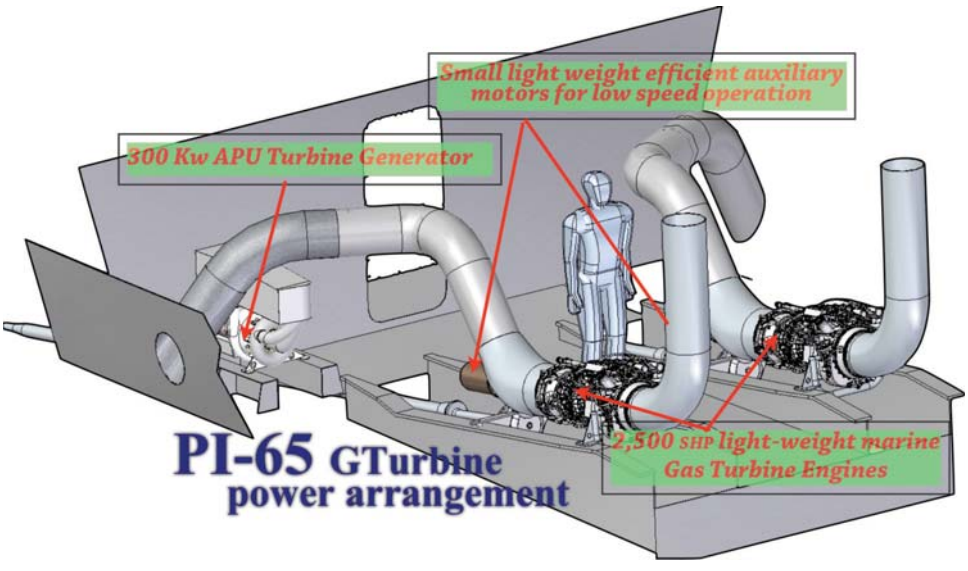


Online and Way Ahead

Calhoon MEBA Engineering School pioneers two more distance learning programs. Where others wonder if it can work, CMES is up and running – miles ahead of the pack.

By Joseph Keefe

On the heels of its already highly successful Crowd Management Online, and Crisis Management and Human Behavior Online courses – both intended primarily to satisfy STCW training requirements for the cruise and passenger ship sector – the Calhoon MEBA Engineering School has rolled out two new National Maritime Center (NMC) approved Online Deck Officer Course Programs. The online programs designed to help deck officers renew or upgrade their licenses, Radar Renewal ($225) and Flashing Light ($100), allow self-paced study; and ultimately, testing at as many as 340 conveniently located Prometric testing centers distributed throughout the United States.

For mariners weary of endless travel during scheduled holiday periods for the purpose of satisfying the increasingly onerous burden of regulatory compliance, a small measure of relief is finally at hand. Course study materials include video lectures available online as well as for download to iPad, iPhone, or Android devices. USCG-approved Instructors are available to answer questions. The interactive online course materials recreate the test environment, so the student experiences the same interface used during the examination. If the first attempt is unsuccessful, a retest is offered during the same session.

USCG-approved eLearning Courses and associated Learning Management Systems (LMS) must satisfy the same quality standards as would be needed for a similar class given in a traditional brick and mortar environment. Therefore, any training organization that wants deliver content as an online course, it must (as a minimum) assure the Cost Guard NMC that a long list of requirements are met. These include:

course documentation is according to USCG standards	student identity is verified	synchronous training is part of the course
online instructors are vetted and approved by the USCG	testing is secure	instructor identity during training is verified
student-teacher ratios support sufficient interaction	LMS has a high degree of reliability	the LMS is secure, maintained, auditable

Given these constraints, it is no wonder that few maritime training centers have entered into this form of training. When the Calhoon MEBA Engineering School received approval by the USCG – way back in 2008 – for its Distance Learning LMS, it was the product of a two-year effort adapting the DNV Standards for Maritime Training Centers to an eLearning environment. Since then, no one has yet duplicated the effort and CMES continues to develop courses for the platform. Originally set up to help the MEBA union manage training and travel costs, their Distance Learning LMS platform is available to anyone in the maritime industry who can get access to a secure internet connection. The possibilities for more of this type of training to develop are therefore endless. For now, CMES is the only maritime training school to figure out not only how to do it, but also to satisfy both Coast Guard and STCW requirements in doing so. Other STCW courses are in the CMES pipeline, too. These include ship's stability and meteorology for advancement to Chief Mate and Master.

According to Chuck Eser, Director of Training at CMES, the RADAR Recertification Online is doing well. Late last year, reported that about a dozen deck officers had done the refresher, practiced at home, and tested at a Prometric testing center. Eser continued, "The system seems to work well. In November, the first (ever) mariner completed CMES USCG-approved Online Flashing Light Program. He went through the Online practice sessions, scheduled his session at Prometric, and successfully completed the test." Test results went electronically to the NMC database. And the cost? Just $100.

More than three years ago, ***MarineNews*** editor Joe Keefe was one of the first students to experience the CMES' LMS system. During his journey to attain STCW credentials for his "continuation status" USCG Deck Officer License, he took and completed two CMES, STCW Online classes; Crowd Management Online, and Crisis Management and Human Behavior Online. And, while the numbers of students taking advantage of the CMES system is not yet where they want it to be, Eser says that metric is moving in the right direction.

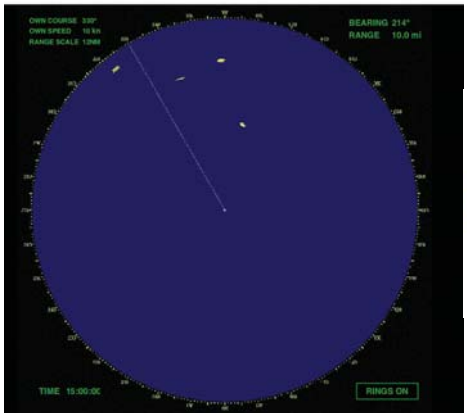
The remarkable part about the CMES journey, without discounting the sweat equity and ingenuity expended to devise, develop and roll out the systems themselves, is perhaps the amount of latitude that CMES and MEBA administrators gave the team of CMES Interim Director Chuck Eser and CMES Distance Learning Manager Dan Noonan to get the job done. Eser explained, "We wanted to do something innovative. MEBA gave us the time and money to do the job right. Sure, this system saves money with remote testing for membership, but it had a long incubation period, hence it was not immediately profitable." Ultimately, the goal for CMES is to have as many as 500 people attending the online course annually. This level, of course, would go above and beyond the elimination of travel expenses for union membership, but also provides affordable options for any mariner.

Far from a self-serving and secretive endeavor, CMES has reached out to countless other schools in any number of ways. Twice the host of e-learning conferences at the CMES School in Maryland in the past few years, their agreement with Prometric also allows the school to act as what Prometric calls an 'aggregator'. What this means is that any school that wants to put a course online and use Prometric to test their students does not have to go to Prometric and sign a 3 year minimum contract to use their testing services. Instead, they can come to CMES and for a nominal fee to package their test, plus a per test fee of approximately $100 per student, they can validate and verify their students tests results independently at over 320 US testing centers (and hundreds more worldwide). This could be part of a school's NMC course submittal or if they just wanted to test their candidates to impartially verify their subject matter knowledge. Eser adds, "We are already working with one school in this way and they will have their testing live very soon." Beyond this, however, CMES needs to produce a minimum number of test candidates to Prometric annually in order to make the system pay for itself. Dan Noonan told ***MarineNews*** in August, "Are we there yet? No. We are getting close, though."

The implications of success at CMES in terms of e-Learning cannot be understated for the industry itself. For example, the state maritime academies today largely accomplish almost all of their STCW training for cadets in-house, but at an enormous annual cost that exceeds $1 million for each. As the European model of training for future officers continually impacts STCW requirements, the task only promises to get more onerous down the road. And, packaging the maritime academy training package into a traditional four-year college experience may soon become a thing of the past – that is, without e-learning to help deliver that knowledge. Ultimately, a blended education – combining traditional brick-and-mortar training for hands-on work with the knowledge based component of training delivered online may become the rule, rather than the exception.

For now, mariners can, for certain STCW requirements, avoid a five hour round trip drive to their nearest maritime academy for what amounts to a 10 question quiz. Throw in lodging, meals, gas (or airfare) and tolls to the mix and it can add up quickly. Of course, not all mariners will have the benefit of a testing center located within 50 miles of their home, but the vast majority of U.S. mariners certainly will.

Distilled down to its common denominator, CMES simply hopes to improve mariner training outcomes using existing and future technologies. The benefits are easy to calculate and include the reduction of training costs, the extension of technical and operational resources, the freeing up of existing training resources to concentrate on innovation and core business activities, the use of complementary resources and capabilities, enabling participants to grow and expand more quickly and efficiently and, finally, the positioning of training schools to expand their training offerings into the global market place. What's not to like?



Year	Total Enrolled	Crisis	Crowd	Radar	Vis.Comms
2012 (#)	66	29	25	10	2
2013 (*)	130	11	59	45	15
TOTALS	196	40	84	65	17

(*) Through six months of 2013 only / (#) Radar & Flasher courses came on line in October and September of 2012 only.

ARGUS: Enviable Technology, Unlimited Potential

System is designed to universally interface with a vessel's existing navigation equipment and autonomously deliver water depths seen by the vessel to a central server. Almost four years and 100 million soundings later, the concept is a reality.

By Joseph Keefe

Almost two years after we first reported (December 2011 edition of ***MarineNews***) on an innovative, depth sounding recorder device that made wide swaths of data available to perhaps anyone who wants it, the concept envisioned by ARGUS has developed into a viable tool that could change the way that government agencies schedule surveys and dredging. Beyond that, the resource represents a valuable asset for commercial and pleasure mariners alike who, if they so choose, can *"take advantage of the depth sounder on the boat in front of them."*

How it Works

Today, about 40 boats have voluntarily placed on board their vessels the ARGUS (Autonomous Remote Global Underwater Surveillance) system transmitters. ARGUS is designed to universally interface with a vessel's existing navigation equipment and autonomously deliver water depths seen by the vessel to a central server. In April, SURVICE and the ARGUS inventors, John and William Hersey, received from the U.S. Patent and Trademark Office a patent for the ARGUS system. SURVICE, the parent company of the ARGUS effort, provides service to the Department of Defense, among others, performing survivability testing, simulation, and modeling. According to John Hersey, the ARGUS service is a natural outgrowth of that business.

ARGUS, in operation and field testing since 2010, automates the acquisition and processing of depth, environmental, and meteorological data from coastal and inland waterways and provide the data to Government, commercial, academic, and other interested organizations. The autonomous onboard system (without the need for any crew intervention) continuously processes and transmits GPS position and single-beam sonar data from a growing network of commercial and recreational mobile marine platforms to supplement nautical charts, many of which have become outdated and inaccurate.

SURVICE characterizes the patented system as "crowd-sourced" bathymetry (CSB), perhaps akin to the efforts being put forward by disaster first responders who hope to better harness the power of social media outlets. This innovative approach to data collection, however, leverages existing infrastructure and a potentially unlimited workforce. The cost-sharing of data products results in low-cost bathymetry and other data and utilities that are valuable to many different interests. Since 2010, ARGUS has acquired more than 100 million soundings from a distributed fleet of vessels navigating U.S. and international waters.

Signals can be transmitted via WiFi or SATCOM and can be viewed in "real time," if desired. Each dot on a typical ARGUS solution depiction represents at least 140 soundings. Those soundings, initially reported without input for the state of the tide or other variables, are corrected automatically after transmission and before posting.

Unlimited Potential

Backend processing of the data from all participating vessels is used to provide the latest condition reports back to the vessels to optimize route planning and navigation safety, and in the case of the inland waterways, could be used to optimize barge loading based on the current depth conditions. The system can contribute to the Corps' mission at a minimum as a reconnaissance tool, highlighting for them areas that require expenditure of their resources vs. those that do not. ARGUS is a self-enabling technology for the inland waterways industry, providing condition reports at a fraction of the cost and at a speed many times faster than what it takes the Corps to provide updates to the waterway charts.

In early June of 2013, a demonstration was conducted in coordination with the Port of Pittsburgh Commission's (PPC) Wireless Waterways program. As reported in the October 2012 edition of ***MarineNews***, the $1.3 million wireless project was funded by a $975,000 federal port se-

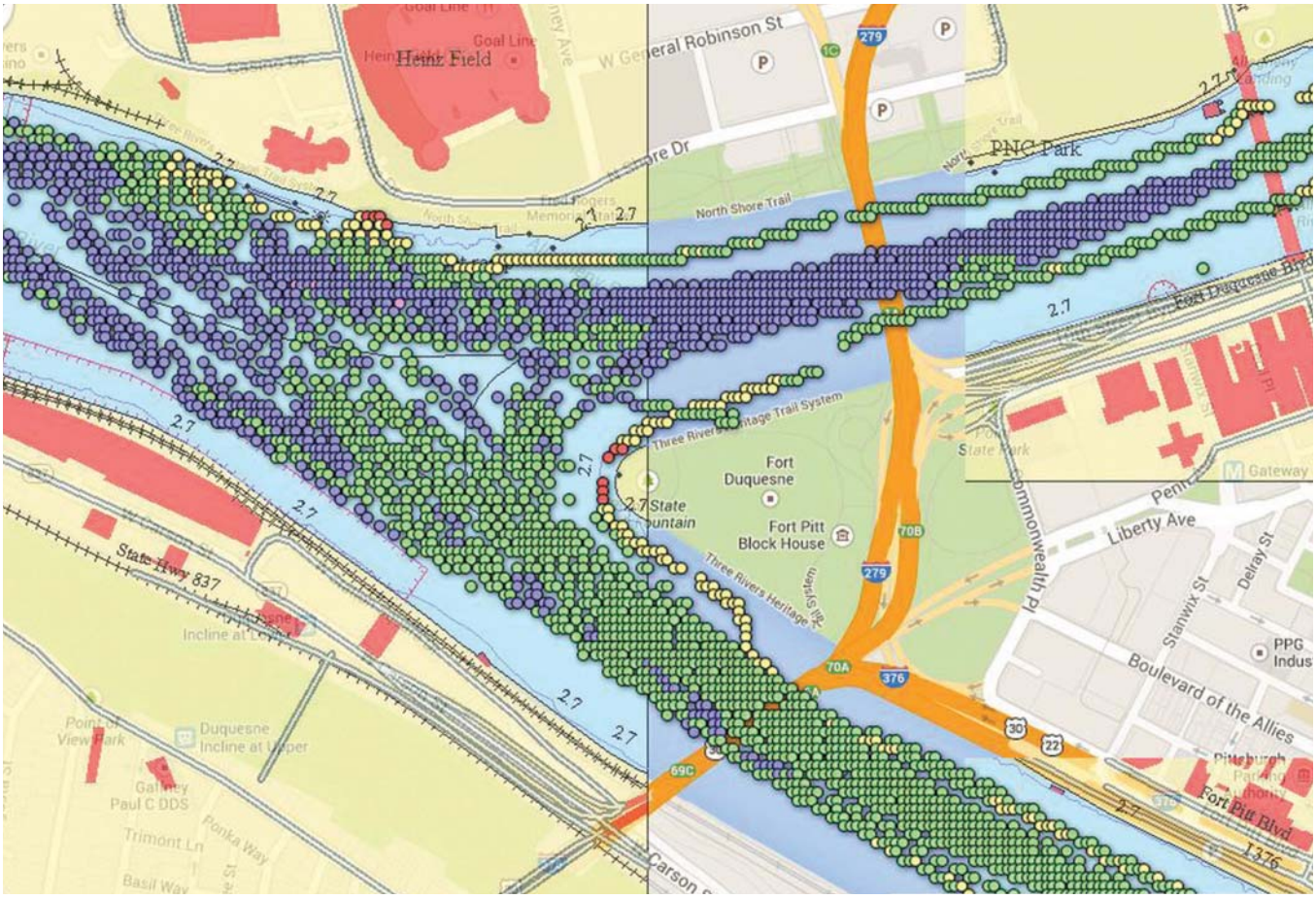
curity grant and $325,000 from the nonprofit port commission, an organization that supports the region's river transportation system. The event provided an opportunity for companies with technologies that could fit into the Wireless Waterways framework, and also contribute to needs of the Port to demonstrate those technologies. SURVICE participated with its patented ARGUS platform, deployed on the RiverQuest Explorer, on Campbell Transportation and Consol Energy vessels, and on the Platypus unmanned surface vessel. ARGUS solutions were displayed on the Maritime Situational Awareness Portal (MSAP) and refreshed every two minutes based on incoming data, providing real-time display of bathymetry updates through the wireless Portal. The solution sets, received from active vessels, truly represented a first in the application of crowd source bathymetry and went right to the heart of its purpose: *providing users with current information.*

Participants & Partners

Over time, many commercial, private and pleasure operators have participated in the ARGUS effort. Commercial firms such as McAllister towing, at least one Cruise Line operator (who did not want to be identified), Rivercrest (classroom), Campbell Transportation, Consol Energy, and the Platypus unmanned surface vessel have all at one time or another had ARGUS equipment deployed on board. Beyond this, ARGUS has collaborated on one level or another with the port of Pittsburgh, NOAA, the University of New Hampshire and many others.

Downstream Applications

Eventually, it is hoped that ARGUS will be a primary tool in helping to prioritize dredging areas, surveys and could also substitute for a dredging schedule that may not reflect real needs. In a world where cruise lines increasingly go to places not considered mainstream ports that lack reliable soundings, the participation of local boaters in the ARGUS scheme could provide real commercial value in that regard. Yachts and others cruising on intercoastal waterways could benefit immediately by using improved, community generated chart products at a fraction of the cost of current methods, and in places that haven't been surveyed in decades. And the Wave WiFi, integrated into the ARGUS onboard units for data offload, provides mul-



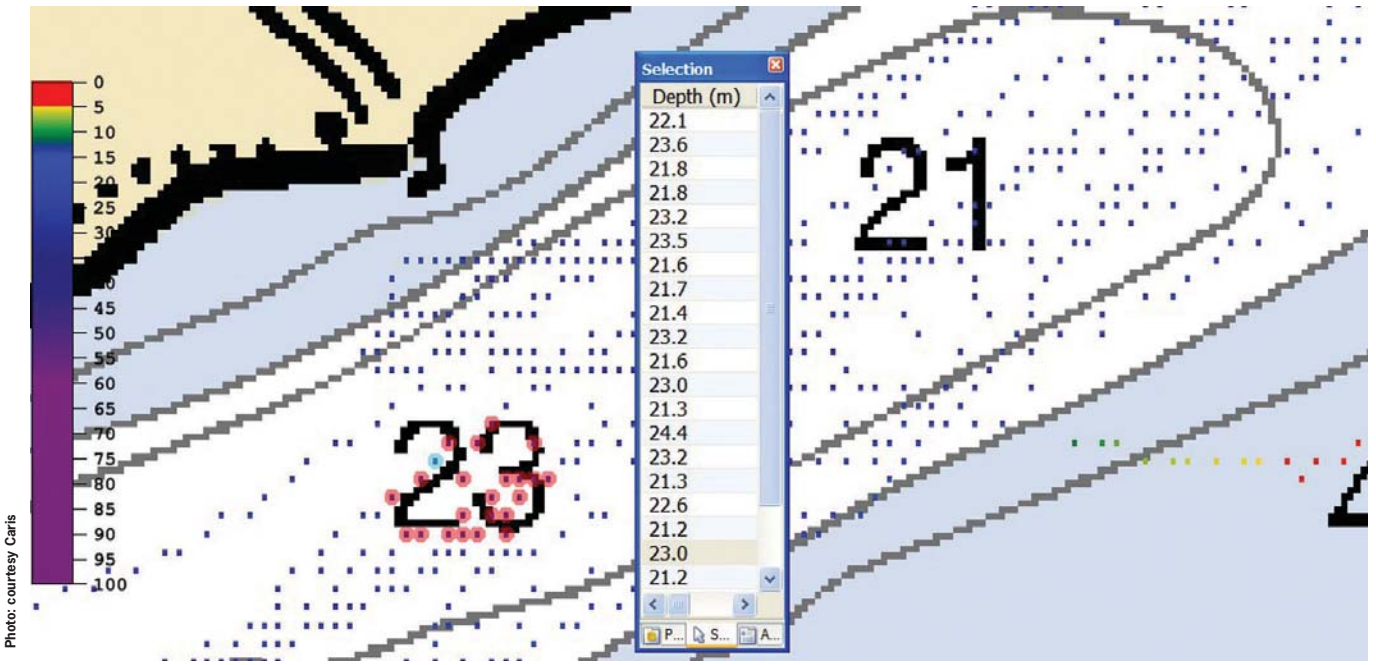


Photo: courtesy Caris

Screenshot of individual soundings around a particular datum point give mariners a clear view of actual conditions.

ICW Study Area						% of Soundings	
Start Location	Mile Marker	End Location	Mile Marker	Distance (mi.)	Total No. Soundings	Depths < 12'	Depths < 6'
Atlantic ICW (Norfolk, VA)	0	Fort Pierce, FL	965	965	277,078	9.1	0.1
VA/NC Border	35	Winn Bay	105	70	12,207	31.7	0.0
Bogue Sound	215	Carolina Beach	295	80	15,197	5.9	0.0
North Myrtle Beach	345	International Drive	360	15	7,390	13.3	0.0
Georgetown	400	Charleston	460	60	23,520	29.9	0.2
Edisto Island	500	Beaufort	535	35	11,517	14.7	0.2
Hilton Head Island	560	Savannah	585	25	12,163	6.1	0.0
Saint Catherine's Sound	625	Jekyll Sound	685	60	23,755	9.6	0.1
Fernandina Beach	720	Jacksonville Beach	745	25	10,748	10.6	0.4
Flagler Beach	810	Fort Pierce	965	155	34,528	14.9	0.3
Gulf ICW (Sand Ridge)	185	New Orleans	0	185	16,489	6.7	0.1
Sand Ridge	185	Gum Island	155	30	1,996	29.0	0.1
Cypremort	135	Mud Lake	120	15	587	19.6	0.0
Larose	35	New Orleans	0	35	3967	5.2	0.0

Source: ARGUS. This data not to be used for navigational purposes.

tipurpose Internet connectivity.

Most recently, ARGUS participated in a NOAA-led discussion at the University of New Hampshire Center for Coastal and Ocean Mapping (UNH-CCOM) on crowd-sourcing of hydrographic data. Eventually, says Hersey, ARGUS hopes to address the 100-year Federal surveying backlog. And, Hersey is looking at an ongoing research effort with Towson University to develop analysis tools specific to the temporal and spatial characteristics of the continuous stream of ARGUS data.

In Use Today

In a partnership with Cruisers' Net and EarthNC, a beta release of ARGUS solution sets for the ICW compatible with OpenCPN is now happening. According to Hersey, OpenCPN is a capable open source PC Navigation software application in use by a large following of recreational and commercial boaters. Eventually, ARGUS intends to further develop the integration of ARGUS solution sets, making them available through Cruisers' Net as a complement to other valuable information they provide.

There may be no more important issue to vessel operators today than the depth of the water under the keels of 40,000 commercial hulls crisscrossing the nation's waterways. Great Lakes operators put the exclamation point on that by illustrating how many tons of cargo is lost annually due to each inch of draft that is unavailable. Beyond the gray noise of complaining about the lack of maintenance dredging is the concern that depths on charts may be inaccurate. At least until now. If you plan to transit the ICW in the near future and depths less than 12 feet get your attention, then you might want to take a look at the chart.

Note that these are simple vessel observations that reflect tidal conditions, have not yet been corrected or added to the database for collective processing, and should NOT be used for navigation. Today, federal law provides for the waterway to be maintained at a minimum depth of 12 feet (4 m) for most of its length. But, as shown below – this isn't always the case. Moreover, depths on charts are typically referenced to a mean low water datum, and since the state of the tide isn't taken into consideration below, actual depths may even be less.

ARGUS represents the way forward for many applications, but its initial value may be found in merely taking advantage of the boat's depthsounder that's just ahead of you. And, that can be done today.

The ATB – What Does The Future Hold?

The AT/B comes of age: operating coastwise, Jones Act – and beyond the horizon, too.

Edited by Joseph Keefe

A great deal has been written about the capabilities of the AT/B, or "Articulated Tug/Barge" unit in recent years. Without a doubt, though, the concept is firmly established as a viable ocean and coastwise transportation system in North America. But like any transportation asset, the concept has to not only expand its' capabilities, but also conform over time to ever-changing rules and regulations. It must also be able to embrace and adapt to changes in technology that hold the promise of reduced emissions as well as savings in fuel and protection of the environment.

AT/B's recently placed in service as well as those on the drawing boards today, are indeed being designed around these principles and future AT/B's promise higher speeds per HP, lower fuel consumption and the application of all manner of "green" technologies in their construction.

Early On

The United States and Canada both built their modern coastwise transportation networks around self-propelled vessels. Once the age of powered vessels was born, the development of non-powered barges, towed by powered tugboats, began in earnest. The earliest barges were created from sailing vessels, and indeed, some even retained their sails, to assist in the movement of the tow. In fact, non-self-propelled vessels pulled by mules, or free-drifting in the current, had been common along North America's rivers and canals for many years.

When it came to offshore and coastal operations, towed barges had a lot of issues when held up to the light of both fuel consumption and schedule reliability. There was also a desire to increase the safety factor in tug and barge operations by exerting better control over a barge than to have it on a long towing hawser. Looking at the entire situation, the solution was obvious enough. Create a tug and barge that could operate with the crew of a traditional tug and barge, yet could be weather-reliable and safer to operate in heavy seas, with increased speed where that speed would be useful.

Pushing a barge yields better speed than towing it. By its very nature, towing involves adding enough resistance to a barge stern that it will "follow" the tug. If you are pushing, then you want that this resistance penalty is removed. So, various patents to connect a tug and a barge with a secure mechanical connection, were filed - all the way back into the 1800's. In the late 1960's, Edwin Fletcher with ARTUBAR, and the Bludworth family of flexible pushing systems, were pioneering efforts to marry the economies of pushing, with the safety/seakeeping inherent in mechanically linking the tug and barge at sea. Other systems were developed and tried; not all were successful.

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

Safety: Second to None

The safety record of the AT/B has been excellent. No double-hulled AT/B has ever been involved in a cargo spill incident and only one AT/B has been involved in a collision that resulted in a spill and that was judged to be human error on the part of the bridge crew of all three vessels involved in the collision – which included a ship. There has been no loss of life on an AT/B.

AT/B design specialist Robert Hill, Ocean Tug & Barge Engineering Corp.

The field of AT/B design has seen great advances in recent years. AT/B's were among the first tank vessels to adopt double hulled cargo tanks and AT/B tugs were among the first to employ double-skin fuel tanks. AT/B designers are also among the most prolific users of large-scale model testing and have been among the earliest commercial users of Computational Fluid Dynamics software to optimize their designs.

Today's naval architects include specialists in AT/B design and Robert Hill of Ocean Tug & Barge Engineering Corp., of Milford, MA has specialized in the design of AT/B's for many years. His success comes, in part, from a willingness to innovate. "AT/B design has more than kept up with the times," Hill told *MarineNews* in August. "We have, as an engineering-industry, worked tirelessly to stay ahead of the various technology curves and have even been responsible for many innovations that apply to other fields of ship design." He adds, "With all the talk of reduced bridge complements, the tug and barge industry has been safely running single-officer bridges for decades." Naval architects serving the tug/barge industry have long dealt with the needs of designing a vessel to be easily operable by a compact crew size, as well as making the boats themselves far more crew-friendly. That effort continues today. AT/B accommodations and designs

are among the most comfortable available – they have to be, given the problem the entire maritime industry has in attracting and retaining crew members. According to Hill, "The boats HAVE to be good and the principal designers in this field are collectively among the best multi-discipline naval architects in the world."

Built to Order: fit for purpose

Modern AT/B's are being increasingly designed for ship-like speeds. For example, OT&BE's "RAPID" class AT/B's will be capable of 15 to 16 knot speeds and the design is being used at this very moment in designs being prepared for AT/B's to carry containers and compressed/liquefied gasses. Hill insists, "It is not pie in the sky, nor is it a claim with no back-up to it." Today, AT/B's are being developed to run on LNG and to employ advanced, American-made diesel and gas-electric drive systems. And Hill insists, "These are not research projects – designs are being prepared for building." In OT&BE's office alone, designs are underway for refrigerated gas carriers, two types of container-carrying AT/B's, LNG bunkering AT/B's, the tug portion of an AT/B dredge, AT/B's for project cargoes, and a recent boom in inquiries for 110, 150 and 190,000 barrel capacity crude carrier AT/B's (reflecting the new prosperity in U.S. crude oil stocks and the rejuvenated U.S. coastwise tanker trades) has resulted in further design work. "We're all very busy," Hill says of the principal designers of AT/B's worldwide, "Not only here, but overseas as well."

Both vessel Owners and their charterers are asking more of the AT/B's they build and charter. They are looking for vessels that can save fuel, reduce their emissions, and provide top quality accommodations for the crews. The vetting process that AT/B operators go through when chartering vessels to oil companies and their subsidiaries, is the same vetting tanker Owners must deal with. Being a tug and barge does not allow for any "slack" in the requirements on any level. AT/B's are widely employed because, says Hill, "… they meet those requirements and they do the job they are chartered to do and they do it safely and efficiently"

Horses for Courses: here and everywhere

Today, AT/B's operate on transoceanic routes; they operate from the Gulf Coast to the east coast, to South America, and even to Europe. From the west coast they service Alaska, Hawaii and the Pacific Islands. One even runs military equipment to far-away bases. Bulk units move everything from coal to grain to rock, to iron ore, to virtually any mineral needing transportation. Tank barges move a huge range of crude and refined product as well as chemicals and liquefied gasses. They take dangerous cargoes off rail lines and highways and route them safely at sea as opposed to moving them through cities and towns. That's not to say that the AT/B is a universal panacea for any sort of ocean trade route. That said; where an AT/B can fit into a particular slot, it will generally do it VERY well.

AT/B's Evolve: shipyards, too

As AT/B Designers, Owners and Crews are evolving – so, too, are the shipyards that build these boats. The so-called "Second Tier Shipyards" – the yards that build many of the AT/B's – are anything but second tier today. Many have become specialists in the building of AT/B's, utilizing modern infrastructure that rivals some of the larger commercial shipyards. Hill notes that all of the fine design work in the world means nothing, if an equally fine builder isn't there to make

the design come to life.

Over time, Ocean service AT/B's have been built in Maine, Rhode Island, Florida, Alabama, Mississippi, Texas, Louisiana, Oregon, Washington, Pennsylvania, Wisconsin, Ohio, Michigan and Indiana. The industry has provided shipbuilding jobs in fourteen states. AT/B ocean barges are built in inland river shipyards and their attending tugs can be built in an even wider range of coastal small vessel construction yards. Collectively, these shipyards are among the most productive in the world and according to Bob Hill, even foreign AT/B customers are looking to American yards to build their AT/B's. "It is a trickle, right now, but it is there and if what my clients are saying turns into contracts, American yards may be building soon for overseas clients." Indeed, they are already doing so in other sectors. AT/B's could be next.

Innovation and Improvements

AT/B's have kept apace of their single hull counterparts include Emissions and Environmental Protection, Crew Comfort, Fuel Consumption, Constructability, Reliability In Service and expansion of services & trade routes. Beyond that, electric drive systems employing multiple generator/VSG/DC Bus/PM motor and generator configurations have the potential to reduce duel consumption on certain AT/B's by over 20%. A Jones Act AT/B gas carrier slated to go to shipyard bid in December of this year and another, a container AT/B are both similarly designed with these features. Innovative solutions to both hull production and assembly are being carried out by Senesco Marine, while VT Halter has produced the largest class, and second largest class of AT/B's to date. The extensive use of 3D CAD design in both design offices and shipyards, makes it possible now to expand the kinds of hulls that can be created in the name of higher speed.

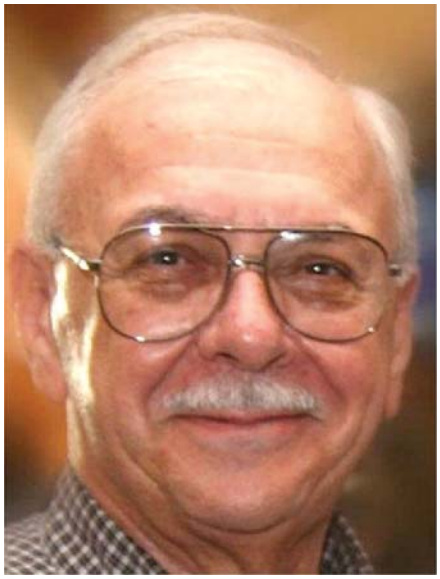
Looking Ahead & Back …

New trade opportunities assure that new kinds of AT/B's will be built in the future. From small landing craft type, multi-purpose units designed to supply outlying Aleutian Islands with the necessities of life, to LNG carriers, to specialized chemical carriers, to the first vessels designed to fulfill the Marine Highway (shortsea shipping) promise, these versatile vessels are finding their way into the American merchant fleet in ever-increasing numbers. The same holds true in overseas markets as well.

What was once labeled by opponents as a "sorry excuse for a ship," the AT/B has gone about its business, proving time and again that it has earned a well-justified place in the world's merchant fleets.

Remembering an Industry Icon

Paul B. Candies, Sr., *11/23/1940 – 7/21/2013*



When Paul B. Candies passed away suddenly on July 21, 2013, the lifelong resident of Des Allemands, LA left behind a prolific, enormously accomplished family and one of the most well-respected marine services and vessel operations firms on the planet. His passing also opened our eyes to the breadth and depth of an individual whose influence and impact extended far beyond the sometimes insular world of maritime commerce. Fitting far more into his time here on earth than others living much longer, the waterfront – although supremely important to him – was only one of many parts to Paul's life. And everything he took on, he did with zeal and ultimately, produced with excellence.

MarineNews readers knew him as President and Chief Financial Officer of Otto Candies, LLC, the company founded in 1942 by his Father, the late Capt. Otto Candies. He was a graduate of Southeastern Louisiana University, and along the way, served in the United States Coast Guard. Unbeknownst to many in the maritime world, he was also Founder and Co-Owner of the legendary drag racing team Candies & Hughes, and Chairman of the International Grand Isle Tarpon Rodeo for more than 30 years. His racing team was in 1999 enshrined into the International Drag Racing Hall of Fame. In his spare time, he was said to be an avid dove hunter and enjoyed spending time hunting in Argentina. Married for 48 years to Rita Daigle Candies, he also left two sons, two brothers and countless other close relatives. Many of the Candies family members (at least 15, by our count) today are active in the operations and management of Otto Candies, LLC.

As President and CFO of Otto Candies, he oversaw a fleet of more than 100 vessels serving the offshore oil and gas industry worldwide. Along the way, he was part of the company which, among other things, is known as the first to transport an oil production platform from Houston to the North Sea, for its response to the Exxon Valdez spill in Alaska, as the first to transport a full refinery from Houston to Puerto Rico, and even the specialty transport of the enormous Saturn V rocket to Cape Kennedy, FL. Like his affiliations to the world of drag racing, rodeo and a dozen other interesting pastimes, whatever Paul Candies did, he was a winner.

Nicki Candies, Otto Candies Director of Government Affairs and Public Relations, perhaps summed up the man best when she told *MarineNews* in August, "From my perspective as his niece, he was a loving, fun, family man who was dedicated to our family and to our company's success. He was always present in our lives – both personally and professionally. His leadership and guidance will be missed."

Underscoring that reality were the estimated 1,000+ people who came to mourn at his funeral, but instead ended up helping to celebrate a life well spent. Those attending, appropriately enough, hailed from all walks of life and represented the full expanse of Candies' far reaching world. Drag racers, politicians, local dignitaries, law enforcement officers, mariners and the maritime community itself honored Candies in a very public manner that, for the most part, he shunned as he went about his daily business in life. Clearly, Candies will be missed as much for what he accomplished away from the office as he will be for his efforts in his chosen profession. That's something we can all aspire to.

Paul B. Candies, Sr.; gone but not forgotten.

PPG Announces Executive Appointments


Davies


Braun


Navikas


Sklarsky

PPG Industries has announced several executive appointments. Frank S. Sklarsky, executive vice president, finance, will be appointed executive vice president and chief financial officer, as previously announced, and will continue to serve on PPG's executive and operating committees. David B. Navikas, senior vice president, finance and chief financial officer, will be appointed senior vice president, strategic planning and corporate development. Navikas also continues to serve on the executive and operating committees. Kevin D. Braun, general manager, silica products, will be appointed vice president, global raw materials and Americas purchasing. Jeffrey C. Davies, managing director, corporate development, will be named vice president, corporate development, and become an officer of the company.


Pyne


Riedel


Bryson


Glover

Coast Guard Foundation Honors Pyne and Coast Guard

The Coast Guard Foundation, a nonprofit organization committed to the education and welfare of Coast Guard members and their families, announced that its 33rd annual Salute to the United States Coast Guard will honor the bravery and heroism of U.S. Coast Guard members across the country and pay special tribute to Joseph Pyne of Kirby Corporation for his strong support of the Foundation that benefits the Coast Guard's service members. Pyne, a Coast Guard Foundation trustee, has served as President and now Chairman and CEO of Kirby Corporation since 1995, and as a Director since 1988.

Riedel Joins Global Diving & Salvage

Global Diving & Salvage, Inc. has announced the hiring of Jim Riedel, joining the Pacific Northwest Environmental Division. Based out of the Seattle corporate office, Mr. Riedel will assist in the management of existing preventative booming operations as well as the pursuit of additional opportunities in the Puget Sound and surrounding areas. Jim Riedel brings over 17 years in the Environmental Services industry at National Response Corporation (NRC).

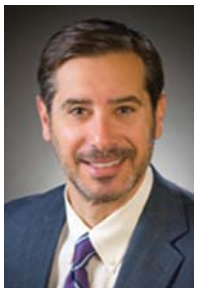
Willard Marine Adds Three to Professional Team

Willard Marine, Inc. recently announced the addition of three new members to their operations and engineering team. Richard Bryson will join Willard as Director of Engineering. With over 20 years of maritime experience, Bryson was previously with Derecktor Shipyards, Christensen Shipyards, and Heisley Marine Corp. David "Smokey" Glover will join the Virginia Beach facility as Director of Operations. Glover's career in the maritime industry dates back to 1974 when he completed a four-year apprenticeship as Marine Machinist for Norfolk Naval Shipyard. He went on to work as both a Shipbuilder and Operational Manager with SUPSHIP Portsmouth and Bluewater Yacht Sales before dedicating 13 years to the Naval Surface Warfare Center as a Mechanical Engineer Technician. Rolf Engstrom joins Willard's as an electrical engineer. Engstrom last worked as a Senior Test Engineer for Fisker Automotive, Inc., while having previously been with McDonnell-Douglas Information Systems Group, Verigone, and Exadigm, Inc.

AGLPA Elects New Leadership

Members of the American Great Lakes Ports Association (AGLPA) elected new leadership at their annual summer meeting held this year in Oswego, NY. The new president is William Friedman, President & CEO of the Cleveland-Cuyahoga County Port Authority. Friedman became president and CEO of the Cleveland-Cuyahoga County Port Authority in June 2010. Dean Haen, director of the Brown County Port & Solid Waste Department in Green Bay, will serve as vice


Engstrom


Friedman


LaMarre


Haen


Ludwig


Sutton

president. The secretary-treasurer position will be held by Paul LaMarre, port director at the Port of Monroe (Michigan). The term of office is two years.

Coast Guard Foundation Hires Northeast Director

The Coast Guard Foundation, a nonprofit organization committed to the education and welfare of all Coast Guard members and their families, announced today the addition of Susan Ludwig to its staff as Regional Director of Philanthropy. Ms. Ludwig Joins the Coast Guard Foundation after six years in development positions for the Norwalk Hospital Foundation. Prior to her philanthropy work, she held sales positions at IBM and Apple.

Sutton Sworn in as Saint Lawrence Seaway Administrator

U.S. Transportation Secretary Anthony Foxx last month administered the oath of office to former U.S. Congresswoman Betty Sutton who becomes the tenth Administrator of the U.S. Department of Transportation's Saint Lawrence Seaway Development Corporation (SLSDC). Administrator Sutton represented Ohio's 13th Congressional District in the U.S. House of Representatives from 2007–2012. Sutton was a member of the Energy and Commerce Committee and was co-chair of the Congressional Jobs Task Force.

Art Anderson Associates Strengthens Team

Anderson Associates has two new team members: Stephen Gatz and Marc Derenburger. Gatz, PE is a naval architect working in the firm's marine group, while Derenburger joined the facilities group as an entry-level mechanical engineer. Gatz brings a diverse background in naval architecture & marine engineering design, marine research and development, and marine operations. Derenburger is a recent graduate of Washington State University.

Delta "T" Adds Miller to HVAC Team

Delta "T" Systems has announced the appointment of HVAC veteran Bob Miller to its staff. In his role as HVAC specialist of the new Delta "T" Complete vessel ventilation program, Miller's goal is to set a new benchmark of reliability in marine heating, ventilation and air conditioning (HVAC) systems. Beginning with nine years of submarine service in the US Navy, Miller's experience with HVAC systems extends from engineering to servicing. This includes service provision for some of the largest marine contractors in the world, as well as a stint as crew engineer on a 127' auxiliary ketch. Most recently, Miller helped develop the AC and refrigeration shop at Viking Yachts Service Center.

OW Bunker Appoints New Regional Manager

OW Bunker announced that Adrian Tolson has been appointed to the new role of Regional Manager for the company's North American operation. Mr Tolson joined OW Bunker in October 2012 to develop the physical division in North America; he will now head up both trading and physical operations.

Bell, Ryniker & Letourneau Join Blank Rome

Blank Rome LLP has announced that all eight attorneys of Bell, Ryniker & Letourneau, P.C. – a Houston, Texas maritime law firm – joined Blank Rome today in the Firm's Houston, Texas office. These additions further enhance Blank Rome's Houston presence and maritime and energy practices, while expanding the depth and scope of services that Bell, Ryniker & Letourneau provides to its clients.

This group of attorneys and additional professional staff bring significant experience in maritime and energy law, in addition to the areas of insurance, transportation, government contracts and construction. Michael K. Bell, Keith B. Letourneau, and Douglas J. Shoemaker join as partners; Robert J. Ryniker, and James C. Arnold join as of counsels; and Mitchell R. Machann, Tracy Freeman, and David G. Meyer join as associates.

KPI Bridge Oil welcomes Bunker Trader/Broker to NY Office

KPI Bridge Oil has appointed Mr. Jordan Felber as Bunker Trader/Broker in its New York Office. Jordan initially joined KPI Bridge Oil in 2008 from a position with Global Transportation Services as Area Sales responsible and stayed with the company until end 2011. Jordan has spent the last 1.5 years as a bunker purchaser with a large ship owner.

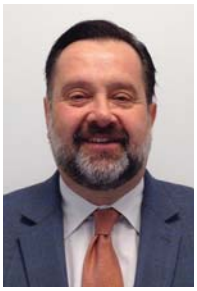
Carlile Transportation Systems Names Henri Legal VP

Henri will be responsible for setting


Gatz


Derenburger


Miller


Tolson


Bell


Felber

the strategy and business plan for Carlile's LTL and Facility locations. He joins Carlile most recently from Western Canada Express, Inc. where he was the Vice President, Western Canada Operations and Vice President, Portside Warehousing and Distribution. Legal is familiar with Pacific Northwest and Canadian markets, having worked in both markets for many years.

New Trader with Dan-Bunkering (America)

Dan-Bunkering (America) Inc. announced that Camilo F. Jimenez has been employed as Bunker Trader.

Camilo is fluent in English, Spanish, French and Italian. He has previously been working as a trader of energy derivatives. Camilo has joined the sales department of the worldwide bunker trading company's office in Houston, TX, which opened last year.

AEU Safety Awards Presented at ALMA Conference

The American Equity Underwriters, Inc. (AEU) presented the 2012 Safety Awards at the annual American Longshore Mutual Association (ALMA) Conference in Punta Cana, Dominican Republic. The awards are given each year to the best performing ALMA members and are based on the number of accidents and the severity of accidents for the calendar year. This year's award winners included Linea Peninsular, Inc., US United Bulk Terminals, DPH Holdco, LLC, Beacon Maritime, Inc., Candies Shipbuilders, LLC, Signal International, LLC, Austal USA, and receiving a Special Marine Industry Safety Award, W & T Offshore, Inc.

Superior Performance Promotes Hodge

Superior Performance Inc. has promoted Bobby Hodge to sales manager. Hodge brings a thorough understanding of sales and customer relations to this role. He holds two degrees from McNeese State University in accounting and computer science.

Konopasek Attains ABS LNG Certification

Jim Konopasek, president of Maritime Design, Inc., has recently attained certification from the American Bureau of Shipping in the design and construction of LNG carriers at the ABS Shanghai office. Maritime Design assists Jones Act vessel operators in conveying their small scale LNG fleet needs through early development to construction. Konopasek has been involved in the design, engineering and consulting of many specialized vessel types.

Fidelis Group Holdings Launches Inland Division; Helfers, Uzzo new MD's

Fidelis Group Holdings, LLC (FGH) through its subsidiary company Continental Underwriters, Ltd., announced the formation of its new Inland Marine Division. Ed Helfers and Lisa Uzzo were named Managing Directors in charge of expanding the Company's existing Inland Marine portfolio utiliz-


Jimenez


AEU Award


Hodge


Konopasak


Brown

ing the Company's national platform. H. Elder Brown, Jr., FGH's Chairman and Chief Executive Officer said the new division will be underwritten through FGH's established relationship with Houston Casualty Company, a subsidiary of HCC Insurance Holdings, Inc. (NYSE: HCC) rated A+ by A.M. Best. The group will underwrite a broad-based Inland Marine portfolio on a national level.

GL Group Strengthens Offshore Wind Leadership Team

The GL Group has recently strengthened its offshore team with two appointments: David Robertson who takes on the role of Head of Practice for the UK Marine and Offshore Project Management Services and Elaine Greig who is the new UK Head of Offshore at GL Garrad Hassan. Robertson's career in renewables began after 13 years in the onshore petrochemical industry. Elaine brings with her over 20 years of experience in developing and constructing wind farm projects, from site finding and feasibility, to onshore and offshore operations.

Dometic Marine Expands to Gulf of Mexico

Dometic Marine has established a new base in the Gulf of Mexico as part of its strategy to target further business in the commercial sector. The addition of the facility in Slidell, LA, to its global network places the HVAC and toilet systems specialist at the heart of the United States' commercial market. Nathan Farr, OEM Account Manager, Dometic Marine said that the new office in Slidell will improve customer service and response times to existing clients and help us to secure new business in other sectors.

Contract Awarded for Rescue 21 in the Western Rivers

As part of the ongoing National Distress and Response System (NDRS) Modernization Project (Rescue 21), the U.S. Coast Guard competitively awarded a contract August 5, 2013, to Eyak Technology LLC for design, delivery, installation and support of Rescue 21 capabilities in the Western Rivers. Rescue 21, the Coast Guard's advanced command, control and communications system, was created to better locate mariners in distress and save lives and property at sea and on navigable waterways. By harnessing state-of-the-market technology, Rescue 21 enables the Coast Guard to execute its search and rescue missions with greater agility and efficiency. The total value of the contract, with all available options, is $22 million. Under a separate contract, the Coast Guard is also in the process of implementing Rescue 21 capabilities in Alaska.

Interior Officials Convene Safety Meeting

Bureau of Safety and Environmental Enforcement (BSEE) Director James Watson and Acting Assistant Secretary for Lands and Minerals Management Tommy Beaudreau convened a meeting last month in Houston with senior executives from the offshore oil and gas industry to continue the dialogue on improving safety in offshore operations, particularly in shallow water in the Gulf of Mexico. The meeting followed three loss of well control incidents in shallow water operations since February. All three incidents resulted in no significant injuries or pollution, but a November 2012 explosion that occurred during maintenance activities claimed the lives of three workers. Secretary of the Interior Sally Jewell joined the meeting by video teleconference to reinforce the Administration's strong commitment to safe and responsible domestic energy production.

New Cargoes Boost St. Lawrence Seaway Commerce

Despite a downturn in overall cargo movements through the St. Lawrence Seaway in July (down 12.5 percent over 2012), new cargoes and new vessels signaled continued confidence in the future of the navigation system. Several U.S. ports welcomed a variety of heavy lift cargoes destined for projects throughout the region. At the Port of Cleveland, international cargo volume jumped 77 percent in July compared to the same time last year. Year-to-date, the port is up nearly 4 percent compared to 2012.

The port continues to benefit from last year's expansion of its on-dock rail system and expects to see more new types of cargo this year. New business ventures and unique cargoes were not the only highlights last month. U.S. ports also welcomed new, environmentally ad-

Watson

Robertson & Grieg

Farr

Jaenichen

vanced vessels from Canada Steamship Lines (CSL). Year-to-date cargo shipments for the period March 22 to July 31 were 15.3 million metric tons.

Marad Announces $9.46 Million in Shipyards Grants

The U.S. Department of Transportation's Maritime Administration (MARAD) recently announced $9.46 million to help improve 12 shipyards in 10 states. The grants, provided through the Small Shipyard Grant Program, foster efficiency and modernizations that allow shipyards to compete more effectively in the global marketplace. Acting Maritime Administrator Paul 'Chip' Jaenichen made the announcement at Jeffboat, LLC, located in Jeffersonville, Indiana. MARAD received 113 grant applications requesting $96 million in assistance, exceeding the $9.46 million available for the grants. The grants fund a variety of projects including infrastructure improvements and equipment upgrades. Jeffboat, LLC, received an $845,817 grant which will allow it to adjust the width and orientation of one of its vessel lines, helping the facility to enhance efficiency. A complete list of shipyards receiving grants is at: http://www.marad.dot.gov/documents/Grant_Awards.doc

PRODUCTS

Volvo Penta D13/16 Marine Diesel Engines

Volvo Penta brings heavy-duty power with state-of-the-art Tier 3, in-line six-cylinder diesels with electronically controlled unit injectors, twin-entry turbo and intercooler. The engines produce high torque at low RPM and low emissions levels – important qualities in a workboat. The D16 is a rugged workhorse for larger vessels, with power ratings ranging from 501 to 751 hp. The D13 engines, with power ratings of 400 to 700 hp are available as a propulsion system (D13 MH) or as a marine genset (D13 MG). The D13 can run Volvo Penta IPS steerable pods, straight-shaft drives or water jets.

www.volvopenta.com/us

Clean Hybrid Technology Gets EPA Verification

Clean hybrid technology, already proving its value today, has received verification from the U.S. Environmental Protection Agency (EPA). The EPA verified the XeroPoint Hybrid Tug Retrofit System (XeroPoint) pioneered by Foss Maritime and Aspin Kemp and Associates (AKA). The rigorous EPA verification process ensures the XeroPoint hybrid system is an effective choice on any U.S. harbor tug seeking to meet the nation's highest environmental standards. The ports of Long Beach and Los Angeles and the California Air Resources Board also have partnered with Foss and AKA on the XeroPoint hybrid retrofit system.

www.foss.com

Voith Propulsion for Fireboats

Voith will provide Voith Schneider Propellers and turbo couplings for two fireboats designed by Robert Allan Ltd. for the Port of Long Beach. The vessels are being built by Foss Maritime, with delivery scheduled for both in 2014. Designed for operating speeds of 13 knots the design is based on the Voith Water Tractor principle. The fireboats will be equipped with two Voith Schneider Propellers, VSP 26GII/165 AE45, each in the vessel. The relatively short VSP blade length allows the fireboats to enter shallow areas to perform onshore firefighting, without compromising safety.

www.voith.com

Scania's Marine Engines Ready for EPA Tier 3

Scania has retained all performance benefits found in the Tier 2 Scania engine, and improved them to comply with legislation for Tier 3. The Scania Marine engine range for EPA Tier 3 includes enhanced environmental performance, increased power, and unchanged fuel consumption. The engine range consists of a 13-liter Inline six and a powerful 16 liter V8 for both marine propulsion and marine auxiliary applications. EPA Tier 3 emission standards come into effect on 1 January 2014 for 75 kW to 3000 kW engines, and 1.2 to 2.5 liters of displacement per cylinder.

www.scaniausa.com

John Deere Power Systems

John Deere Power Systems manufactures and markets diesel engines to meet marine customer needs in commercial and recreational applications worldwide. John Deere PowerTech marine engines are built for power, reliable performance, long life, fuel efficiency, quiet operation, ease of maintenance and simplified integration. The John Deere lineup of propulsion engines offers power ratings from 56 kW to 559 kW (75 hp to 750 hp). John Deere also supplies generator-drive and auxiliary engines to the market. Engine models are available in every required emissions level.

www.JohnDeere.com/marine

MAN 32/44CR Units to Power Offshore Construction Ship

MAN Diesel & Turbo has won an order to supply the main gensets for a multi-layer vessel newbuilding, recently commenced by Lloyd Werft Bremerhaven AG. The Ceona Amazon will be equipped with 2 × 9L32/44CR + 4 × 8L32/44CR main gensets, providing a total output of 28MW. The 32/44CR has gained a strong foothold in the offshore market due to its second-to-none power and SFOC. MAN Diesel & Turbo reports the new order as being the third significant 32/44CR order the company has secured in the offshore market this year alone.

www.mandieselturbo.com

High Speed Ferry Powered by Wärtsilä Waterjets

Wärtsilä has provided waterjets for the world's fastest ferry. In addition to two of its LJX1720SR axial waterjets, Wärtsilä has also supplied an advanced propulsion control system for the 'Francisco'. Wärtsilä's waterjets incorporate a high level of efficiency, with compact dimensions enabled the waterjets to be installed within the ferry's transom, thus saving valuable space. Wärtsilä's Lipstronic 7000 propulsion control system for maneuvering the vessel gives effective, reliable control of all the waterjets and is very easy to use. Designed in accordance with IMO regulations, it fulfills requirements of leading classification societies.

www.wartsila.com

Torqeedo Electric Engines Power Tour Boat

No visit to the Oklahoma City Zoo feels complete without a cruise aboard the popular Safari Voyage, a guided boat tour on tranquil Zoo Lake. Thanks to a recent conversion to Torqeedo Cruise 4.0 engines, the zoo's fleet now delivers dependable, uninterrupted service for the nearly one million guests annually. The zoo cruise relies on two 40' x 12' pollution-free electric boats, each with a 50-passenger capacity. The demands of heavy commercial usage resulted in significant engine overheating and dependability problems. The recently installed Torqeedo Cruise 4.0 models solved the zoo boats' issues.

www.torqeedo.com

Build Your Own ATL FueLocker

Aero Tec Laboratories (ATL) is offering their world-renowned custom fuel bladder services to the yachting community. ATL's series of FueLocker fuel bladders provide a vital auxiliary fuel source that allows yachts to reach exotic destinations without the burden of their vessel's limited fuel capacity. ATL realizes that deck space is extremely valuable. In most instances, standard deck mounted rigid tanks are cumbersome and simply consume too much space. When not in use, all ATL bladders are completely collapsible which makes for effortless transport and compact storage.

www.boatbladders.com

Emsys Selected for Scrubber Monitoring Applications

Emsys, the laser based emissions monitoring system from US technology firm W R Systems, Ltd. (WR), have now been selected as the compliance monitor system on 5 differing scrubber types. The Emsys system uses laser sensor technology with which exhaust gas is measured in the same form as in the stack and not conditioned, cooled or dried. The laser allows accurate measurements of emissions at low gas temperatures with high humidity present in the exhaust stream. Significant benefits of the technology are based around the elimination of consumable spare parts and regular maintenance.

www.emsysmarine.com

Krill Systems Bunkering System Software

The advanced, Krill Bunkering System software (KBS-100) can be ordered as a separate stand-alone system, incorporated into an existing Krill system, or ordered as part of a larger Krill VFMMS system. Krill Bunkering System uses OIML/MID approved mass-measuring meters to minimize inaccuracies found in two and three phase HFO transfers. Flow Rate, Temperature and Density are displayed in real time and a display area shows the total volume of bunkers delivered, ticket number, start and stop times. Back-flow oil is measured as a negative and reflected as bunkers not having been delivered.

www.krillsystems.com

New STAUFF Mini Water Vac Cleans Oil Continuously

The STAUFF Mini Water Vac purifies hydraulic system oil, eliminating water, gas and particulate matter, dehydrating and cleaning most types of oils such as lubricating, hydraulic, transformer, and switch oils while it neither removes nor alters oil additives. The water removal process is based on pure vacuum evaporation inside a vacuum chamber at a maximum temperature of +65 °C / +149 °F. Solid particle removal is achieved through a STAUFF Systems Micro Filter. The Mini Water Vac offers protection against malfunctions, breakdowns and system failures, while reducing oil consumption and oil disposal.

www.stauffusa.com

PRODUCTS

S3 Smart Sulphur Switch

The S3 system is able to always blend and adjust two fuels to desired sulphur content as well as documenting sulphur content, enabling monitoring and control of sulphur emissions. The primary market for the S3 Smart Sulphur Switch is for vessels that occasionally need to enter an ECA. The secondary market is for vessels, for example ferry operators in the Baltic who choose to install scrubbers that cannot handle more than 2% sulphur content due to space considerations. These operators can freely purchase the cheapest available HFO and blend down.

www.insamarine.com

Pettit Launches Hydrocoat Eco

Pettit has launched the latest product in the Hydrocoat line up, Hydrocoat Eco. Incorporating Pettit's self-polishing, water-based, ablative technology with an organic biocide, Hydrocoat Eco combines a slime fighting inhibitor with multi-season protection. Pettit's innovative technology replaces the harsh solvents found in most bottom paints with water. With no copper to cause galvanic corrosion issues, Hydrocoat Eco is the perfect choice for bronze IPS and jet drives, outdrives and outboard motors. Hydrocoat Eco will not lose effectiveness when removed from the water. Hydrocoat Eco is available in five colors.

www.pettitpaint.com

Jotun Introduces Resilient Antifouling Coating

Jotun has launched SeaLion Resilient, a high performance marine coating based on epoxy-polysiloxane technology. Jotun's anti-fouling coating includes a compound of resins and hardeners that provides highly resilient hull protection. When combined with Jotun's proven Fouling Release Coatings (FRC) technology, the epoxy-polysiloxane in SeaLion Resilient prevents settling of organisms on the hull and produces a glossy, smooth surface optimized for owners seeking to reduce costs related to dry-docking and maintenance. Resilient is a biocide-free coating and has low VOC emissions, making it a sustainable coating solution.

www.jotun.com

Hartzell Quality with New Powder Coat Booth

Hartzell Air Movement is now offering powder coated products The addition of a new paint booth will increase product consistency and quality control. This new process is also safer on the environment compared to liquid paints since it does not contain any solvents. Powder coating is universally accepted and specified as the Best Available Control Technology (BACT) to reduce air pollution. Hartzell Air Movement is a manufacturer of industrial air moving solutions to a variety of markets throughout the world. The company manufactures in Ohio, Indiana, and Singapore.

www.hartzellairmovement.com

Hempel Coatings

Hempel Coatings, a world leader in Marine and Protective Coatings, develops and produces high standard coatings with the same consistently high quality since it was established in 1915. Hempel provides protection for all types of marine vessels. Hempel's coatings and its Fouling Control series are a Class-A solution, and Hempel offers the latest technology in fouling release guaranteeing fuel savings and less CO2 emissions. Hempel's network of stock points, Coating Advisors and Sales Professionals are strategically placed in the world to ensure that they are always able to satisfy customers with the optimum quality and service.

www.hempel.us

Nyalic Coatings

Nyalic is a clear, ultra-thin resin coating. Widely used on workboats to protect metal, fiberglass, painted surfaces, plastics, and electrical and mechanical connections from salt, chemicals and UV damage, a properly applied coating gives a minimum of 3 to 5 years of protection, generating cost savings in maintenance. Nyalic is an ideal surface protectant for highly moist and corrosive environments. Designed to withstand extreme temperatures, it is also a non-conductive polymer coating, effective in preventing corrosion failure of electrical components. Nyalic performs at film thicknesses as low as 5 microns and does not cause heat build-up.

www.nyalic.com/marine

Thermal Coating Company Penetrates Marine Market

Tri-State Coating And Machine Co., Inc., began operation in March 1987 servicing the marine industry. TSC has become one of the world's largest producers of hard-coated liner sleeves. TSC knows the abuse that workboats, push boats, and tug boats endure from dirty, brackish, and corrosive salt water calls for liners that are a cut above the rest. Let TSC handle all your tail shaft liner needs. If you have a need that requires qualified personnel and you wish to discover savings while achieving optimal running time, TSC can be your solution.

www.tscminc.com

Ecospeed Coating System

Ecospeed is an impermeable and extremely tough underwater hull coating system that lasts the lifetime of the vessel and permits cleaning whenever needed during a vessel's sailing life without damage to the coating. The coating's surface texture will even improve over time with regular in-water hull maintenance. This keeps the hull at its smoothest and results in a major saving in fuel. The decrease in fuel consumption thus obtained contributes to the reduction of carbon footprints, and the fact that Ecospeed is a 100% non-toxic technology makes this system extremely environmentally benign.

www.hydrex.be

Fathom's FREE Guide to Vessel Lubricants

Fathom have launched a brand new, free publication series for the maritime industry. The inaugural edition, entitled Fathom FOCUS: Choosing the Optimum Lubricant Solutions for Your Operation is a practical guide that gives operators and managers crucial support in understanding how they can reduce vessel operating costs and improve lubrication performance. At over one hundred pages in length, this comprehensive publication critically and comprehensively examines lubrication solutions, from the formulation and chemistry of the products to optimization methods to the current status of the market and regulatory pressures.

www.fathomshipping.com/the-guides

AVEVA: 3D Laser Scanning Improves Shipyard Efficiency

AVEVA has published a business paper – 'On the Beam: How 3D laser scanning technology brings new opportunities in ship refitting and conversion'. In this paper, AVEVA examines how rapid, accurate and non-intrusive 3D laser surveying can increase shipyard capabilities to meet the coming surge in demand for ship conversion and refit projects. Early availability of detailed and accurate 3D surveys from laser scan data enables shipyards to plan the project, design the refit and procure materials ready to begin work as soon as the vessel reaches the repair dock.

www.aveva.com/onthebeam

Sea-Fire's Triton 8 Alarm Panel

With commercial vessels, being able to efficiently pinpoint the source of fires enables quicker response. The new Triton 8 Fire Alarm Panel from Sea-Fire is an addressable system enabling up to 256 detectors or manual call points. Reporting not only smoke or fire, but potential hazards such as short circuits, the Triton 8 bears DNV Type and ABS Design approvals. The system's 8 loops have 32 configurable zones. This system is superior to traditional two-wire, zone-based alarm panels, reducing the amount of installation wiring.

www.sea-fire.com

Nv Charts 'Virtual Chart Shop' Web Site

Nv Charts announces the launch of www.nvcharts.com, a new interactive web site and e-commerce site for all of the company's charting and navigation products, customer service, and all things 'Nv'. The new website features an improved homepage design, cleaner layout of page content, and an intuitive and consistent site-wide navigation system. It is also accessible through a wider range of web browsers and devices, including mobiles and tablets. The new Nv Charts App, a simple-to-use Free app for iOS and Android mobile devices can be downloaded directly from the new web site, with digital chart regions for the App available at only $10 per region.

www.nvcharts.com

JonRie's ATS (Auto Tow System)

The new ATS (Auto Tow System) offers a Constant Scope Tension Limiting device which relieves tension on the tow line and then reclaims back to its original set scope point. The ATS provides for centenary (line sag) displays, real distance between the tug and tow, alarm points if the tow is too close, too far away or about to disconnect with the package providing GPS set on the tug and tow. If the Tow is lost the GPS will give its location to the tug in enough time to reconnect. JonRie uses no open gearing and no clutches as all operations are independently driven.

www.marinewinch.com

Perko's Adjustable LED Interior Light

Boasting efficiency and low operating temperature, the Perko Swivel Berth Light makes an ideal choice for illumination of any marine cabin. The Perko Fig. 0609 Swivel Berth Light features stainless steel mounting brackets and aluminum and stainless steel housing construction. The diffused cover delivers eye-friendly illumination over a large area. In addition, the housing swivels, allowing the user to adjust light direction to suit a variety of activities, including reading. The light itself comes in white or white/red LED options. Perko makes all its products in the USA.

www.perko.com

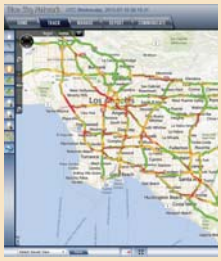
PRODUCTS

Brennan Industries Introduces Instrumentation Catalog

Brennan Industries, Inc., a leading international supplier of hydraulic fittings and adapters, introduces a new instrumentation catalog for its complete line of instrumentation fittings. The new catalog has all Brennan instrumentation tube fittings and their specifications in one place and includes tubing selection guides, tube-working pressure tables, sizing charts and other helpful information for selecting the right fittings for each application. Brennan instrumentation tube fittings provide leak-proof, torque-free seals at all tubing connections and eliminate leaks in instrumentation, process, pneumatic, hydraulic, gas and other tubing systems.

www.brennaninc.com

Blue Adds Map Overlay Features to SkyRouter



Blue Sky Network has announced several new map overlay enhancements to its cloud-based fleet management solution, New SkyRouter. The overlays include third-party weather feeds, localized traffic information, as well as an overlay for oil and gas lease block data in the Gulf of Mexico and customer specific overlays such as pipelines or power lines. These enhancements can be combined with existing asset tracking information to improve a single map views. Operators can now manage assets and routing in near real-time based on changing conditions leading to improved fleet efficiency and safety.

www.blueskynetwork.com

Mustang Survival Launches New Ocean Commander

Mustang Survival has launched an improved Ocean Commander immersion suit; the first immersion suit to receive Transport Canada, MED, and SOLAS approvals. The new Ocean Commander (Model #OC8003 HR) is constructed of a high visibility fluorescent yellow-green shell material, up to four times more detectable in rescue conditions than other common suit colors. The suit is feature-laden an easy full-length zipper, neoprene wrist seals and removable neoprene mitts. The Ocean Commander is also lighter and more durable than conventional neoprene suits, providing unhindered mobility for both work and abandonment procedures.

www.mustangsurvival.com/visibility

Ferguson Group announces a range of Zone 2 Workshops

The Ferguson Group has introduced its new DNV 2.7-1/ EN12079 Zone 2 workshops. Both 3m and 6m workshop modules are fitted with Zone 2 electrics and lighting with workbench, vice and caged shelving. The 6m workshop features a manual internal lifting crane, which can extend to 1m outside the module and a Zone 2 air conditioning system is available as an optional extra. Both modules are lined and insulated for Zone 2 use with the safety of Durbar anti-slip flooring. The 6m workshop comes fitted with a single personnel door to provide easy access.

www.ferguson-group.com

Climax BW3000 Automated BoreWelding System

The BW3000 Auto-BoreWelder from Climax Portable Machining & Welding Systems is an automated welding system designed to attach directly to several of Climax' boring machine mounting fixtures, allowing a single setup for both welding and machining operations. These automated welders offer precise, high-quality, and uniform welding performance for bore repair; while decreasing weld time. Precise, uniform welds also mean less wire is consumed which reduces costs, and there is less need for rework compared to hand welding. Available for sale or rent, training on this and other Climax machine tools are is also available.

www.climaxportable.com

Bestobell Valves for High-speed LNG Ferry

Bestobell Valves, has supplied valves to what has become the fastest LNG (liquefied natural gas) fuelled ferry ever built. The specialist cryogenic valve manufacturer produced 70 globe, check and thermal relief valves, which were supplied to Chart Ferox, which manufactured the fuel system for the ferry. Bestobell Valves has enjoyed a long working relationship of over 20 years with Chart Ferox, a company which specializes in the manufacture of cryogenic storage vessels. The vessel has reached a record-breaking speed for a ferry of 66 miles per hour.

www.bestobellvalves.com

New Hobart Flux-Cored Wires

The newest addition to the Hobart family of welding wires, the Hobart FabCO 70XHP gas-shielded flux-cored wire, offers low fume generation rates to help improve operator comfort and high deposition rates that help increase productivity. The new wire complements the FabCO TR-70 and FabCO RXR wires. Together, the three wires provide a high level of performance. The FabCO TR-70 wire is best suited for all-round performance, while the FabCO RXR wires offers greater performance for welding through mill scale and rust. The FabCO 70XHP wire is designed for use in shipbuilding, maintenance and repair.

www.hobartbrothers.com

Heavy Duty Wiper Motor from Schmitt & Ongaro

Visibility in all conditions is essential and Schmitt & Ongaro knows that a boat's windshield wipers are only as effective as the motor that powers them. The company's new Heavy Duty Waterproof Wiper Motor comes packed with features that ensure dependable, trouble-free operation, at an economical price. Living up to its heavy duty description, the wiper motor produces impressive torque, when driving a wiper arm and blade. Waterproof to IP 66 ratings and CE certified for safety. The Heavy Duty Waterproof Wiper Motor is available in 12 and 24V versions.

www.schmittongaromarine.com

Hella Floodlights for any Job

Workboats require illumination that withstands the harshest marine environments. Hella marine specifically addresses commercial needs with its new ultra heavy-duty AS 5000 LED floodlight. This 5000+ lumen LED lamp provides effective and dependable illumination while drawing only 60 W, or 5 amps at 12V and 2.5 amps at 24V. Unlike some warmer halogen lighting, the 5700K color temperature reduces eye strain and fatigue and gives users the option of either a wide or narrow light distribution pattern, and uses a rugged Grilamid lens. The Floodlight is backed with a five-year warranty.

www.hellamarine.com

The M7000 Portable Marking Solution

With ProPen's M7000 stand-alone micro-percussion marking gun, there is finally an easy way to permanently mark parts of all types and even hard-to-reach parts. The M7000 also excels by its marking performance and unparalleled ease of use, in particular thanks to its built-in touch screen. Marketed under the ProPen brand, the M7000 is a portable system. Using micro-percussion technology to indelibly mark text, logos, timestamps and even 2D codes on parts for accurate traceability, it offers added value to industries such as Oil and gas, shipbuilding, and military equipment.

www.propen.com

Saint-Gobain Abrasives, Inc.

Saint-Gobain Abrasives, Inc. has introduced Norton Finium abrasive microfinishing film rolls for precision applications. Norton Finium products, positioned in the "Best" tier of Norton film products, are designed with a new, patented topside resin system alongside two new backing types and an innovative grit size color coding. This combination is specifically engineered to deliver high material removal and exceptional surface finish uniformity, while positioning Norton Finium film products as the most advanced in the market. These microfinishing film rolls are used in powertrain polishing operations in the marine, small and very large engine manufacturing operations.

www.saint-gobain-northamerica.com

Positorq Oil Shear Marine Duty Tension Control Brakes

Positorq oil shear tension control brakes from Force Control Industries provide simple, precise torque control over the entire speed range, even down to 0 rpm. Operational speeds are controlled without chatter, stick slip or torque variation. Torque is controlled by pneumatic or hydraulic actuation pressure and is independent of speed. Positorq Oil Shear brakes operate with noise levels below 50 dB and are ideal for tension control applications such as anchor systems, mooring winches, and other applications requiring smooth payout control, as well as drawworks, capstans, conveyors, and hoists.

www.forcecontrol.com

Cortland Company's Plasma®12-strand single braided rope

Cortland Company's Plasma 12x12 is a 12-strand single braided rope in which each of the 12 strands is, in turn, a 12-strand rope. This patented construction addresses most critical properties of fibers, to provide high strength translation efficiency for larger ropes. The design allows for long lay lengths, making the rope more flexible for bending applications, easier inspections and a rope that can be quickly spliced using standard 12 strand splicing techniques. Cortland recently delivered a three-part Plasma® 12x12 mooring line configuration for the Battleship TEXAS. Cortland delivered the solution in less than a week.

www.cortlandcompany.com

Marine News 2014 Editorial Calendar

ISSUE	EDITORIAL	BONUS DISTRIBUTION
JANUARY **Ad Close:** Dec 12	**Tug Boat Technology** Market: Training & Education Technical: Arctic / Cold Weather Operations Product: Winches, Ropes & Cranes	**Arctic Technology Conference** Feb. 10-12 – Houston, TX **PVA/Maritrends** Jan. 18-21, Houston, REGIONAL FOCUS: Gulf Coast
FEBRUARY **Ad Close:** Jan 15	**Combat & Patrol Craft Annual** Market: U.S. Coast Guard Technical: Outboard / Thrusters & High-Speed Propulsion Product: Fire & Safety Equipment	**ASNE Day** Feb. 20-21 – Arlington, VA
MARCH **Ad Close:** Feb 13	**Fleet & Vessel Optimization** Market: Naval Architecture & Design Technical: Propulsion & Emissions Management/Control Product: Water Treatment & Technology MaritimePropulsion.com	**CMA Shipping 2014** March 17-19 – Stamford, CT **AWO Spring Convention & Meeting** April 1-3 – Washington, DC
APRIL **Ad Close:** March 13	**Shipyard Report: Construction & Repair** Market: Push Boats & Barges Technical: Marine Communications MarineElectronics.com Product: Oil Pollution: Prevention & Response	**Workboats Exchange** April 13-16 – Bonita Springs, FL **Sea-Air-Space** April 7-9 – National Harbor, MD
MAY **Ad Close:** April 15	**Offshore Annual** Market: Fire, Patrol & Escort Craft Technical: Maritime Security Product: Interior Outfitting / Design / HVAC	**OTC Houston** May 5-8 – Houston, TX **SeaWork** June 10-12 – UK
JUNE **Ad Close:** May 15	**Dredging & Marine Construction** Technical: Salvage & Response Product: Marine Training Facilities Special Section: Marine Photo Contest	**HiperCraft Show** June – Virgina Beach, VA REGIONAL FOCUS: Great Lakes
JULY **Ad Close:** June 13	**Propulsion Technology** MaritimePropulsion.com Market: ATB Technical Trends Technical: Deck Machinery & Cargo Handling Equipment Product: Marine Coatings & Corrosion Control	REGIONAL FOCUS: East Coast
AUGUST **Ad Close:** July 15	**MN 100 Market Leaders** Market: Passenger Vessels & Ferries Technical: Navigation & E-solutions MarineElectronics.com Product: Safety & Prevention	
SEPTEMBER **Ad Close:** Aug 14	**Inland Waterways** Market: Specialty Workboat Missions Technical: Cordage, Wire Ropes & Rigging Product: Inland Boat Builders	
OCTOBER **Ad Close:** Sept 15	**Innovative Products & Boats – 2014** Market: Security Workboats Technical: On Board Communications MarineElectronics.com Product: CADCAM Software	**SNAME** Oct. 22-24, Houston **ShippingINSIGHT** Stamford REGIONAL FOCUS: Inland Rivers
NOVEMBER **Ad Close:** Oct 15	**Workboat Annual** Market: Lubricants, Fuels & Additives Technical: Pumps, Pipes & Valves Product: Marine Propulsion MaritimePropulsion.com	**International Workboat Show** Dec. 3-5 – New Orleans, LA **Clean Gulf** Dec. 2-4, San Antonio REGIONAL FOCUS: U.S. West Coast
DECEMBER **Ad Close:** Nov 15	**Salvage & Spill Response** Market: Software - Fleet Management Technical: SATCOM for Workboats Product: Workboat Supplier's Guide	

** The publisher reserves the right to alter this calendar. All features are subject to change in light of industry trends and developments.*

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where employers and job seekers connect

The Maritime Industry's Leading Employment Website. For more information contact: Jean Vertucci at vertucci@marinelink.com

MASSACHUSETTS MARITIME ACADEMY

Founded in 1891, the Massachusetts Maritime Academy is the nation's oldest and finest co-ed maritime college. The Academy prepares young women and men for exciting and rewarding careers on land and sea. Our graduates have been at the very top of seagoing, engineering, environmental, and international business professions.

POSITIONS AVAILABLE

Marine Transportation Lab Technician
Engineering Faculty, Chemistry Faculty
Sea Term Coordinator

The Academy is located in Buzzards Bay at the mouth of the scenic Cape Cod Canal and is a special mission college within the Massachusetts university college system.

For information about this positions and how to apply, visit the employment quick link on our web page at **www.maritime.edu.**

Massachusetts Maritime Academy is an AA/EEO employer. Under-represented groups are encouraged to apply.

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- Post Maritime Job Listings
- Accept Applications

www.FindAMariner.com

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Maritime Global News

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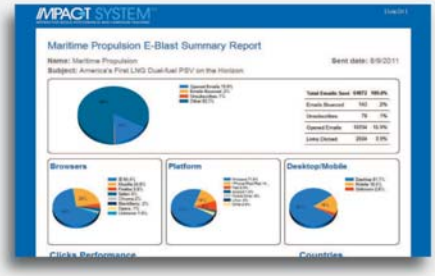
Give your online advertising real IMPACT, an exclusive tracking tool for online advertisers.



Online reports and response data:

Browsers
Platforms
Desktop / Mobile
Countries

Take control of your campaign- only from New Wave Media.

Track your banner ad exposure in real time, with an easy interface

Impressions
Clicks
Click Through Rate
Unique IPs

Access a complete report of your Eblast campaign's success.

Total Emails Sent
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