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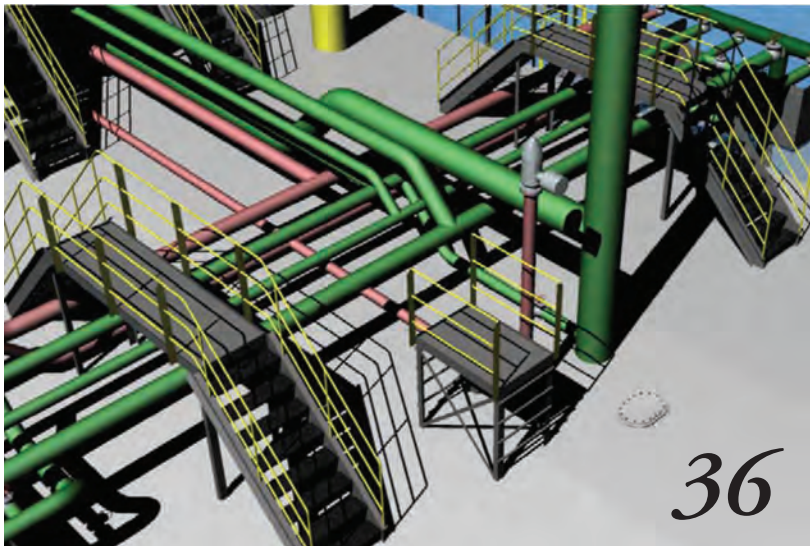
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Florida: 215 NW 3rd St., Boynton Beach, FL 33435
tel: (561) 732-4368; fax: (561) 732-6984
New York: 118 E. 25th St., New York, NY 10010
tel: (212) 477-6700; fax: (212) 254-6271
www.marinelink.com

PUBLISHER

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

Associate Publisher & Editorial Director

Greg Trauthwein • trauthwein@marinelink.com

Editor

Joseph Keefe • keefe@marinelink.com
Tel: 704-661-8475

Web Editor

Eric Haun • haun@marinelink.com

Contributing Writers

Susan Buchanan • Lawrence R. DeMarcay, III • Joe Hudspeth • Randy O'Neill

PRODUCTION

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

SALES

Vice President, Sales & Marketing

Rob Howard • howard@marinelink.com

Advertising Sales Managers

National Sales Manager

Terry Breese • breese@marinelink.com
Tel: 561-732-1185 Fax: 561-732-8414

Lucia Annunziata • annunziata@marinelink.com
Tel: 212-477-6700 Fax: 212-254-6271

Frank Covella • covella@marinelink.com
Tel: 561-732-1659 Fax: 561-732-8063

Mitch Engel • engel@marinelink.com
Tel: 561-732-0312 Fax: 561-732-8063

Mike Kozlowski • kozlowski@marinelink.com
Tel: 561-733-2477 Fax: 561-732-9670

Dawn Trauthwein • dtrauthwein@marinelink.com
Tel: 631-472-2715 Fax: 631-868-3575

Jean Vertucci • vertucci@marinelink.com
Tel: 212-477-6700 Fax: 212-254-6271

Managing Director, Intl. Sales

Paul Barrett • ieaco@aol.com
Tel: +44 1268 711560
Fax: +44 1268 711567

Uwe Riemeyer • riemeyer@intermediapartners.de
Tel: +49 202 27169 0
Fax: +49 202 27169 20

Sales & Event Coordinator

Michelle Howard • mhoward@marinelink.com

Classified Sales

(212) 477-6700

CORPORATE STAFF

Manager, Public Relations
Manager, Info Tech Services

Mark O'Malley • momalley@marinelink.com
Vladimir Bibik • bibik@marinelink.com

CIRCULATION

Circulation Manager Kathleen Hickey • mncirc@marinelink.com

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At the Scania factory and headquarters in Södertälje, Sweden, Scania builds every engine specifically to a customer's individual order. *MarineNews* contributor Joe Hudspeth visited their facilities this Spring. His report on proper engine selection – with this OEM and others – begins on page 22.



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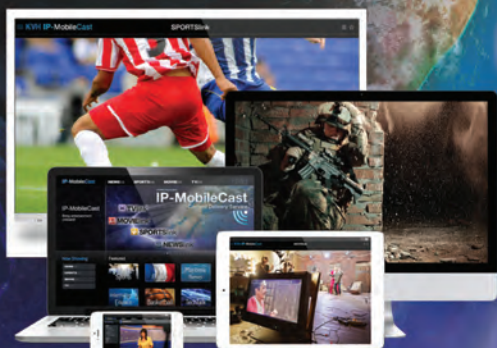
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EDITOR'S NOTE



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I couldn't possibly kick off this edition of *MarineNews* without first acknowledging – and applauding – the passage of the long-awaited, much needed Water Resources Reform and Development Act (WRRDA). Signed into law by the President on June 10th, the bill gives the domestic waterfront a much improved vehicle from which it can get onto the important business of rehabilitating the nation's waterways and infrastructure. Beyond this, I can't think of a single sector of our core readership that won't eventually be impacted in a positive way by this news. That said; I'm not just going to leave you wondering how.

Handicapping the ABC's of marine infrastructure 101 in this edition is none other than St. Louis-based attorney James Kearns. His article, which begins on page 26, lays out the implications of WRRDA for industry and explains the mechanics of financing to get it done. Kearns has few peers when it comes to understanding the political, legislative and commercial realities of trying to create a world class, 21st century domestic waterway.

Waterways aren't much good without the engines that propel the boats from point A to point B. It turns out that this is no time to make a mistake below decks. Hence, our look at propulsion technology in this edition really does span the gamut of what's new, why and what it means as you look at repowering your current fleet or starting from scratch at the shipyard. These variables – discussed within no less than three separate pieces – include commercial solutions for fast craft, LNG propulsion and savvy advice from Joe Hudspeth, who leads readers through the engine selection process.

Speaking of boatbuilding, the nation's red hot shipyards continue to augment those backlogs, seeing even more additions from a variety of sectors. A big slice of that work comes in the form of ATB orders for domestic yards, whose customers continue to warm up to this versatile design that lends its utility across multiple marine applications. It's no wonder that as many as 90 ATB's currently operate in North American waters with another 10 on the order books. None of that is more interesting than the dual fuel ATB bunker unit currently on the drawing board of Elliott Bay Design Group (EDBG). Designed to consume boil-off in the same fashion that ocean carriers have done for many years, EDBG's innovative concept could eventually revolutionize (and help clean up) inland and ocean fleets of tomorrow. The story begins on page 36.

WRRDA's passage continues the winning streak for the domestic waterfront, but that's not the only thing that stakeholders have to be optimistic about. Lurking just around the corner, for example, are the inevitable subchapter M towing rules, something which will bring change, challenges – and business – to shipyards, OEM's and a myriad of others. I can't tell you exactly what it all means, but I can promise that it will be exciting. Stay with us at *MarineNews* as we cover it, as always, from A to Z.



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NOAA “Catches and Releases” 2011 Data on Ocean and Great Lakes Economy

NOAA’s newest output includes a feature on Economics. The National Ocean Watch site features facts, charts, story maps, and videos. It turns out that our maritime economy – commercial, recreational and everything in between – really matters.

In 2011, the U.S. Ocean and Great Lakes economy produced \$282 billion in goods and services and employed 2.2 percent of the nation’s workers—that’s more than twice the percentage of workers in the U.S. agriculture industry. This fact and many others are featured in a 2011 data summary from *Economics: National Ocean Watch (ENOW)*, a product of the National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center.

ENOW’s annual time-series data highlight six economic sectors and cover roughly 400 coastal counties, 30 coastal states, eight regions, and the nation, using data derived from the federal Bureau of Labor Statistics and Bureau of Economic Analysis. Although the data collection lags a bit (2011 vs. 2014), the success story of the 2011 ocean and Great Lakes economy has hundreds of important chapters, and here are just a few:

- *From 2010 to 2011, the ocean and Great Lakes economy gained*

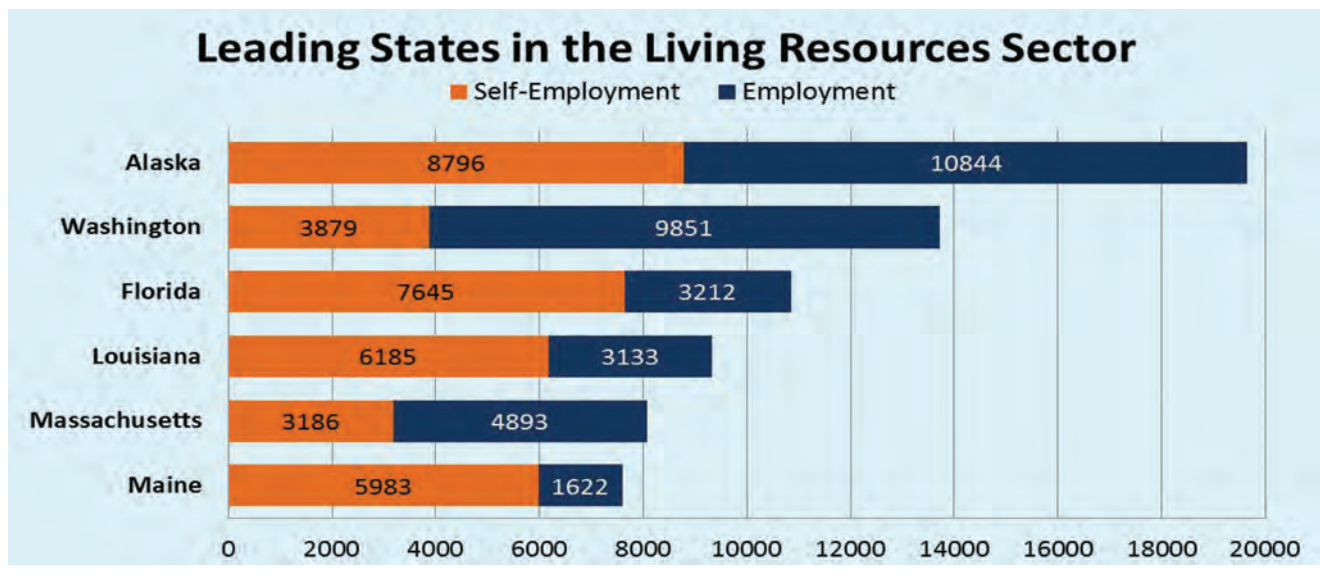
67,000 jobs—an increase in employment of 2.4 percent, which was twice the job-growth rate as in the U.S. economy as a whole.

- *Alabama, Delaware, New Hampshire, and Texas experienced the highest rates of employment growth.*
- *The tourism and recreation sector accounted for 70 percent of employees but averaged the lowest wages of the six sectors represented.*
- *Self-employed workers held half the jobs in the living resources sector.*

ENOW data and tools have been used in many other ways—for instance, to develop baseline economic profiles for 70 East Coast communities and to plan for coastal hazards in Florida. The ocean and Great Lakes economy falls into the six broad sectors shown below. In 2011, two sectors accounted for a large piece of the economic pie: the tourism and recreation sector accounted for 70 percent of employment while offshore mineral extraction contributed

37 percent to the total gross domestic product (GDP) of the ocean and Great Lakes economy.

From 2010 to 2011, real GDP grew by 2.7 percent, faster than the U.S. economy as a whole (1.6 percent). Offshore mineral extraction employment grew the fastest of all sectors, with an increase of 6.2 percent. However, ship and boat building grew the fastest in terms of real GDP, with an increase of 19.7 percent. Indeed, four of the ocean economy’s six sectors paid wages that were higher than the national average. The two exceptions—tourism and recreation and living resources—are characterized by seasonal and part-time employment. The tourism and recreation sector paid the lowest average wages but provided many part-time and entry-level jobs for young workers and students. In 2011, California, Texas, Florida, and New York accounted for about half the total employment and half the total GDP in the U.S. Ocean and Great Lakes economy. New





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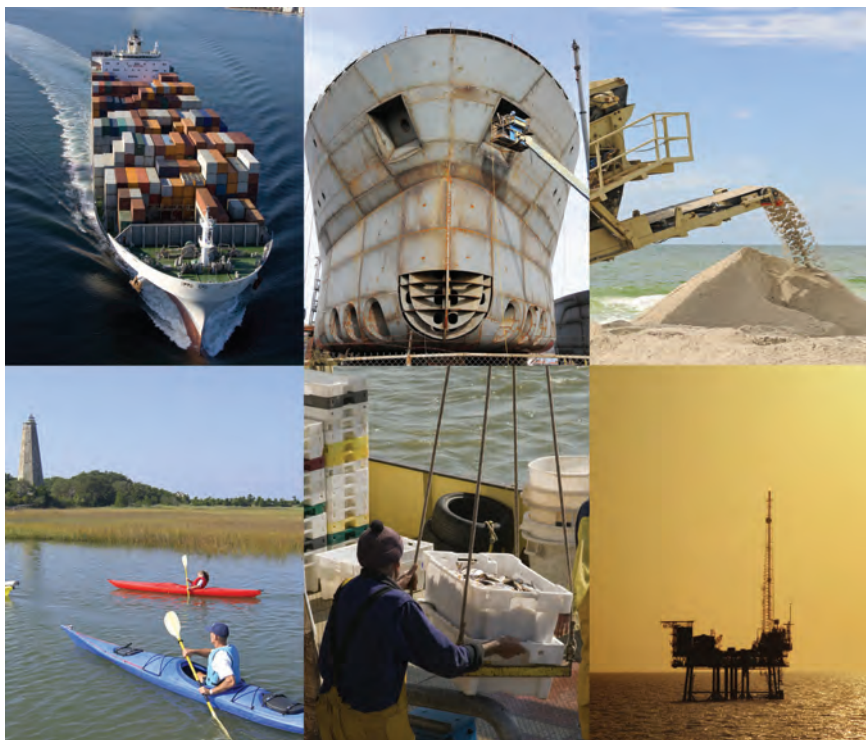
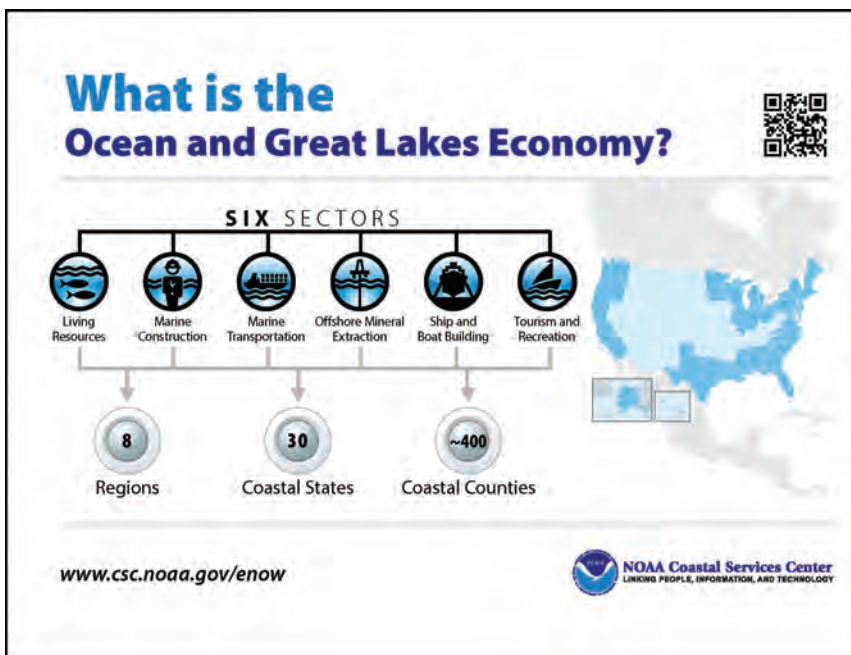
BY THE NUMBERS

Hampshire, Delaware, Alabama, and Texas had the highest rates of growth in employment.

The data regarding states with the highest employment in each of the ocean sectors is telling: Offshore mineral extraction and marine construction activities are highly concentrated in the Gulf of Mexico, with Texas and Louisiana accounting for three-fourths of the nation's employment in this ocean sector.

The ocean and Great Lakes economy accounts for an additional 132,000 self-employed workers, and these workers received total receipts of \$8.0 billion in 2011. In the living resources sector, about 120,000

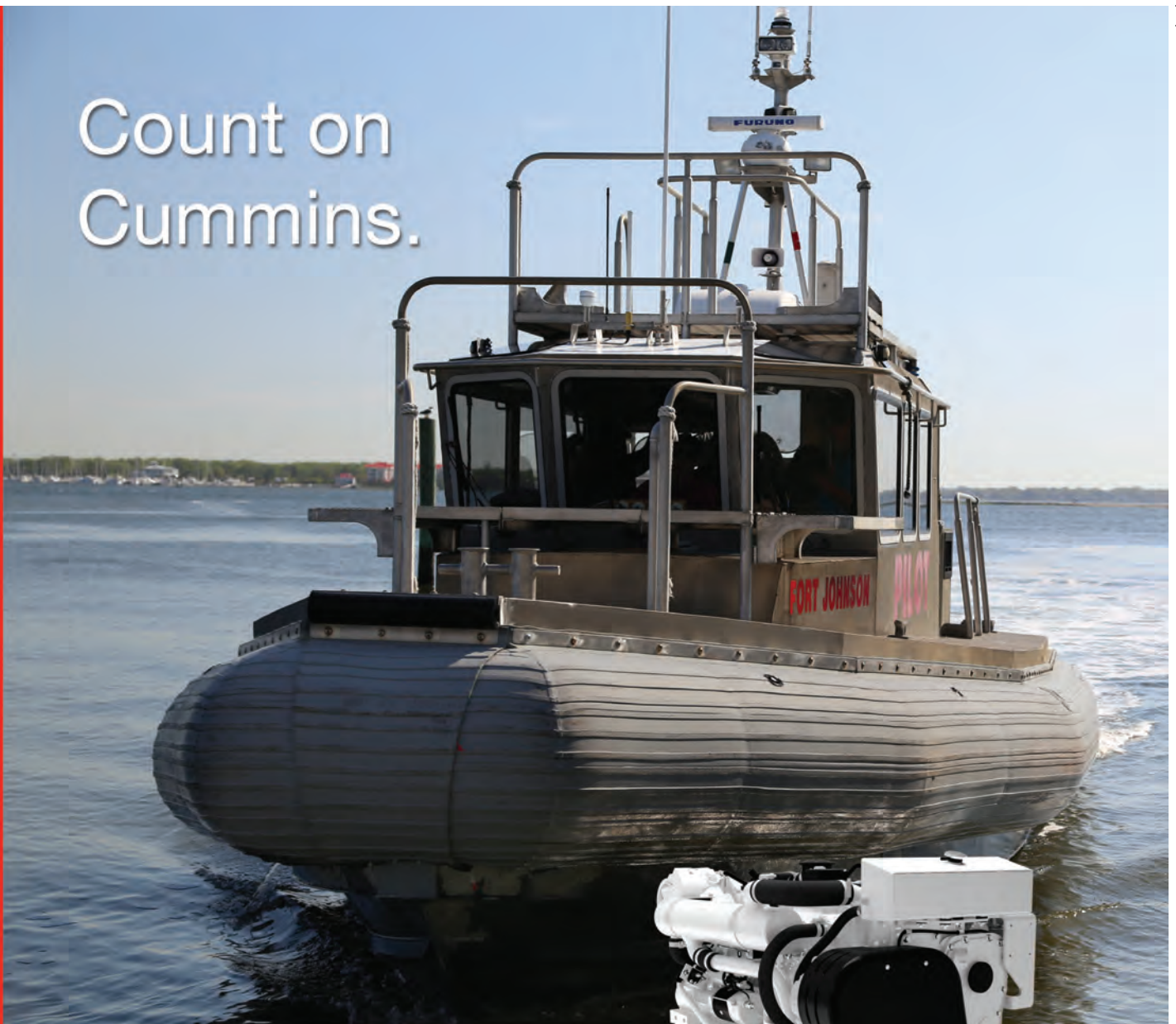
workers accounted for all the seafood produced in the U.S. Half of these workers (and most fishermen) were self-employed workers. Employment in the living resources sector is concentrated in activities associated with processing and marketing seafood. And, at the end of the day, this means workboats and brown water activities.



NOAA does great work. See the April 2014 report: Economics: National Ocean Watch (ENOW): The U.S. Ocean and Great Lakes Economy in 2011. NOAA Coastal Services Center: www.csc.noaa.gov/enow



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Robert Kunkel

**President,
Alternative Marine
Technologies, Inc.**

Those *MarineNews* readers who are not familiar with Bob Kunkel probably should be. That's because Kunkel, President of Alternative Marine Technologies, previously served as the Federal Chairman of the Short Sea Shipping Cooperative Program under the Maritime Administration and Department of Transportation from 2003 until 2008. He is a past Vice President of the Connecticut Maritime Association, a contributing writer for many maritime and technical trades publications, including *Maritime Professional Magazine* and *MarineNews*. He continues as the Technical Advisor for several Private Equity firms, financial institutions and Coastal Connect, developing the maritime component of short sea shipping and offshore wind energy along the coasts of United States.

A graduate of the Massachusetts Maritime Academy, Kunkel sailed with several U.S. flag companies as a licensed engineer, was commissioned as a Navy Officer and continued his career in ship construction at National Steel and Shipbuilding, San Diego, Hyundai Heavy Industries, South Korea, Chengxi Shipyard and Dalian New Shipyard in Mainland China. He is a senior member of the Special Committee on Ship Operation with the American Bureau of Shipping and an elected member of the National Cargo Bureau. Amtech is currently involved in several construction supervision projects in Korea and the United States building for the Product Carrier, Chemical Carrier and Offshore markets. Bob Kunkel's experience with marine



construction and propulsion is too long to list within the pages of this publication. What he has to say about today's challenges in the engine room is not. Follow along as Bob provides the ultimate propulsion primer as this month's INSIGHTS focus.

What's the number one driver for engine selection today for workboat operators? Would it be emissions control, fuel consumption, or both?

The problem in today's market is the amount of technology available and as a result no single driver to make the selection. The operator will first consider engine cost, performance and the ability to contract with a single manufacturer to control his fleet spares, crew experience and inventory. In the foreign markets, the decision is fuel performance based – everything we see in Asian construction is "ECO" driven. Heavy fuel is still being utilized and the construction takes into account the fuel tank sizes and the switch between low sulfur fuel use and heavy fuel use when entering an emissions zone. The U.S. markets, operating solely in the emissions control areas (ECA), wrestle with the emissions driven selection as they are locked into the most heavily regulated trading areas. Dual Fuel engines using natural gas as a primary fuel looked to be the answer. That said, the infrastructure to support that engine selection has not moved forward at the speed most hoped for and gas prices have been moving up. The latest buzz is now liquid gas injection (LGI) and dual fuel methanol. As we discuss emissions issues, remember there are two "Tiers" to watch: the International IMO tiers and the U.S. EPA Tiers. There is a lot of confusion in the U.S. markets on this issue.

What's the number one mistake today's marine operators make when making repower solutions for their fleet?

In our experience, the lead mistake involves the lack of communication between the operator's commercial department and his technical department or the inability of a marine consultant to address the synergy between the two groups. A successful repowering or propulsion selection must take into account the trading patterns, operating tempo and load patterns of the propulsion system. Does the engine run at a normal continuous rating (say 85% load) for long periods of time? Does the vessel operate at low loads for intermittent periods? Is speed or fuel efficiency the

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major factor for profitability? What is the optimal horsepower range and have all of the vessel's operating patterns taken that power into account? Commercial input helps to make the project economically feasible. Anyone with a pile of money can build the space shuttle. The successful operator builds one that pays the bills and is profitable.

Diesel electric drive is once again hot. For what reasons and under what circumstances would you advise a client to go that route?

Variable Frequency drives, digital automation and advanced electronics has moved diesel electric back toward the head of the class. The systems are more compact and reliability has increased through documented trend analysis in the offshore markets. You will see this propulsion package move into bluewater and coastal shipping in the near future as it fits with our discussions regarding operating tempos and hybrid applications. Diesel Electric drives provide a more flexible load analysis and an opportunity to place the asset into niche trading beyond its basic operating scenario. Dynamic Positioning becomes an easier option, slow steaming and a greater selection of speed is a better fit and the azimuth units can add a new range of maneuverability. The emissions issue also sneaks into this trend as the engine manufacturers have a much easier time getting their Tier ratings if the engines run at a fixed RPM. This has driven some owners away from the historical clutch and direct drive to CPP and Diesel Electric. All of these "plus" factors must always be weighed against a higher cost of construction and future maintenance. We like the propulsion options in coastal operations and vessels employed on shorter routes and multiple port entries; in other words, schedules that require flexible speed ranges and maneuverability.

LNG is the so-called hot, new fuel for workboat operators. It is now in the process of penetrating the market for OSV's and designs are being submitted for bunker barges, infrastructure to support LNG, LNG tugs, etc. What's your take on LNG in the marine fuel pecking order?

We completed one of the first LNG/CNG design projects on a compact RoRo for Coastal Connect back in 2007 when "green" fuel applications and the reduction of CO2 was the focus. The major hurdle at that time was the "urban legend" of the dangers of LNG and the lack of infrastructure to support the fuel in the U.S. The price of natural gas at that time was low and the gas producers were looking for a large consumer. The cost advantages as a propulsion fuel looked to be the correct move forward. Unfortunately, the infrastructure has not developed and as we

get closer to U.S. export opportunities, we believe the price of natural gas will rise to international levels and may take that cost advantage away. Natural gas propulsion reduces sulfur emissions by over 80%. CO2 is reduced by approximately 15% and NOx reduction is still an issue that may require scrubbing once Tier III international regulations and EPA Tier 4 come into effect. LNG as a propulsion fuel is a huge investment; both on board the vessel and ashore where bunkering facilities and liquefaction are required. No doubt the move to gas is a move to a cleaner fuel. The issue becomes the payback on your investment and the industry's ability to support it.

Talk about the cost premiums for installing a dual fuel and / or LNG engine over that of a conventional engine burning distillates. Is it really worth it?

There isn't one operator that does not support the quest for a cleaner burning fuel or the easy answer to solving the mandated emissions regulations. The dual fuel gas engine is not the issue and the cost for a DF engine depending on horsepower and size ranges between \$750,000 to \$1 million above an engine capable of burning heavy fuels. The cost of this fuel modification is the delivery system – tankage, refrigeration, double wall piping, compression stations, etc. That additional construction cost can reach \$10 million, depending propulsion size and power. With the exception of one or two offshore projects, most of the construction contracts in place for dual fuel propulsion in the U.S. are "LNG Ready." That tag only prepares the vessel with a dual fuel capable engine and the space to install the delivery equipment. We can answer the "is it really worth it?" question when you see construction describing "LNG delivered." That next stage can be reached only when the bunkering infrastructure is in place. Simply put, if the gas price stays well below the low sulfur distillate price and someone takes up the infrastructure issue then a payback scenario on the investment will be worth it. Until then, other fuel choices are available to comply with the regulations.

Looking at the typical OSV, tug, pushboat and any other conventional workboat platform – do any really have the room for after-treatment as a way to reduce emissions? Assuming space is at a real premium, what are the options otherwise?

Most do not and it all depends on the system installed; closed loop, open loop, exhaust gas recirculation, the list goes on and on. Many systems require a horizontal exhaust run and we have been designing ships and workboats for years to make sure there were limited horizontal piping

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runs in your exhaust system. There are also deck mounted options if space is a premium. The simple answer is to burn low sulfur marine diesel oil or gas oil until all of the regulations fall into place. NOx reduction will be the most difficult regulation to meet and exhaust gas recirculation looks to be the answer to solve that problem.

You've been quoted as saying that methanol will overtake LNG as the new fuel of choice in the future. Why, how and when?

Methanol burns with similar characteristics as natural gas and without methane slip. A 95% reduction in SOx and a 24% reduction on NOx is available in two stroke applications. Keep in mind the first diesel engines burned alcohol so the introduction of this fuel is not a technological reach. It does not require the refrigeration characteristics of LNG for storage and is liquid form at injection. MAN B&W has been successful with the diesel cycle using MeOH or Methyl Alcohol in their two stroke LGI engines. The formation of formaldehyde in the exhaust of the four stroke engine in the Otto cycle still remains a problem for this fuel to be introduced at the workboat or tugboat level. We have seen the Europeans move to two stroke engines in their tugs and offshore workboats to solve that issue. Using Methanol and Ethanol solves the sulfur issue with a 95% reduction, and reduces the NOx to levels that can be handled by exhaust gas recirculation (EGR) or Selective Catalytic Reduction (SCR). All of these modifications can work towards simpler retrofits and the reduction of the fuel delivery costs that LNG requires. Large Bluewater vessel have been ordered with ME-LGI engines, and more movement towards this fuel type in 2015 could occur as the Tier II keel laying dates disappear and the new Tier III/ Tier 4 regulations come into place.

Retrofit (re-power) or rebuild: that is the question. What should today's workboat operators do and why?

Our advice would be to make the necessary changes to your fuel delivery and lubrication systems to meet Tier II regulations and safely use ultra-low sulfur in your existing engines. Most of that work requires only timing changes and new fuel injectors. Remember, this fuel type has been required by the EPA for road transportation since 2006 under the Clean Air Act and the latest discussion lead us to believe that the price of ultra-low sulfur fuels may not reach the levels some are predicting as the refineries have already made modifications to meet the road transportation requirements. Meeting those levels and burning that fuel will get you to 2020. From there, EGR and SCR re-

quirements will be needed to reduce NOx emissions. On existing vessels, meet Tier II/2 and take a break. Your new construction is a different story. That is where big decisions on what fuel you will burn are taking place.

What do you think the repower market looks like in the near term for Workboats? If operators decide not to repower, will there be a rush for replacement tonnage?

New construction slots in the U.S. shipyards are limited and most of the contracts in place took into account the dates required for Tier 2 and Tier 3 compliance. Historically, this market was built on the analysis of supply and demand, not regulatory advances. We see repowering and or engine modification as the first step in compliance. That said, most owners will ride out the "grandfather" period and then make their decisions for replacement tonnage. Technological advances move quickly in this Internet world and the best advice now is to let this regulatory market develop and move on a slow bell.

Which existing engines are "grandfathered" under the new EPA Tier rules? Can an existing 10 year old engine stay in operation even it doesn't meet future or existing Tier requirements. Lead us through that matrix.

The answer to this question and the route through the regulatory matrix is complicated. Engine size, application, date built all come into play. At this point in time the best course is to ask the manufacturer if you can comply with Tier II/2 and operate on distillate fuels until 2020.

You advise a myriad of clients on all sorts of power plant decisions. What's new and what do you tell your clients when they ask about power options?

We advise our clients to first look at their operating parameters and trading patterns; then look to fuel efficiency. The first thing that should be understood is the less fuel you burn, the less in emissions that are produced. Look for slower revolutions in your engines, larger propellers and optimum efficiency in the power train. Analysis of the full propulsion system from engine to wheels is important. Listen to all of the engine manufacturers and then take on a company that is capable of integrating the correct system for you. The analysis goes well beyond engine type or size. From a fuel perspective the current situation is an interesting dynamic and it is dependent on market sector. For new construction operating within an ECA, we have recommended the use of low sulfur diesel as the primary fuel for four stroke applications and the removal of heavy fuel equipment to save costs. We are also looking at the installation of two stroke engines in this market sector – one that

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historically bought and installed four stroke equipment. At our foreign construction sites in the tanker and chemical markets, we have continued with the use of low sulfur heavy fuel operation and extended the size of the vessel's low sulfur marine diesel fuel tankage. This allows for extended periods in the ECAs when the vessel is trading those areas. The engines to this date are Tier II compliant. We have seen over 150 new construction slots filled in Korea in the Product tanker and chemical tanker sector. Not one has installed after treatment systems.

One of your more exciting jobs perhaps was the research / classroom vessel up in Connecticut. Tell us about the power requirements on that vessel. Didn't it have an electric mode for quiet operation?

The Marine transportation sector historically is late in adjusting to new technology. If you look to the Automotive and Airline industry, major changes are occurring in power and again most of these changes take place in the interest of fuel efficiency. The airlines are moving away from hydraulics and into digital electrical systems fueled by lithium powered batteries. The automotive industry has also moved to Hybrid powered fueled by advanced lithium powered energy. This battery source integrates well with marine transportation at several levels. In the research vessel project, we were tasked with providing a "green" propulsion platform. As we discussed above, the vessel's operating tempo and trade was

part of the analysis. The vessel used limited periods of peak engine power, towed ROV and arrays at slow speed and was used as an education platform to teach students. One of the major complaints was engine noise during those classroom sessions. We partnered with Northern Lights, BAE Hybrid, Incat and Derecktor shipyard to develop a 65' catamaran that held seventy students and operated on Corvus Lithium powered batteries. The power requirement is about 500 horsepower to make 12 knots full speed. Two variable frequency Lugger generators provide charging power to the lithium battery packs which drive two electric traction motors. The generators start automatically under certain load requirements and when the battery discharge reaches 27%. The operation during classroom sessions and sonar research is completely silent and emissions during operation were reduced to near zero. We are now working to apply this technology to a Chemical ATB project using Marflex Variable Frequency deepwell pumps for silent cargo operations on the U.S. West Coast where complaints of terminal noise have forced limited cargo operations. Hybrid operations will gain traction in the workboat sector as the batteries provide an energy buffer and allow diesel generators to run at optimum potential despite reduced load requirements. The excess energy is stored and when the batteries are charged, the engines can be stopped. And all of us know the best way to achieve lower emissions and better fuel economy is to simply not run the engine.

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Congress Gets It Done

By Michael J. Toohey, President and CEO, Waterways Council, Inc.



On May 22, the Water Resources Reform Development Act (WRRDA) of 2014, containing major recommendations of the Capital Development Plan (CDP), was passed by a vote 91-7 in the Senate. As *MarineNews* was going to press, President Obama finally signed the bill into law. The conference agreement had passed the House on May 20 by an overwhelming 412-4 vote.

The bill contains four key elements of the Capital Development Plan that were included in the House WAVE 4 (H.R. 1149) and Senate RIVER Act (S. 407) bills, both strongly supported by WCI:

- **Olmsted Federalization:** permanent cost-sharing for the remaining cost of the Olmsted project will be 85% General Fund, 15% Inland Waterways Trust Fund, freeing up approximately \$105 million per year for funding other Trust Fund priority projects with Olmsted funded at \$150 million per year.
- **Definition of Major Rehabilitation Project Eligible for Inland Waterways Trust Fund:** increased from current law level of \$14 million to \$20 million and adjusted annually for inflation.
- **Prioritization of Projects:** based upon risk of failure and economic benefit to the Nation.
- **Project Delivery Process Reforms:** based upon CDP-recommended reforms to better achieve on-time and on-budget performance.

The bill also increases annual target appropriations levels for spending of funds from the Harbor Maintenance Trust

Fund (HMTF), with full use of HMTF funds by 2025. Implementation of many provisions in WRRDA will not happen immediately, as the Corps and the Secretary of the Army first must develop and provide guidance with respect to the provisions before they can be implemented.

Of WRRDA's passage, WCI Chairman Matt Woodruff said, "The nation's towboat operators, shippers, and labor, port, conservation and agriculture stakeholder members of WCI applauded today's passage of WRRDA. This bill – and, we hope, law – will create American jobs, increase U.S. exports, keep our nation competitive in world markets, and enhance the reliability of the nation's waterways transportation mode and critical supply chain link. Today, Congress got it done and voted to keep America moving!"

There are many champions whose leadership led to a strong WRRDA outcome. Chief among them are Senate Environment & Public Works Committee Chairman Barbara Boxer and Ranking Member David Vitter, and House T&I Committee Chairman Bill Shuster, Vice Chairman Jimmy Duncan, and Ranking Member Nick Rahall; House Water Resources and Environment Subcommittee Chairman Bob Gibbs and Ranking Member Tim Bishop; Rep. Ed Whitfield and Rep. Daniel Lipinski and the 31 co-sponsors of WAVE 4: Waterways are Vital for the Economy, Energy, Efficiency, and Environment Act (H.R. 1149); and Senators Bob Casey, Lamar Alexander, Mary Landrieu, Amy Klobuchar, Tom Harkin, and Al Franken for authoring The RIVER Act: Reinvesting in Vital Economic Rivers and Waterways Act (S. 407).

Last January, at the State of the Union address, President Obama said, "We'll need Congress to protect more than three million jobs by finishing transportation and waterways bills this summer."



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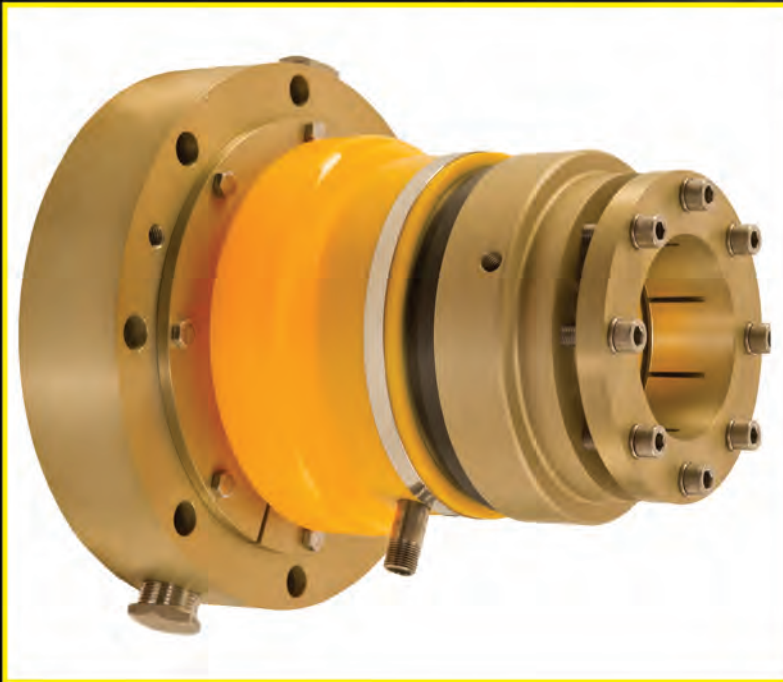
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Get Your Motors Runnin'

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By Joe Hudspeth



It is hard to say why the phenomenon occurs, but with every new engine that arrives in any boat yard comes a sense of approval and appreciation. Heads turn and work even stops as the iron horsepower machines make their way onto the production floor. Such admiration is warranted; after all, the engines are the heart and life of the vessel – without them, the cliché becomes true and you are dead in the water. With the advancement of technology, expectations have grown and we have become desensitized, yielding a hard-to-impress society.

Recently, I was able to get an up close look as to how quality engines are made when I was afforded the opportunity to tour the Scania engine factory. Just prior to visiting Scania, I also had the privilege of touring the Hamilton Jet factory in Christchurch, New Zealand. I can attest that both these factories are impressive at the highest levels and that sophisticated engineering teams, skilled production labor, and stringent quality measures are in place to ensure that the marine industry is getting the best propulsion systems that the regulators will allow.

BURN BABY BURN

The Environmental Protection Agency (EPA) may have had the intent of sparking innovation and moving the industry forward towards the production of cleaner burning engines, but at what expense? The engines that have been manufactured as Tier II and Tier III solutions have both been found to be less fuel efficient and more expensive. Could one have argued that a more efficient engine would burn less fuel and produce fewer emissions, than a cleaner burning engine that has to consume greater amounts of fuel and gas off a corresponding amount of emissions in the process? Engine manufacturers have been able to meet compliance standards through in-cylinder technology. In essence, the engine has to burn more of the fuel so that less waste (emissions) is produced. Herein, lays the problem. In order to burn more of the fuel, the engine consumes extra fuel to enhance the combustion process. Tier IV promises to be more of the same, only better, with the added benefits of a urea-based SCR system.

NARROWING THE PLAYING FIELD

When it comes to engine selection, boat builders really

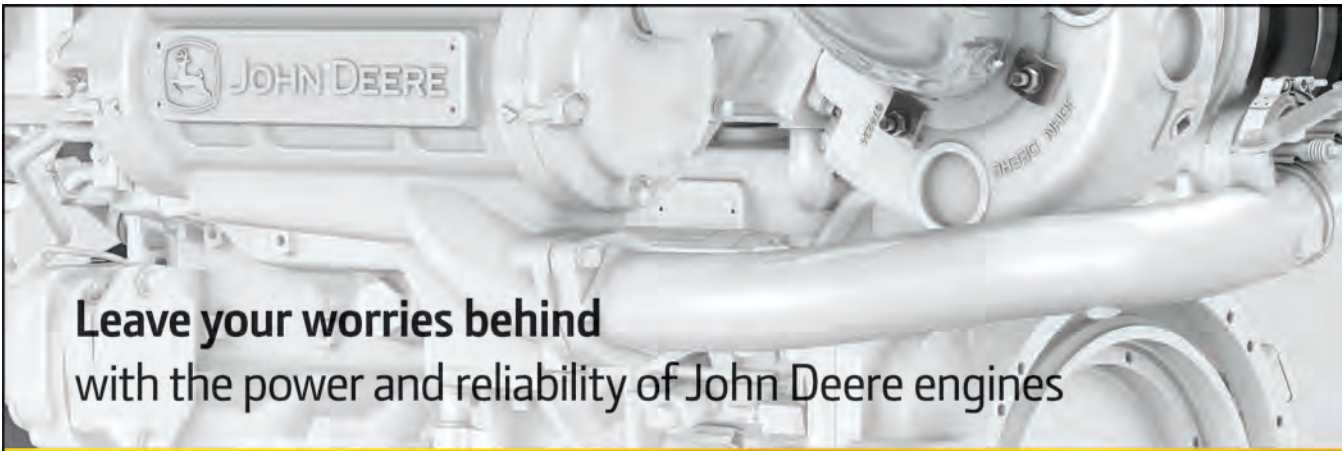
cannot have favorites. Sure, we take note of certain models that may have experienced warranty issues and before the confines of EPA certification were in place – builders had options and price, delivery, and support really mattered. Now, the process of engine selection is quite simple, because there are so few options. It used to be that the naval architect would evaluate the application and calculate the required horsepower. Builders would then flip through all the engine selection guides and present their customers with a list of offerings in the suitable power range with the appropriate duty cycle rating.

Builders and architects prefer to recommend engines with the best power density ratio – or in other words, the most ‘oomph’ for the weight. Customers will have their favorites too, either evidenced by the color of engine they prefer, or it is clearly stated by the logo on the baseball cap they are wearing after attending a trade show. Now that the game has changed, builders are lucky to have even two options to choose from. Some manufacturers have more gaps in their Tier III production line than others, but virtually all brands have had their challenges and were forced to change their offerings.

UGLY STEP-SISTER

Once upon a time, it used to be that boat builders could offer discounts on sistership vessels using pre-existing designs. The discount comes in the form of savings on design and engineering costs. With the triggering of Tier III, engines typically grew larger, heavier, and in some cases had varying horsepower offerings than their Tier II predecessors, which can necessitate a change in gear box, prop size, and shaft diameter. What may seem like insignificant details can actually alter the entire weight and balance of the boat, change engine bed configurations, and possibly even tip the scales over the 2% allowable weight tolerance that the USCG accepts in accordance with the sistership status guidelines.

The variation of engines from one tier to the next has also erased the advantages of fleet commonality that came with standardized parts, swing units, and crew familiarity. Builders have also had to modify their construction practices as exhaust ports have changed, mounting feet have been repositioned, and plumbing connections are sometimes located in awkward locations. It was beneficial to see firsthand the challenges the engine and water jet manu-



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facturers have to overcome on the production line. Not only do they have to deal with the mandated technology evolution, they also have to find a way to build them in a timely and economical manner. The benefits go both ways as builders and designers can provide feedback to the manufacturers to address any challenges that have been experienced, aside from the holes in the product range.

In the rush to get product out the door, there have unfortunately been costly errors. Given the long lead time for engines, it is absolutely critical that the engines are delivered as ordered and in working condition. The room for error is slim to none, as starting the engines is one of the final steps in the vessel construction process. When drawings are inaccurate, or engines are delivered with a different sized oil pan, or when plumbing connections that used to be standard are now suddenly no longer supplied, there are delays and the onus immediately falls upon the builder to make it right. One vessel's delivery was delayed by nearly 30 days because of something as small as a mis-wiring in the manufacture's engine wire harness. Overall, most engine suppliers are responsive and work quickly to resolve any shortcomings.

SEEING TRIPLE

It might appear like you will be stuck with your old boat forever, now that hopes of a sistership are gone and the thought of a Tier IV engine and keeping your urea tanks filled seems downright oppressive. There may be an alternative that offers considerable merit, given the right application. Currently, EPA Tier IV standards will only apply to engines greater than 600 kW (805 hp). Some customers may choose to produce the power they need through quantity at the lower horsepower levels. There are no regulations against installing three Tier III engines rated at 800 hp in lieu of twin Tier IV engines rated at 1200 hp with an SCR system.

ENGAGED, MOVING AHEAD

Industry has found EPA's progressive rollout schedule to be onerous, forcing some engine manufactures to push product out before it is really proven, refined, and ready to be supported. The research and development teams are so focused on EPA compliance that tunnel vision has become consequential and we have seen little to no developments regarding other engine technologies; specifically hybrid or LNG solutions. Does the advent of Tier IV mean the end is in sight? Propulsion manufacturers will continue to focus on compliance with the regulations, but success comes with innovation and manufacturers will be looking to make advancements outside the scope of the law. These manufacturers are also careful not to lose sight of the individual needs of their customers. At Scania, Hamilton Jet, and certainly at factories elsewhere, during the very first stage in the production process paperwork is physically attached to the unit to identify who the customer is. Like your new boat, these units are only made to order. Take the time to visit your boat builder and discuss what propulsion systems are available to keep your new vessel powered and moving ahead.



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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WRRDA: Charting a New Course

Innovative Financing for the Inland Waterways Infrastructure

By James A. Kearns



Out of a Congress long on budgetary constraints and short on bipartisanship has come the Water Resources Reform and Development Act of 2014 (WRRDA)—and by wide margins, no less. In my more cynical moments, I am tempted to think that this is because the marine transportation industry is so invisible to most members of Congress that they do not consider it to be worth fighting over. My better self knows that WRRDA is here because our cause is just and our arguments compelling. (Chairman Shuster should receive a MacArthur Fellowship just for the drawing graphic, which is now everywhere. In case you missed it, check it out at <http://transportation.house.gov/wrrda>).

WRRDA IS THE WORD

The recent passage of WRRDA was a major step forward in addressing the dire and deteriorating condition of the inland waterways infrastructure. Perhaps WRRDA's most important accomplishment for the inland waterways was to loosen the chokehold of the Olmsted Locks and Dam on the Inland Waterways Trust Fund (IWTF). So long as the IWTF has been required to provide 50% of the funds for the soaring cost overruns of Olmsted under the standard cost-sharing formula, there has been little left each year for other new construction or rehabilitation projects in the inland waterways infrastructure. WRRDA changed IWTF's share of the costs for Olmsted, going forward, from 50% to 15%. It has been estimated that this could free up as much as \$105 million annually for other sorely needed projects on the inland waterways, depending on the fuel tax revenues that the IWTF receives each year. WRRDA also reformed the process by which new construction and rehabilitation projects are to be studied and carried out the U.S. Army Corps of Engineers.

But what WRRDA did not do was to change the basic mechanism for funding infrastructure projects. Such projects still need to be authorized by Congress and—here's the rub—funds need to separately appropriated for those projects, whether from general funds or from the IWTF. Historically, project appropriations have not kept up with project authorizations, and appropriations have been made in only annual incremental amounts, rather than for the en-

tire cost of the project as estimated at its outset. This funding process is one of the principal reasons for the piecemeal manner in which construction and rehabilitation projects have moved forward, which in turn has led to inefficiencies, delays, and cost overruns. WRRDA left this basic funding mechanism intact, and with it the risk that construction and rehabilitation projects for the inland waterways will continue to be plagued by inefficiencies, delays and cost overruns, despite reforms in how projects are to be studied, contracted for, and managed by the Corps of Engineers.

PROBLEM SOLVING 101

Section 2004 of WRRDA offers the maritime industry an opportunity to address this problem. Captioned “Inland Waterways Revenue Studies,” this section of the Act requires the Secretary of the Army to conduct a study on the “potential benefits and implications of authorizing the issuance of federally tax-exempt bonds secured against the available proceeds, including projected annual receipts, in the Inland Waterways Trust Fund.” This section also requires the Secretary to conduct a separate study of the “potential revenue sources from which funds could be collected to generate additional revenues for the Inland Waterways Trust Fund.”

Although calling only for “studies”—which are to be submitted to Congress within a year—these provisions are significant since they show that Congress now recognizes that such funding alternatives are worthy of serious consideration. And it is Congress that needs to recognize this, since legislative action at the federal level will almost certainly be required to implement whatever specific proposals result from these studies.

Further, Section 5014 of WRRDA, captioned “Water Infrastructure Public-Private Partnership Pilot Program,” requires that the Secretary establish a “pilot program to evaluate the cost effectiveness and project delivery efficiency of allowing non-Federal pilot applicants to carry out authorized water resources development projects for coastal harbor improvement, channel improvement, inland navigation, flood damage reduction, aquatic ecosystem restoration, and hurricane and storm damage reduction.” Although this section looks like it promises more immediate action for public-private partnerships than simply conducting studies, it is subject to the qualification that any activity undertaken

WRRDA changed IWTF's share of the costs for Olmsted, going forward, from 50% to 15%. It has been estimated that this could free up as much as \$105 million annually for other sorely needed projects on the inland waterways, depending on the fuel tax revenues that the IWTF receives each year.

under this provision is authorized only to the extent specifically provided for in subsequent appropriations acts.

In conducting the studies required by section 2004 of WRRDA, the Secretary will have immediately available a significant amount of work that has already been done. Among the important studies that have recently been conducted are two that have been sponsored by the soybean industry. The first of these is a study prepared for the United Soybean Board by the Center for Ports and Waterways of the Texas Transportation Institute, titled *"New Approaches for U.S. Lock and Dam Maintenance and Funding,"* published in January 2013 (the TTI Study). In the discussion of section 2004 in the Conference Report for WRRDA (H. Rep. 113-449, page 194), the Secretary is specifically directed to review, and to the extent practicable use, the assessments completed in the TTI Study.

TTI STUDY

The TTI Study had two principal objectives: first, to analyze the possibility of transitioning from the current "build and expand" approach to a "repair and sustain" approach to our lock and dam inventory, and second, to analyze the possibility of transitioning from the government's current lock and dam funding approach to a bonding style approach. With respect to the first objective, the TTI Study describes the long-term, overall cost advantages of adopting a "repair and sustain" approach, but also points out how current funding practices make the adoption of such an approach difficult, if not impossible.

The second objective of the TTI Study is more directly related to the study that section 2004 of WRRDA calls for. In this regard, the TTI Study first describes the benefits that the use of bonds would provide for funding infrastructure projects. First and foremost, of course, the use of bond proceeds would provide up-front all of the capital initially expected to be required for a project, avoiding the piecemeal, on again-off again, funding process that has caused the inefficiencies, delays and cost overruns that have become endemic to infrastructure projects. The use

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of bonds would also provide a way to access funding sources beyond the IWTF and general appropriations.

Although section 2004 refers specifically to federally tax-exempt bonds, bond financing could also include bonds that are not tax-exempt, or that are exempt only from state and local taxes. While the interest rate on such bonds would likely be higher than on federally tax-exempt bonds, they could help to avoid objections about the impact that federally tax-exempt bonds would have on federal tax receipts. The higher interest rate could be offset, at least in part, by the cost savings from improved efficiency and timeliness in carrying out the projects financed with those bonds.

Section 2004 proposes that the bonds be “secured by” the available proceeds, including projected annual receipts, in the Inland Waterways Trust Fund. If section 2004 was inspired by the TTI Study, as the Conference Report suggests, then the phrase “secured by” is technically inaccurate. In conventional bond financing, the bonds are “secured” by property (such as buildings or equipment) or by cash (such as revenue from sales or services) that are pledged as collateral, but which nonetheless remain available for the issuer of the bonds to use in its business unless it defaults in paying the debt service on the bonds (Think of the mortgage on your house). However, projects for the inland waterways infrastructure, such as locks and dams, do not typically generate any revenue on their own that would be available to pay the debt service on the bonds. This assumes that earlier proposals for lockage-based user fees are not adopted. Therefore, the TTI Study proposes that the funds received by the IWTF would not simply “secure”—or be collateral for—the payment of the debt service on the bonds, but would actually be used to make those payments. Presumably the study to be undertaken by the Secretary will take this into account when it is prepared.

The TTI Study examines various possible scenarios for the use of the IWTF to support bond financing and estimates the total amount in lump sum payments for infrastructure projects that this approach would make possible in each scenario. Certain scenarios in the TTI Study include the assumption that the inland waterways fuel tax will be increased. This reveals something else that WRRDA did not do, which the inland waterways industry has been advocating for several years, namely, increase the inland waterways fuel tax by six to nine cents per gallon to provide additional revenues for the IWTF. Earlier this year, Congressman Dave Camp (R MI), chairman of the House Ways and Means Committee, included an increase of six cents in this tax in his draft of the Tax Reform Act of 2014, but this proposal to overhaul the tax code has not made much headway in the House. The TTI Study shows the

dramatic effect that such an increase in the fuel tax would have if it were leveraged through the use of bond financing.

THE P3 STUDY

The second study sponsored by the soybean industry was prepared for the U.S. Soybean Export Council by The Horinko Group, titled “*Proposed Public-Private Partnership Projects for U.S. Inland Waterways Infrastructure Financing, Operations and Governance*,” dated December 2013 (the P3 Study). As suggested by its title, the P3 Study is more a study of public-private partnerships than of the specific type of bond financing referred to in section 2004 of WRRDA, but in this the P3 Study builds upon the TTI Study and expands upon it. The pilot projects that the P3 Study recommends are leases of certain specified locks and dams by non-federal entities from the Corps of Engineers, and the financing structure of such leases is assumed to include debt financing from private sector investors. Such debt financing could be with bonds of the very kind that are contemplated by section 2004 of WRRDA. Although the P3 Study does not receive special mention in the Conference Report for WRRDA as does the TTI Report, the P3 Study is an equally valuable contribution to the research and analysis and debates that will be necessary to find new ways to provide funding needed by the inland waterways infrastructure.

Private sector financing for infrastructure projects is not that hard. It has been done in other types of infrastructure projects, with success. Much work has been done, especially by the soybean industry, to show how it can be done for the inland waterways, and WRRDA has given us the opportunity to do it. Now it's our turn.

BRYAN CAVE

Mr. Kearns has represented owners, operators, financial institutions (as both lessors and lenders), and end users for more than 30 years in the purchase, construction and financing of vessels engaged in both the foreign and coastwise trades of the United States, including compliance with the requirements of the Jones Act for the ownership, chartering and transfer of vessels. This work has included purchase and sale transactions, construction contracts, loan agreements, preferred ship mortgages, bareboat charters, time charters, contracts of affreightment and a myriad of vessel operating agreements. His Bar and Court Admissions include Missouri, New York, the District of Columbia and he is Patent Attorney registered to practice before the U.S. Patent and Trademark Office. A copy of the P3 Study and the TTI Study can be found at www.soytransportation.org.



ATB

Demand for Coastal and Transoceanic ATBs Grows

Along the way, ATBs gain speed, efficiency, safety – and popularity.

By Susan Buchanan

Operators of articulated tugs and barges, or ATBs, say they like the maneuverability, weather reliability, stability, speed of these units, and the manner in which the tug pushes the barge. As a marine transportation concept, they can also simply be described as versatile. ATBs move petroleum, chemicals, coal, grain, containerized cargo and rail cars for customers on the U.S. coasts, rivers, the Great Lakes and overseas. As a result, demand for articulated units expanded in the last two decades with new technology.

In 1984, Robert Hill, president and chief naval architect at Ocean Tug & Barge Engineering in Milford, Mass., worked with Intercontinental Engineering-Manufacturing in Missouri, to develop the INTERCON system for ATBs. The INTERCON addressed deficiencies in the existing ARTUBAR and Blutworth connections, Hill said last month. Naval architect Corning Townsend and the Netherlands Ship Model helped produce the INTERCON.

The ATB Connection

The INTERCON is a single-degree-of-freedom connection which, like its predecessors, establishes a transverse, fixed axis between the tug and barge. Movements, including yaw, roll and heave, are restrained. The tug heaves and rolls with the gentler motion of the barge. The INTERCON incorporated the unlimited draft connection of Taisei Engineering's Articouple system; it eliminated the hydraulic ram as a means of extension, and uses a mechanical screw drive instead.

After the INTERCON was introduced, other engineers improved the Blutworth and ARTUBAR designs, and the Articouple system gained a foothold overseas. Companies eventually turned out in greater numbers to ATBs as a transport solution in the 1990s. Ultimately, Penn Maritime in Connecticut built the first entirely new INTERCON ATB in 1995.

"Starting in 1994, use of ATBs really began to take off," Hill said. He and his partners worked with hydrodynamic



“We were one of the first in the nation to build ATBs for Jones Act transportation,” Grune said. “We responded to an oil company’s West Coast needs back in 2002. At the time, the jury was out about using ATBs on the West Coast because of its steep ocean swells. But the test models we used were successful, and we embarked on building the 550-Class series. Then our customer came back and said in addition they would like a bigger 650 design. We built four 550s and ten 650s, followed by our still bigger 750s.”

– Rob Grune, Senior Vice President and General Manager, Crowley Maritime

experts to create a barge shape that maximized speed while keeping construction costs in check. Though ATBs are slower than ships, they can reach good speeds. For containers and other light deadweight tonnage, newer ATBs can achieve 15 to 17 knots. Speed is more important in transoceanic ATB voyages than on coastal trips.

ATBs take less time and effort to connect and disconnect on departure and arrival at ports than traditional tugs and barges, Hill said. They eliminate the need to shift from towing to pushing gear when entering a harbor. Safety threats from rigging heavy backing wires are removed. With an ATB, an hour inbound or outbound from harbors can be shaved off a trip.

ATBs run between the West Coast and Alaska. In fact, they run just about anywhere. “They operate transocean, for instance from the U.S. West Coast to islands in the Pacific,” Hill said. “They run from the Mississippi River in Louisiana to Africa with grain for PL 480 food aid. They travel from the United States to Mexico and South America. They go to Newfoundland from the U.S. Atlantic.”

OT&BE Participates in Many U.S. and Foreign Builds

“I’ve continued to design ATBs since 1994,” Hill said. “We’ve been busy every year since and remain quite busy.” OT&BE has designed, helped engineer or been involved in other ways in a majority of ATBs now in service in the United States. The company has foreign customers too, particularly in the Far East and Europe. OT&BE collaborates with Connecticut-based CT Marine, which special-

izes in ocean barge design, model testing, and river and ocean barge hydrodynamics. OT&BE and CT Marine run tests for shipyards and owners. In the Midwest, OT&BE teams with Ohio-based Northeast Technical Services on Great Lakes and other bulk carrier designs.

Crowley Maritime Completed Its Big Build Program

In 2002, Crowley Maritime Corp. in Jacksonville, Fla. launched a more than \$1 billion rebuild program that spanned over a decade. Today Crowley owns and operates 17 ATBs ranging in capacity from 155,000 to 330,000 barrels, senior vice president and general manager Rob Grune said last month. These units are chartered to petroleum and chemical companies.

“We were one of the first in the nation to build ATBs for Jones Act transportation,” Grune said. “We responded to an oil company’s West Coast needs back in 2002. At the time, the jury was out about using ATBs on the West Coast because of its steep ocean swells. But the test models we used were successful, and we embarked on building the 550-Class series. Then our customer came back and said in addition they would like a bigger 650 design. We built four 550s and ten 650s, followed by our still bigger 750s.”

Crowley’s 550 Class ATBs were developed and designed for West Coast operations and weather, with advanced safety features such as double hulls, IGS, segregated ballast and radar gauging systems. These ATBs with 155,000-barrel barges were the first in the industry to achieve speeds of 12 knots and handle extreme weather safely, according to



Initial work on Harley's ATB.

Crowley. The company's four operating 550 Class ATBs, delivered between 2002 and 2003 on the West Coast, are by tug: *the Sea Reliance, Sound Reliance, Ocean Reliance and Coastal Reliance*.

Crowley operates ten 650 Class ATBs carrying 185,000 barrels each in the U.S. Gulf and on the East and West Coasts. These vessels can maintain 12 knots and travel in bad weather. They were designed for modification to transport EZ chemicals, including cyclohexane, paraxylene and styrene. The first of the company's 650 Class ATBs was christened in 2006. Tugs in the series are the *Pacific Reliance, Gulf Reliance, Resolve, Integrity, Courage, Commitment, Pride, Achievement, Innovation and Vision*.

Crowley's newest ATBs, the 750 Class, can carry 330,000 barrels of petroleum products and are the most innovative in its fleet. The company operates three 750 Class ATBs along the U.S. Gulf Coast for Marathon Oil. These tugs are the *Legacy, Legend* and *Liberty*. The 750 Class barges are 45,000 deadweight tons and 600 feet in length. All three barges were built

by VT Halter Marine in Pascagoula, Miss. The 16,000 horsepower tugs were constructed by Dakota Creek Industries in Anacortes, Wash.

Crowley christened the *Legacy* in New Orleans in 2011 and the *Legend* in Tampa in 2012. Its 17th ATB, the *Liberty* was christened in May of last year at VT Halter in Pascagoula. "Manning on an ATB is greater than on a towed tug and barge, and the real cost of operating an ATB is higher than a towed barge," Grune said. "The main reasons we've gone to ATBs are to gain some speed, efficiency and safety." Jacksonville-based Crowley Holdings Inc., is a private holding company for 121-year-old Crowley Maritime. The firm provides transportation and logistics to domestic and foreign customers.

Moran's New Builds Followed Acquisitions

Moran Towing Corp. in New Canaan, Conn. operates six liquid petroleum ATBs, along with a dry bulk ATB that was added several years ago, company president Ted Tregurtha

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ATB

said last month. Moran's first ATBs were acquisitions and conversions, and they were followed by new builds. Those units operate along the U.S. East and Gulf Coasts.

"We're shipping more unconventional oil now than we did in the past," Tregurtha said. Unconventional oil includes products from shale, sands, coal and biomass; synthetic crudes; and gas to liquid from gas processing. "Our dry bulk ATB carries grain for a commercial customer from New Orleans to Puerto Rico," he said. The Mary Ann Moran tug pushes the 531-foot barge Virginia to San Juan for Conagra.

The company acquired New York-based Turecamo Maritime and its affiliates in 1998. Moran's first ATB tug, the Scott Turecamo, was a conversion. The vessel, built in 1998, was

retrofitted in 2005. Moran converted the ATB Barney Turecamo in 2005 with an INTERCON connection. For the ATB Paul T. Moran, Moran acquired the tug and barge from two different owners. In 2005, the barge was modified to receive a Bludworth coupler system.

Pati R. Moran, launched in 2008, was the first of four new-build ATBs in the Moran fleet, with all tugs designed by OT&BE and built by Washburn & Doughty shipyard in Boothbay, Maine. The Pati R. Moran is paired with the 425-foot, 118,000-barrel barge Charleston, built in 2007 by Manitowoc Marine in Wisconsin. The Linda Moran was delivered in August 2008, slightly more than a month after a major fire at the Washburn & Doughty shipyard. She is married to the 425-foot, 118,000-bar-

rel double-hulled barge Houston, also built by Manitowoc Marine in 2007. The Lois Ann L. Moran, delivered in September 2009, is coupled with the Philadelphia, built in 2008 by Eastern Shipbuilding of Panama City, Fla.

ATB tug Mary Ann Moran was delivered in late 2010. The 121-foot vessel has 5,300 hp worth of EMD power and an INTERCON coupler system. The tug was matched with Moran's dry-bulk barge Virginia after it was converted with an upgraded notch to accept the INTERCON coupler. The Virginia was built in 1982 by Galveston Shipbuilding in Texas and was converted at Gulf Marine Repair in Tampa for service as an articulated barge.

Except for its Bludworth model, Moran's ATB barges are equipped with INTERCON's C-series couplers. Moran's barges are mostly interchangeable with their tugs. Tregurtha also addressed ATB crew sizes and costs. "Petroleum ATBs operating in the United States typically have a crew of 8 and 11 people," he said. "That's more than an old-style towed oil barge might have." ATBs can be economical for short distances while tankships are more cost effective for moving large parcels longer distances, he said.

"Based on customer needs, it's highly likely we'll build more ATBs," Tregurtha said. This spring, Moran contracted with Wisconsin-based Bay Shipbuilding Co., a division of Fincantieri Marine Group, to build three oil/chemical barges and two tugs to be operated together as ATBs. Two of the barges will carry 150,000 barrels, and the third will hold 110,000 barrels. The two tugs--one 6,000 hp and one 5,300 hp--will be delivered separately over the next 24 months. Construction has begun on the first units.

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Courtesy Moran

Harley Marine Contracts for ATBs

Seattle-based Harley Marine Services' first ATB is under construction now, following a recent in-house study. "This ATB will allow us to provide better coastal petroleum transportation with faster delivery," founder and CEO Harley Franco said last month. "It will be reliable in adverse weather. And it will allow us to use less fuel for coastal deliveries, reducing the company's carbon footprint." Additionally, the articulated unit will give its crew safe access to the barge and cargo tanks during voyages.

The company partnered with Zidell Marine Corp. of Portland, Ore. for the barge and Conrad Industries in Morgan City, La. for the tug. Harley expects its first ATB to enter service late this year, joining the Olympic Tug & Barge fleet in Seattle. The ATB has a double-hull barge



The Christian Reinauer weathers a storm.

"They convinced us to go with water jet propulsion and incorporate dynamic positioning into the vessel control system, both of which have proven to be wise decisions. The vessel is fast, highly-maneuverable, and has proven to be a very versatile and stable platform for mooring operations, fisheries studies, and general survey work. After four years of successful operations, the RACHEL CARSON has far exceeded our expectations."

*~ Bruce Cornwall, Marine Superintendent
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ATB



Robert Hill, President and Chief Naval Architect at Ocean Tug & Barge Engineering

with a hull length of 422' 3", a molded beam of 76' 8" and a depth amidships of 27' 10." The barge will have a carrying capacity of 83,000 barrels and will be paired with a 4,070 horsepower twin-screw tug. The tug will be 116' long, with a molded beam of 36' and a depth of 16' 9."

Harley Marine plans to build another two ATBs. Both of them will be 83,000-barrel tank barges, to be constructed by Vigor Industrial in 2015. All three ATBs will have technically advanced, environmentally friendly equipment so that the company can continue providing safe, reliable and efficient service, Franco said. "Our future plans may include building more ATBs to meet growing demand for coastal petroleum transportation," he said.

GLDD Orders a Dredge ATB

ATB's can be fitted for dredging, too. At Great Lakes Dredge & Dock Co. in

Illinois, vice president Bill Hanson said last month, "We're in the design phase for our first hopper dredge ATB, which is scheduled to be delivered in 2016. This will be the first dredge of its type ever built, and we're excited to be in the lead. Its uses will include coastal protection, harbor deepening and channel maintenance projects."

In January, GLDD contracted with Eastern Shipbuilding to build a hopper dredge ATB unit, with a 433' trailing suction hopper dredge barge and 158'-4" 15,600 BHP, CPP tug. The tug's engineering details are being done by Ship's Architect, Inc. and the barge's details are by Bay Engineering, with both plans based on an OT&BE design.

A GLDD contract with Signal International in August 2012 to build the ATB dredge was terminated. GLDD's \$140 million contract with Eastern compares with \$94 million it had agreed to pay Signal. The GLDD dredge will work to restore eroded land along the Gulf Coast, and will deepen and maintain waterways and ports as the nation accommodates larger vessels, especially from the expanded Panama Canal, starting in 2015. GLDD owns and operates over 200 specialized vessels, and is the largest provider of dredging services in the United States and operates internationally.

Outlook: Orders for 2016 to 2017 Abound ...

ATBs will continue adjusting to the times, Hill and operators said. The initial appeal of ATBs was that federal regulations allowed them to have relatively small crews. But today most tug and barge customers, particularly major oil companies, are concerned about safety and spills and don't want to be understaffed. Meanwhile, the industry is considering alternative fu-



els. “We have two ATBs under design now that will burn LNG, and one of them is dual fuel, using diesel and LNG,” Hill said.

Looking ahead, “we have inquiries from customers to take delivery in 2016 and 2017,” Hill said. “The future is very bright domestically and overseas. ATBs are cheaper than using rail. We’re building for oil and chemicals. Overseas, the Orient has more than 200 ATBs now.”

Today, almost 90 ATB units are active in North American waters and that number will grow significantly in the near term. As many as 10 more can be counted amongst the active order books at the nation’s shipyards. Beyond this, and buoyed by the ongoing domestic energy ‘boom’ and an economics model that works well in Jones Act cabotage trades, it’s virtually certain that this unique transportation system will remain a part of the

nation’s intermodal transportation solution. There aren’t too many things you can count on in today’s rapidly changing domestic waterfront, but the ATB apparently holds a spot on that short list.

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.



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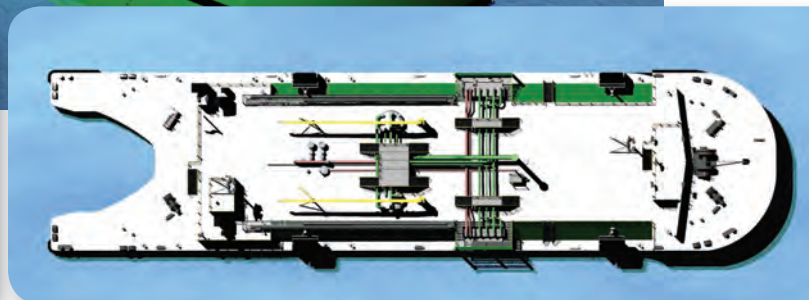
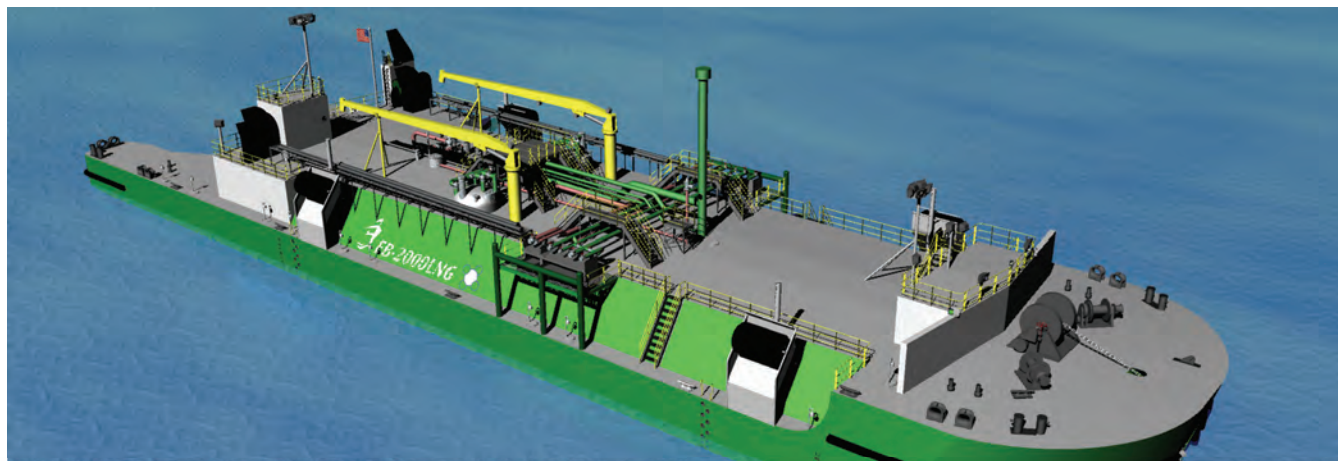
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The Versatile ATB Enters the LNG Game

EBDG's LNG bunkering barge design receives ABS approvals as the maritime industry increasingly looks to LNG as a fuel of the future.

By Joseph Keefe

In early June, Federal Maritime Commissioner William P. Doyle told listeners at an LNG Bunkering conference in Vancouver, Canada that “Liquefied Natural Gas (LNG) bunkering in North America is moving forward ... There is an abundant supply of natural gas in North America. Utilizing natural gas as a marine fuel would help ship owners and operators comply with the MARPOL Annex VI requirements to reduce air pollution from ocean going vessels.” That much is true.

It's also true that there is any number of ways for vessel operators to get to the Promised Land. Nevertheless, LNG – as a fuel – has certainly stepped out into the lead on that mission. And, the race to design next generation bunker barges – those carrying LNG for all those soon-to-come

LNG powered vessels on the backlogs of U.S. shipyards – is in full swing. In the thick of that race is the Seattle-based Elliott Bay Design Group (EBDG), whose EB-2000 LNG ATB Barge concept recently obtained approval in principle (AIP) from the American Bureau of Shipping (ABS). According to EBDG, the EB-2000 offers versatility in LNG transport and bunkering. The barge will be offered in both an optional spoon or ship-shaped bow combined with a (patent pending) flush trunk and foc'sle arrangement which provides proven offshore performance.

Curt Leffers, EBDG Project Manager, told *MarineNews* in June, “We are excited to obtain ABS approval in principal on our bunkering barge design. Our 2,000 cubic meter design is the basic platform that can be customized

to meet our customer's operational and cargo capacity requirements." Also exciting is the prospect for yet another use for the versatile, economical and enduring ATB.

The EB-2000 LNG is just one of several LNG barge designs developed by EBDG for clients to meet growing demand for efficient and cost-effective refueling of LNG powered vessels. The innovative 257 ft. EB-2000 was designed for either an ATB or towed configuration, and features a marine diesel fuel cargo tank for refueling dual fuel vessels.

LNG: Cost, Economics and Logistics

Recent data reveals that LNG in the U.S. is now more than 50% less expensive on an energy-equivalent basis than marine residual fuel and marine distillate fuel. And, while no one can say for sure that this price advantage will continue, the obvious environmental benefits and possible boost to the bottom line has led to a sustained commitment to building dual fuel, gas ready and LNG powered merchant vessels.

Separately, the Port of Pittsburgh Commission in May began soliciting proposals to provide research support for a liquid natural gas project for the Pittsburgh marine-corridor by developing cost/benefit analyses and identifying shore-side and midstream refueling requirements. The effort will evaluate the possible business opportunities that might become available to inland waterway stakeholders should liquid natural gas be introduced as an alternative fuel for regional towboats. Like the bluewater projects already announced, momentum is building for the possible conversion of inland workboats from diesel to natural gas propulsion. In fact, there are currently more than 40 vessels in North America that are under development or evaluation for conversion to LNG fuel. Any and all that come to fruition will need bunkers.

There are more than a few LNG / Dual Fuel deep draft vessels on the books in U.S. yards today. They will all eventually need a reliable, local and reputable source of bunkers. Curt Leffers, referring to EBDG's own design, said, "There will eventually be opportunities for bunkering barge services in the pacific northwest, gulf coast, great lakes, and in the southeast region." He declined to discuss specifics, saying only, "Although we've designed several LNG ATB vessels for external customers, we do not have yet a customer that has placed an order with a shipyard."

The EBDG Concept

As a concept and design idea – the dual fuel tug, rigidly connected to the LNG bunker barge and using boil-off gas in the process – was not originated at EBDG. According to EBDG's Leffers, "This concept has been a topic of discussion in the industry and is attractive from the standpoint of boil off

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VESSEL DESIGN



“We are excited to obtain ABS approval in principal on our bunkering barge design. Our 2,000 cubic meter design is the basic platform that can be customized to meet our customer’s operational and cargo capacity requirements.”

– Curt Leffers, EBDG Project Manager

management and efficiency of operation. Having dual fuel capability allows the tug to use diesel when not coupled to the barge.” That said; EBDG has embraced the idea and incorporated it into their proprietary designs.

The EBDG bunker barge will carry typical capacities of between 2,000 and 3,000 cubic meters of LNG. With the relatively low specific gravity of LNG, anticipated drafts are between 12 and 18 feet, depending on the barge design. The volume necessary to refuel a

containership would be on the order of 2,000 to 3,000 cubic meters, but this ultimately depends on the size of tanks of the vessel. Leffers adds, “The maximum draft of the bunker barges is 18 feet, but this requirement is really driven by operating restrictions, since the specific gravity of LNG is relatively low. Draft has not been an issue.”

While boil-off consumption by the propelling engine is not a new concept – large LNG carriers run-

ning on steam plants have been doing just that, safely and routinely, for decades – getting that done with an ATB arrangement may be something different altogether. Curt Leffers told *MarineNews* that there aren’t (yet) specific regulations pertaining to a gas connection between a tug and barge in an ATB configuration. But, he cautioned, “There are numerous technical challenges that must be overcome in order to have a reliable and safe fuel connection between the tug and barge. From an operation standpoint, consideration must be given to procedures related to connection and disconnection of the gas connection.”

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Emerging Regulations & Guidance

The U.S. Coast Guard issued a notice seeking public comment on two draft policy letters regarding safety measures for LNG as a marine fuel. The second of those draft policy letters discusses voluntary guidance and existing regulations applicable to vessels and land based facilities conducting LNG marine fuel bunkering operations, and provides voluntary guidance on safety, security, and risk assessment measures for these operations.

Separately, the American Bureau of Shipping (ABS) in March followed the Coast Guard policy letters with a report of their own, entitled Bunkering of Liquefied Natural Gas-Fueled Marine Vessels in North America.

VESSEL DESIGN

The objective of the report is to provide guidance to potential owners and operators of gas-fueled vessels, as well as LNG bunkering vessels and facilities, in order to help them obtain regulatory approval for projects.

Horses for Courses

The ATB has been around for a long time, with as many as 75 in operation today in North American waters and another eight on the order books in domestic shipyards. Popular in Jones Act and niche domestic trade routes, the ATB, with its reduced crewing levels, has a bright future especially if shortsea shipping gets another kickstart in the near future. And, of course, another promising outlet for this style of transportation includes use as an LNG bunkering platform. The EBDG version adds its own twist to the mix.

“One of the special design features that our 2000 CBM LNG ATB has is a diesel tank. This allows for flexibility in operation and services for the vessel owner, said Leffers, adding, “We have been designing around the Intercon coupler systems for our ATB designs.” Beyond this, he said, ATB’s are being considered for many concepts; shortsea shipping, container-on-barge for niche ports among them. “EBDG’s engineers have been brainstorming a variety of ATB applications with customers.”

The Way Forward

Leffers left *MarineNews* with a clear idea of where he and EBDG think things are headed next – and they intend to be there. “The way that the market is trending with LNG fueled vessel orders, the use of LNG bunker barges will be important in the fuel supply chain. Flexibility in operation is an important aspect of barge design.”

Natural gas, as a marine fuel, is

strongly supported and endorsed by the Obama Administration.

FMC Commissioner Doyle, speaking last month at the Vancouver-based LNG conference, also left no doubt as to where he thinks things are going. “As this fuel source is taking hold in the commercial U.S. domestic coastwise trade, it is now gaining traction

in the inland waterway system and the international container trade.” He added, for emphasis, “Appropriate, safe and secure bunkering operations are mission-critical to a successful LNG marine fuel program.” Just a few miles to the south, Elliott Bay Design Group is already working to ensure just that.



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Performance, Speed, Fuel Economy & Environmental compliance all come together to form the ultimate balancing act for engine OEM's and their customers alike.

By John Haynes

The 'need for speed' has been at the heart of professional fast craft operations since powerboats first overtook their bow wave and went on the plane. However, it is a hard fact of life for many professional organizations that fuel budgets are being cut. Engine manufacturers now recognize that high performance must be balanced with fuel economy and environmental compliance.

When fuel costs were less of an issue the marine industry solution to engine power for fast craft was often the same as the Detroit motor industry – install maximum horsepower, and then use the engines at lower revs until you need to go fast. The modern engine is designed to be used at continuous higher revs so downsizing engine size is now a viable consideration for reducing fuel bills and increasing range at sea.

Changing Scenarios

Traditional 'boats' in the last millennium were usually considered by definition to be carried on board a ship, then launched and recovered as required. Typical examples of boats around 25 feet, carried in davits onboard ships, include the

US Navy 7 meter RHIB and the UK Royal Navy Pacific 24 RHIB. Propulsion requirements for these boats are simple; start on demand, get the boat on the plane – then do it again tomorrow! One engine usually meets these requirements.

Modern 'ships' include the smaller Offshore Patrol Vessels in the 25 meter (82 feet) to 50 meter (165 feet) range. These vessels operate in green or blue water and may be required to support lengthy coast guard and border actions, international peace keeping or disaster relief. Engine and propulsion requirements for these 'ships' are nothing like the requirements for 'boats.' OPV power specifications reflect self sufficiency, including continuous main engine running, with separate generator sets that support on board systems.

Part of the 'changing world' scenario for professional maritime organizations is the next generation of craft in the sub IMO sector (below 80 feet / 24 meter). Major innovations in both engines and propulsion technology are taking place in this dynamic sector between 'boats' and 'ships'. In the shadow of global recession it is clear that industry has realized that innovations must be linked to genuine end-user

requirements at procurement stage and reduced operating budgets. The major growth in fast craft development has been under 50 feet (15 meters). Established and new players are delivering propulsion technology solutions that range from slight percentage gains to game changers.

Inboards Adjust

In the diesel inboard sector various manufacturers; including Volvo Penta, Mercury, Yanmar and Cummins have recognized the growing professional sector demand for high performance diesel engines. Fast boat operators need to constantly adjust 'power on / power off', for example when running into a head sea or during boarding operations. The engineering challenge has been to combine the robust characteristics of diesel engines with reduced turbo lag and improved throttle response. Since the 1990s, the automotive sector, particularly in Europe, has driven the development of high performance diesel engines. Lighter weight blocks and components, combined with electronic fuel management systems and fly by wire controls are enabling the next generation of inboard diesels to close the 'responsiveness' gap with gasoline (petrol) outboards.

Many inboard engine manufacturers offer their own out-drive 'legs' that combine gears, steering and propellers. These stern drive units are designed to be installed with the OEMs own high performance diesel engines. Other manufacturers focus on specialist stern drive units that can be coupled with various engines. Konrad stern drives are designed for heavy duty applications where strength, reliability and long service life are required. Julie Heifner, Sales and Marketing Director of Konrad told *MarineNews*, "The main design requirement is for the stern drive unit to take the torque and the impulse load that comes from a diesel engine. When a high performance craft is running hard in waves, the loading effect of leaving and re-entering the water can be extreme."

Konrad drives are compatible with most high performance diesel engines. The company has just announced the launch of their new 600B Series drive for commercial and military operations. Heifner adds, "The new system offers a thicker, wider, stronger transom unit - designed to spread the load across a larger area, making the entire unit extremely durable. Steering is integrated within the 600B Series unit. Two dual prop models are available, one which excels in performance, the other in high load carrying applications."

Outboards: Emissions & Economy

In the high performance outboard sector various manufacturers, including Mercury, Honda, Yamaha and Suzuki have invested significant R&D budgets to comply with strict emission regulations, and the end-users need for improved

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fuel economy. Since the late 1990s, the transition has mainly resulted in the move from 2 stroke to 4 stroke engines, linked to electronic fuel management systems. A notable exception is Evinrude that have stayed with 2 stroke engines and developed their low emission technology E-TEC outboard range. OEM development programs have all recognized the demand for increased size of power units, with the largest gasoline outboards now delivering over 300 hp. Homeland security, coast guard, customs and border patrol craft in the 25 to 50 feet range have become demanding 24/7 work environments for these twin, triple and quad engine set ups.

At the 2011 Miami Boat Show, when the largest current outboard engine was 350hp, the launch by Seven Marine of a 557hp outboard was a significant event. Company President Rick Davis said, "The muscle for the 557 is provided by a fuel-injected marinized 6.2 litre supercharged small-block V8, managed by the General Motors MEFI 6 engine controller. Our first objective was a two engine, 1100 hp, setup that delivers the same horsepower as a four engine setup. We are now working with high performance boat builders developing three and four engine installations that take the combined outboard horsepower to over 2200 hp. With major weight savings and less appendages dragging in the water this development has caught the attention of naval architects and fast craft designers."

Over the past two decades navy and air forces around the world have made the decision not to carry gasoline. From this decision high power diesel outboards have become a priority objective for both end-users and engine manufacturers. But there have been significant engineering challenges to overcome, particularly the size of unit and overall weight.

In the interim, multi-fuel engines have filled the needs of a specific group of operators. Jeff Wasil, Engineering Manager, at Evinrude said, "Fifteen years ago, Evinrude started to develop a Multi Fuel Engine (MFE) with, water jet propulsion, for the US Marine Corps and the SEAL teams. These units needed multi-fuel engines to power their fleets of Zodiac F470 Combat Rubber Raiding Craft, operating from ships and aircraft in harsh environments. The Evinrude MFE engines can be submerged and are designed to run on kerosene, aviation fuels and standard gasoline. Fuel selection can be changed with the simple flip of a switch. The 55 hp MFE attaches a large impeller pump jet unit to the gearcase for vectored thrust. There is also a propeller version of the 55 hp and a 30 hp model."

Water Jets

Riverine and shallow water estuary operations also require specialist propulsion solutions for larger craft. Wa-

terjets are the most common choice as it can withstand impacts with the river bottom without risking damage to a propeller. In addition, floating debris presents a significant concern, whether organic or inorganic. Joe Silkowski, Chief Operating Officer of specialist boat builder Recon-Craft said, "Vegetation and debris are the nemesis of water jets. Anything that mitigates the risk of a disabling casualty caused by a fouled impeller or jet intake is worth considering. Marine reversing gears are a common addition to the power train to deal with fouled intakes and there is also new technology that helps to prevent the intake from getting fouled in the first place. Being able to rapidly clear debris from the water-jet offers a tremendous tactical advantage to the operator. In riverine settings, the order of importance is usually maneuverability, draft then speed."

Old Demands Spur New Developments

Specialist UK small craft manufacturer, C-Fury, are developing a lightweight high thrust diesel inboard propulsion system, that will be optimised for craft under 20 feet (6 metre). The system combines the latest direct injection, two rotor turbo diesel Wankel engine, with contra rotating ducted propeller from a key technology specialist. C-Fury MD Simon McLoughlin said, "Many potential customers for our craft operate from a mother ship. They want to use common fuel from the ship's main tanks as it is safer and simpler for logistics. Our aim is to enable a fully loaded craft to have controlled acceleration from displacement through to a cruise speed of 25 knots. To safely achieve this in a small craft we need a system that delivers high bollard pull, significantly higher than current technologies. Our system has a very high mass flow." The first prototype craft will be running in early 2015 for evaluation.

Until only recently, electric outboard motors had only made inroads into the lower horsepower ranges, mainly under 10 hp for small fishing boats, tenders and kayaks. The main obstacles to overcome before scaling up had been battery technology and the initial cost of procurement. Providing viable electric power for the automotive industry is a high value problem which has given battery manufacturers the opportunity to consider the differences with marine applications, including shock and vibration when a boat is underway plus the challenges of venting gasses from bilges and enclosed spaces. Developed by the German company Torqeedo, Deep Blue is an electric outboard system powered by batteries adapted specifically for the marine environment. Co-founder and CEO of Torqeedo, Dr. Christoph Ballin explains, "Deep Blue is a powerful electric drive that has been industrially developed and manufactured by

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Torqueedo, using only high-tech components. Deep Blue is environmentally friendly and the battery comes with a nine year capacity warranty. The drive system is available as inboard and outboard version with 40 hp and 80 hp. Twin systems can deliver up to 160 hp.” Zodiac MILPRO is currently using the Deep Blue 80 hp electric outboard system with its 20 feet (6 metre) SRM600 professional RIB.

Although industry has been working on potential innovations in various types of engine and propulsion technology for many years there has been one constant question around the RHIB and high speed craft sector: When will someone bring out a high performance diesel outboard? Marine Diesel of Sweden has talked openly about their diesel outboard development project for many years. The development has been taken over by the company Cimco Marinediesel, partially owned by Marinediesel in Sweden. Pre-launch information for a 200 hp diesel outboard named the OXE was recently released at HSBO in Sweden and MACC in the US.

The turbocharged diesel engine is a proven design that has been marinated in cooperation with the GM Group. Innovative features include a high torque belt-transmission, plus compact design of the lower housing which reduces drag and improves high speed capability. The engine runs on EN590, ASTM D 975, NATO F76, F75, F54, marine distillates DMX, DMA, (JP-5, JP-8, Jet A) fuel which gives high flexibility for operators. Christer Flodman, Technical Manager of Marine Diesel and the project manager for the OXE project said, “We started this project with a mission to design the first generation of high output diesel outboards. Our key words were durability, endurance and performance. The patented technology has enabled us to design a

robust drive unit that will effectively transfer high torque diesel power. Serial pre-production of the OXE diesel outboard engine is planned to commence in mid 2015.”

Engines and propulsion systems that are designed and built for professional or commercial operations need to run hard, often for long hours in adverse sea conditions. Users must be able to rely on these products at all times. In certain situations, failure is not an option – the engineering must not break. Professional boat operators around the world have learned that power and performance are relevant, but reliability and durability, linked to a strong international service, spares and support network are important factors for all types of propulsion solutions.



John Haynes, AFNI, is a Yachtmaster Ocean and Advanced Powerboat Instructor. Subject matter expertise includes high speed craft consultancy, product development and specialist training. He is Operations Director of Shock Mitigation and founder of the RIB & High Speed Craft Directory that brings together specialist boats and equipment for the professional sector.

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NAMJet's tractor jets seal the deal on a significant military boat building contract. The Army's one-of-a-kind bridge erection boats fill an obscure, shallow draft workboat niche, while showcasing capabilities that someday could be commercially viable.

By Joseph Keefe

When the U.S. Army turned to industry in its quest to design the next generation, prototype bridge erection boat, the ensuing competition attracted no less than three industry competition teams, all of whom eventually submitted prototypes in 2010. Birdon America, Inc., teaming with a (now) wholly owned NAMJet propulsion group, was one of the players. These models were then handed over to the U.S. Army for extensive testing. Eventually, in March of this year, Birdon won the US Army Bridge Erection Boat (BEB) platform contract. At about the same time, and to better support its international and domestic clientele, the company also announced it has moved its manufacturing and operational headquarters to Denver, Colorado. As it turns out, there were good reasons for both events.

History & Experience

Birdon's history with the so-called BEB design stemmed from its parent company, Birdon Australia. Previously, Birdon had already built 24 bridge erection boats for the Australian Army and they had their own proprietary design that ended up being very successful for that application. But, at that time, the Australian version was powered by another brand of propulsion systems, one which was teaming with another competitor for the U.S. Army contract. Hence, Birdon went in search for a new propulsion system that they could use to put into the BEB for the bid phase. They landed on NAMJet propulsion systems and its TRAKTOR Jet line of high-thrust marine jets. In the BEB concept, NAMJet performed so well that Birdon went ahead and purchased the company back in 2011.

What is a Bridge Erection Boat?

When the Army goes into theatre in a conflict, bridges might be out that need to be crossed. These temporary

bridges – floating bridges – are created by dropping bridge sections in the water – and then the bridge erection boat is tied up to the section. These types of boats were highly prominent in the first Iraqi conflict. There could actually be as many as 50 of these that would form a bridge. Or, the floating section can be used as a ferry type configuration, moving single tanks across the body of water. In a nutshell, Bridge Erection Boats are primarily used to provide propulsion and maneuverable thrust to support temporary floating bridges often made necessary when existing bridge crossings have been destroyed in military conflict. The vessels are transportable by road, rail and air.

Rigorous Testing – and results – Wins the Contract

The competition for this contract was not easy, nor was it quick. All models were put through extensive testing periods at Aberdeen; as much as 600 hours of testing which included a rail car test because the boats are transportable and meant to go into theatre. One of the tests involved tying the boat to a rail car and then slamming two cars into each other to prove that the tie downs would resist that sort of collision. This was just one of dozens of tests. Following that, and in late 2012, the RFP came out to replace the entire bridge fleet for the U.S. Army, calling for as many as 374 bridge erection boats. RFP's were submitted in March 2013 and an extensive questions and answer period for all of the competitors ensued. In November of 2013, it was announced that Birdon America – the American subsidiary of Birdon Australia – had in fact won the competition and was being awarded the contract.

Jim Ducker, General Manager at NAMJet, told *Marine-News* in June, "The boats include two Traktor Jet 381's – our smallest jet, commercial off-the-shelf units. As you can imagine, the contract comes in phases, but they immedi-

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ately awarded 11 and within another a week, they added another 14 (LUT) Limited User Training Boats. So we were awarded for 25 to start. Once this phase is complete, we presume that they will start the full production phase at yet to be determined quantities. The prospect to replace the entire U.S. Army fleet of these vessels in the next 5 to 6 years is very good.

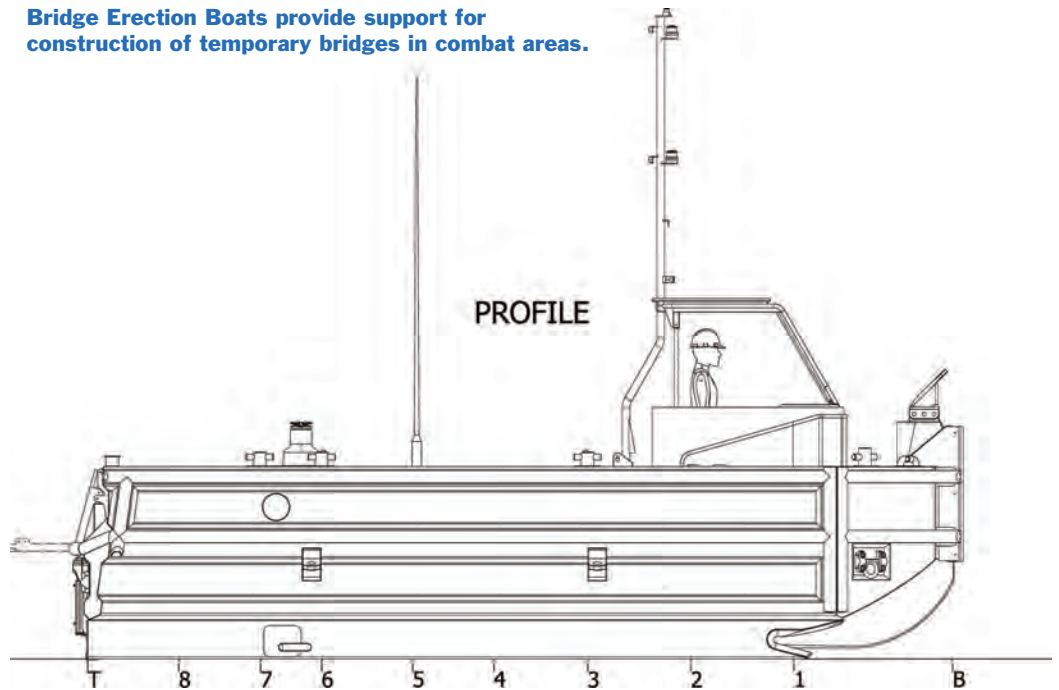
Selection Criteria: Birdon, NAMJet or both?

The bridge erection boat design that Birdon owns is not a typical boat design. Almost a flat bottomed boat – the vessel's exhibit only a 2 degree deadrise angle. Ducker says that's a radically different design than the legacy boat that is a much more traditional, deep-V type hull. He added, "Our design is a much more stable platform, because when you look at the mission that's involved here, it certainly makes a lot of sense. In addition to that, when you are trying to propel what is essentially a brick on the water, you need something that is high thrust, heavy duty and durable. The Australian versions, for example, while they were quite stable, they (using other Jets) were not able to deliver the speed and thrust performance that the U.S. Army required. It was decided that NAMJet was the only propulsion system that could satisfy both speed and thrust requirements for this type of project."

Special Conditions: High Turbidity / Riverine Environments

The very nature of the work required of the new generation BEB involves toiling in riverine, sometimes highly turbid and muddy, debris choked waters. That means that the propulsion systems for these shallow draft craft must not only be durable, they've got to be able sustain prolonged service in

Bridge Erection Boats provide support for construction of temporary bridges in combat areas.



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unfriendly waters. According to Jim Ducker, that's exactly why NAMJet was chosen. "Because our system is higher thrust, as opposed to a really high speed unit, we don't require the precision in the impellor that a high speed unit might need. The RPM on our water jets is almost half of a competitor's high speed unit. So, we've got lower RPM's that produces less damage, and a much higher impellor clearance rate to the wear ring. This gap allows for certain amounts of sand and grit to pass through with minimum or no damage. It's those sorts of things that make our propulsion units less susceptible to the conditions that you are talking about. This is not a deep water boat – it's made to traverse muddy riverine environments."

Swaying the Army Vote: Advantage NAMJet

According to Ducker, when it came time to make its contractor selection, the 'Technical' area was the number one factor. Within that area, reliability was a high consideration. And, while the Birdon boat design certainly came into play, ultimately, NAMJet sealed the deal. Ducker explains, "You can imagine that after 600 hours, there was a lot of wear on all systems, and the NAMJet product really excelled under those conditions. So, the water jet was, we believe, the difference."

Three technical factors were taken into consideration. These included sub factors of (a.) reliability, (b.) conventional rafting speed and (c.) forward top speed. Birdon was rated outstanding in technical aspects and only in terms of top speed was the NAMJet beaten. In theatre, however, these boats don't need to go terrifically fast, but they do need to provide thrust and reliability under load. Jim Ducker added, "It's not a slow Jet by any stretch of the imagination, but it's also not going to be installed in a Patrol Boat to try and achieve 40-50 KT."

All competitors were tested with Cummins engines adapted to run on JP8 fuel to drive the jets, identical water con-

ditions and other similar variables. Nevertheless, the award was protested by one unsuccessful bidding builder, but the Government Accounting Office (GAO) rejected the protest on the grounds that the Birdon boat was technically superior.

Commercial Propulsion Equipment, Commercial Applications?

In June, we asked if the NAMJet equipped BEB performed this well under adverse conditions in a hostile environment, could it not also perform similar service in niche, commercial workboat applications, as well? Ducker wasn't ready to commit to such a concept, saying only that his firm would concentrate first on fulfilling the Army contract before considering other applications. But, while water jets aren't necessarily considered common in inland commercial towing and pushboat work, the NAMJet driven Birdon BEB certainly showed its capabilities under difficult testing circumstances during the Army contract bid phase. Beyond this, and with the newly heightened emphasis on domestic inland infrastructure maintenance, durable shallow draft workboats will certainly be part of that new equation. The recent passage of the long awaited WRRDA bill may well be the catalyst for more such work in the future. Boats employing concepts borrowed from the Army's BEB might just be the ticket for shallow draft operations.

In the meantime, and as NAMJet relocates its manufacturing facilities to Denver, CO, they will also co-locate with Birdon America in the same 50,000 square foot facility. There, they will jointly build the first 25 BEB's in a total contract deal worth \$19 million. NAMJet will also continue to provide propulsion for all of its other business within the same building. To that end, Jim Ducker insists, "Birdon America was established solely for the bridge erection boat. But, Birdon intends to build on NAMJet's name – here and internationally. That's the long term future." By any yardstick, that's a pretty good start.

NAMJet's high-clearance impellers and low-RPM operating range provide exceptional thrust while maintaining top end speed.



Safety Through Standardization

Celebrating the 10,000th YoYo Winch.

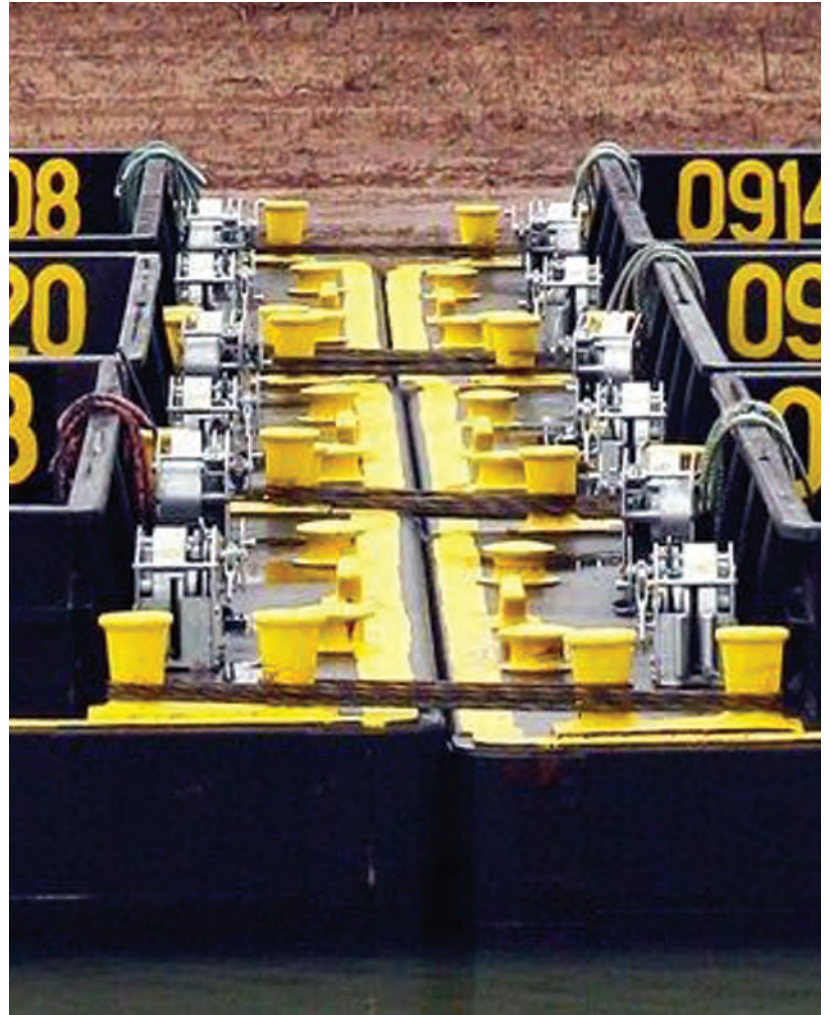
By Kerry Connell

For decades, barge owners and operators had no reason to think twice about their rigging. There were only a few choices when it came to winches, and there were ratchets as well. Because of the simplicity of these machines, few people in the industry were compelled to think critically about how such a basic item might be improved. But winches and ratchets have their downsides: fouling and birdnesting can and do happen. Wire rope is heavy, and traditional rigging takes a lot of it. And old-fashioned winches require a good amount of time and effort to operate. But what else was there?

In 2008, the Patterson Manufacturing Company, of Pittsburgh, PA, developed the YoYo Barge Winch, a revolutionary design that reflected a total re-thinking of the way winches do their job. And now, within the next few months, Patterson is on track to deliver its 10,000th winch—a significant milestone that reflects just how thoroughly the YoYo has taken over North America's waterways in just a few years.

Keeping an Ear on the Customer

David Grapes, president and CEO of Patterson, is not surprised at the YoYo's success. That's because the YoYo is a direct result of customer feedback, something the people at Patterson respect and value. The engineers had originally come up with an idea for a YoYo-style power winch, and they presented this to the people at American Electric Power (AEP), headquartered in St. Louis, Mo. and Patterson's biggest customer. AEP was interested, but it turned out that what they really wanted was a manual winch for barges. "We expanded the idea from there," says Grapes, "and everybody in the industry has embraced it."



That's not an exaggeration—Patterson figures that, counting rebuilds and re-rigging, the YoYo has been the preferred winch for several years for more than 50% of the winches in play on an annual basis. With approximately 4,000 to 5,000 winch-sale opportunities per year, that's a lot of YoYos. And once the 10,000th YoYo winch is installed, an overwhelming majority of barges built in the last five years in the U.S. will boast this revolutionary design.

What does this mean for the inland waterways shipping industry? It means heightened productivity and profitability. Because the YoYo uses a single-stacking design, operators no longer have to deal with springcoil, fouling, and uncontrolled spooling. A patented double-dog design allows easy maximum line tensioning and makes it simple to use. The 25 feet of takeup (or 40 feet for tank barge applications) mean less wire rope to heave around and eventually untangle. "The deckhands all prefer the YoYo," says Grapes.

DECK MACHINERY



David Grapes,
President and CEO of Patterson



Making a Tough job a Little Easier

People at AEP confirmed this preference. “Throughout my 35 years of decking, I’ve had to use hundreds of different types of winches. The YoYo winch is nothing like conventional winches,” says Syd Gibbeaut, port mate (now retired) at AEP River Operations. “This is certainly an amazing winch, one that will have a major impact on our industry.”

Bruce Darst, also retired from his position as port captain at AEP, concurs. During the testing, he said, “We’ve been using the Patterson YoYo winch as a barge connector for three years. The winch has proven to be super-dependable and is both easy to tighten and to pull wire off the drum. It’s also very easy to replace the wire. We’ve been field-testing eight of these winches and have only replaced one wire in that time, which also suggests it extends the working life of the wire cable. Because of its innovative design, it’s impossible for the wire to become entangled or birdnested on the drum. This is the winch’s biggest advantage and saves untold time and effort in building tow. It’s a very high quality winch, easy to use and maintain, and is far superior to the barge-connecting winches that have been commonly used in the past.”

John Byer, AEP boat captain, sums up one of the main reasons the YoYo is so popular: “Once you start to pull the wire off of the winch, as a result of the winch design, the wire pays itself off the winch. It’s the best mousetrap out there, and it’s where we need to be.”



YoYo Winch Specifications

Model	YoYo 25-1	YoYo 40-1
Ultimate Capacity	80,000 lbs	80,000 lbs
Drum Capacity (1" wire rope)	25'	40'
Center Line of Drum	7.38"	8.37"
Overall Height	26.95"	40.30"
Base Length	34.85"	44.60"
Overall Length	39.95"	51"
Base Width	14.75"	16.75"
Overall Width	23.80"	30.42"
Net Weight	1,170 lbs	

A Partnership in Testing Innovation

AEP's involvement in the development of the YoYo was instrumental. Patterson provided with company with some of the first products, and they tested them over two years. AEP personnel collected both quantitative and qualitative information on ease of use, time savings, injury reduction rates, ROI, and overall savings. By the end of the trial period, AEP had concluded that they could save millions of dollars by making the YoYo their standard winch.

As a result of those years of development and testing with AEP, Patterson has determined that the YoYo is 50% faster than ratchets, which, according to the company's innovative ROI calculator, means that the winch actually pays for itself in a short amount of time. Safety is also a plus—less birdnesting means fewer man-overboard opportunities.

Standardization Brings Safety and Efficiency

Taylor Grapes, engineering director at Patterson, notes that the increasing prevalence of the YoYo is leading naturally to a positive change throughout the entire inland shipping industry, not just at AEP: *standardization*. With all of Patterson's customers using the YoYo (including the three biggest towing operations in the industry) and increasing numbers of barges adding the YoYo on a continuing basis, he envisions a day when every barge will be exclusively equipped with this new design.

"The YoYo is becoming the de facto standard in this industry," he says. "As more and more owners and operators upgrade, rebuild, re-rig, or build from scratch, the more YoYos we'll see, until basically you'll have nothing but the YoYo on board anywhere." This represents a positive outcome for Patterson, of course: if owners are specifying the YoYo; that means more sales for the company.

Standardization also benefits the industry as a whole. Most industries agree that voluntary technical and trade agreements among experts contribute to increased safety, predictable outcomes, and better business—this is why organizations like the International Standards Organization, or ISO, exist. Engineers and economists at many standards groups including the ISO, the World Trade Organization (WTO), and the Standards Council of Canada have conducted a multitude of global studies proving the measurable value of standards as they apply to a variety of industries.

Beyond formal standards, the adoption of a standardized technology increases user familiarity, which results in safer conditions. If every deckhand is familiar with the operation of the YoYo, and the YoYo is on every barge, then that means everyone can work swiftly and safely anywhere without the

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downtime associated with overcoming the learning curve.

Another advantage to standardizing the YoYo is increased productivity. Because this winch allows workers to make and break a tow in half the time it takes to do it with ratchets, operators can ensure that more of their time is spent actually out on the river. The elimination of fouling also saves time and effort while increasing user safety. These enhanced efficiencies can really add up when extrapolated to consider the average number of barges per tow.

Beyond North America

Taylor Grapes is pleased with the overwhelming success of the YoYo winch in North America, but he is setting his sights higher for the business in the future. “As the South American market continues to modernize and mature, we envision an influx of YoYos onto both Hidrovia and Amazon barges,” he says. “The Hidrovia Waterway is the Mississippi of South America, and everybody is rethinking up their operations right now as these markets grow and mature. It simply stands to reason that our winch could lead to the same sorts of operator savings and success in these markets as we’ve had here in the U.S.”

Patterson has already begun branching out into South America over the past six years—and business is booming.

“Combined revenues from the three primary markets in South America (the Parana-Paraguay Hidrovia, the Amazon, and the Magdalena) have increased every year since we first entered these markets, and we expect this to continue,” adds Grapes.

Eventually, Patterson will move into the shipping market of the lower Danube River, which is in the process of modernizing and expanding its market for United States shippers. Because of low river levels (and historic but low bridges), self-propelled barges are the norm on the Danube. Patterson believes there is a market there for advanced technology like the YoYo.



Kerry Connell is a freelance writer based in Pittsburgh. In addition to barge rigging, she has written about healthcare products and procedures, industrial products, arts and architecture, tourism, law, and finance.

The Perfect Anchor for Paint

Barge manufacturer doubles production and reduces paint waste with new blast line.

By Jay Benito

When the 600th barge launch was celebrated at Brownsville Marine Products (BMP) just south of Pittsburgh in November 2012, it marked the company's success at reviving a site with over 75 years of history. At the same time, the team also celebrated a facility ready for 21st Century marine vessel production, thanks to a radically modernized production line. Since taking over the site in 2005, the challenge for BMP was to meet the ambitious goal of producing the highest quality vessels at competitive prices. To meet this goal, the team invested heavily in innovation, training and automated processes, with the expectation of increased productivity, efficiency and quality.

A key piece of this upgrade was the installation of a new state-of-the-art horizontal blast and paint line (or 'preservation line'), designed and installed by Wheelabrator, which allowed the facility to double production and save \$400,000 annually on paint, due to improved paint transfer efficiency (TE).

A Perfect Anchor for Paint

The new line is fully automated and can accommodate steel plate as well as structural elements of 12' width, 1" thickness and up to 40' length. The blast process achieves a surface profile before coating between 1.5 and 3 mils. Consistency and accuracy of the surface profile are important to provide a perfect anchor for paint, ensuring maximum coating reliability – a critical factor in preventing corrosion and extending the life of a vessel.

Due to improved paint processes, including tight control of Dry Film Thickness, paint transfer efficiency of more than 75% could be achieved at BMP, resulting in a considerable reduction in paint consumption. Taken together, all this means lower production costs and improved quality, resulting in better value for customers.

Speed, Size and Automation

The equipment installed is large (35' x 218' x 24' high) and has 8 EZEFIT blast wheels (with a tip velocity of 310 ft/sec). The line processes plate at up to 10 ft/min (speed is variable between 4 and 10 ft/min, usually running at 8 ft/min) and uses abrasive steel shot that is added and then recycled automatically. It is this combination of speed, size and automation that allowed BMP to double production with the new equipment. And unlike the previous machine, which had to run three shifts per day to match output targets, the new preservation line usually runs about 10 hours per day to address all

of BMP's production requirements, leaving enough time for maintenance as well as headroom for sudden peaks in demand.

Blast Experts on Call

In order to achieve the high level of process control necessary to reach BMP's standards of quality and cost efficiency, the line requires constant monitoring and regular maintenance. However, thanks to the company's training and development culture – BMP operates their own 'Weld School' – this is not a problem, with skilled employees at hand and blast experts from Wheelabrator on call. Maintenance schedules and ready availability of parts mean the machine is always at the top of its game.

Other measures taken to improve processes and reduce costs along the blast and paint line included:

- *Redesigned airwash separators were added which clean and recycle used abrasive (the quality of which is monitored daily);*
- *An automated abrasive adder was installed that introduces new abrasive to the cycle as needed. This means abrasive never has to be 'changed';*
- *Dust collectors both for the blast system and the paint system ensure clean and safe operations.*

Tim Scheib, CEO at Brownsville Marine Products, told MarineNews, "We've been working with Wheelabrator for a couple of years, to look after and gradually improve our existing equipment, until we reached a tipping point with the old line and asked the team from Wheelabrator to help us design and install a state-of-the-art line that meets our ambitious standards – and will do so for decades to come." He paused and added, "We are very pleased with what has been achieved and it's great to see marine vessel production thrive again at this location, thanks to investment in latest technology and good people. We are all proud of the quality of our barges and proud to be continuing a long heritage at this site."

Perhaps most importantly, Wheelabrator's technology in its preservation lines can be utilized across all marine markets. The efficiency savings that can be achieved apply to operations large or small. Whether that's a barge manufacturer like Brownsville Marine Products, where significantly improved performance metrics have been delivered that will make financial savings into the future, or whether it's at some of the busiest shipyards across the globe, the net effect is the same. www.wheelabratorgroup.com

Chemistry Charts the Course in Coatings

Sherwin-Williams' WB Acrolon 100, developed through waterborne technology, delivers aesthetics and protection in one topcoat. It all adds up to extended maintenance and recoat cycles.

By Tim McDonough

Inland river crews have a lot on their plate. When your job is to be a deckhand, you don't want to spend much time being a painter. There's never a good time to be a painter. However, keeping vessels free of corrosion and looking good is part of the job. So crews must attend to painting the freeboards, superstructures and decks, usually on the go. Solvent-based urethane topcoats have been the standard choice of port engineers and fleet managers for combating the effects of harsh environmental exposures to tugs, barges and towboats. But it is far from the only choice.

Inland operators can now take advantage of the latest advances in waterborne coatings to achieve both good looks and long-lasting performance. We can now achieve high functionality when it comes to environmental exposures with an ultra-durable, high gloss acrylic polyurethane with performance properties far above those typically associated with premium-quality solvent-based urethanes.

The inherent deficiencies of early waterbornes were long ago overcome, and expectations go well beyond just decorative attributes. In fact, Sherwin-Williams' WB Acrolon 100 offers performance across the widest spectrum of performance criteria. It provides the gloss retention of a fluoropoly-

mer or urethane with a clear coat, the color retention of a polysiloxane, and abrasion resistance and hardness demonstrably superior to any topcoat on the market today. Comparing this waterborne product to a traditional solvent-based urethane, in accord with various test methods, tells the story.

Test Methods Benchmark Performance

Sherwin-Williams subjected this innovative technology to a number of standard test methods to assess performance in the key areas of gloss and color retention. To evaluate the material's durability in the face of exceptionally long lifecycle expectations, Q-TRAC testing was employed. This speeds up the weathering process while concentrating natural sunlight using Fresnel lenses to magnify the solar radiation. The concentrator uses photo-receptor cells to maintain alignment with the sun and ten mirrors to reflect the sunlight onto the specimens. In this way, it is possible to simulate 63 years of UV radiation exposure in a single year.

A second form of testing, QUV-A accelerated weathering (per ASTM D4587, Standard Practice for Fluorescent UV-Condensation Exposures of Paint and Related Coatings), captures only one small bandwidth of radiation, so it does not replicate the sun, but it does focus on the most damaging ultraviolet rays. Here sample racks are placed in a chamber, with the sunlight simulated by fluorescent UV lamps. For evaluating gloss retention, this testing gives good rank order correlation to natural sunlight.

ASTM D1014, Standard Practice for Conducting Exterior Exposure Tests of Paints and Coatings on Metal Substrates, is a third, unaccelerated test method that is particularly useful for evaluating color retention. Here, samples are placed on inclined racks oriented at the sun at an angle ensuring exposure to the full spectrum of solar radiation, from infrared to ultraviolet, over a two-year period. The gold standard venue for this test is Florida where temperatures, UV intensity and humidity, all needed for maximum degradation, are at their peak.



COATINGS

Color, Gloss Test Results

Gloss retention – Measured in percentage gloss, or luster, retained after six months, compared to the original sample, Q-TRAC testing resulted in limited loss of luster for the innovative product, with 98.2 percent retention. In the QUV-A testing, it was necessary to log 13,000 hours of exposure before a 50 percent loss of luster was measured.

Color retention – The human eye is believed able to distinguish a color shift only greater than 1 E, depending on hue, saturation and value of the color.

Q-TRAC testing of the acrylic polyurethane showed a shift of only 0.33 E, which is a superior measurement of its ability to withstand premature or excessive lightening of the original color. In the Florida test, a shift of 0.52 E was recorded.

Using standard ASTM test methods for abrasion resistance and pencil hardness, the performance comparisons to traditional results are also instructive. To measure the ability of a coating to withstand or resist wear, ASTM D4060 (Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser) utilizes a CS-17 wheel with a 1 KG load and runs for 1,000 cycles. Results are reported in mg loss. The breakthrough technology recorded a 25 mg loss; standard aliphatic urethanes typically experience losses from 40-90 mg.

In measuring a coating's pencil hardness, or the ability to resist scratching, permanent deformation or damage, ASTM D3363 (Standard Test Method for Film Hardness by Pencil Test) determines the grade of the hardest pencil that won't mar the coating. Pencil grades range from 9H (hardest) to 9B (softest).

WB Acrolon 100 measured at 3H, while most aliphatic urethanes record a pencil hardness of H to HB, the middle part of the range.

The combination of these perfor-

mance metrics adds up to a waterborne finish coat that stands up to the most aggressive marine environments. The deck is one of the most expensive parts of the vessel when it comes to painting, and taking it out of commission for any length of time makes it difficult to get other work done.

That alone should be reason to consider new technologies that deliver significantly extended maintenance and

recoat cycles.

But it goes beyond practicality. When a vessel lives in the port, a good-looking, well maintained exterior reflects well not only on the structure itself but also on the crew and owner in the eyes of a prospective client, buyer, or class surveyor. Advances in coatings chemistry make it feasible for owners to achieve with one product what has only been elusive before.



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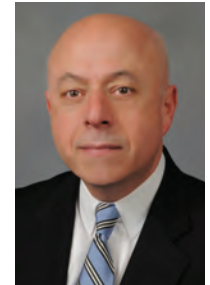
Morton



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Allegretti, AWO

Orrin Ingram named CEO

Ingram Barge Company said that Orrin H. Ingram is the new Chief Executive Officer of the company, succeeding Craig Philip who is retiring effective June 30, 2014.

Remont Joins Bollinger Shipyards

Bollinger Shipyards said that Chris Remont has joined the company as Director of Program Management. Remont will oversee Bollinger Shipyard's Lockport new construction facility, with an emphasis on the present U.S. Coast Guard Fast Response Cutter program.

Fernandez Takes the Helm

Yanmar America said that Ted Bregar will relinquish his duties as President of Yanmar America and assume the responsibilities as Chairman & Senior Executive Advisor. Tim Fernandez will become the new President of Yanmar America.

W&O Promotes Duffy

W&O promoted Bill Duffy to Northeast regional manager. Duffy has spent the past 18 years at W&O.

Schwarz Joins ZF Marine

ZF Marine Propulsion Systems Miramar LLC said that Ed Schwarz has joined the team as Business Development Manager for the Commercial and Fast Craft product line in North America.

Jensen Joins Global Diving

Global Diving & Salvage, Inc. hired Jennifer Jensen as Vice President of the newly formed Quality Assurance Group.

Christensen Joins PVA Staff

Eric Christensen has joined the PVA Staff as the Director of Regulatory Affairs and Risk Management.

Zukunft New USCG Commandant

Adm. Paul F. Zukunft assumed command as the 25th commandant of the Coast Guard in May, relieving Adm. Bob Papp. Zukunft will lead the largest component of the Department of Homeland Security, comprised of 41,700 active duty, 7,800 reserve and 8,300 civilian personnel as well as more 31,000 volunteer Coast Guard auxiliaries.

Morton Elected AWO Chairman

The American Waterways Operators elected new leaders during its Spring Convention. Frank Morton, Director, Turn Services LLC, was elected as Chairman and David Sehr, Senior Vice President & COO, Ingram Barge Company, was elected as Vice Chairman. Morton succeeds outgoing Chairman Buckley McAllister, President, McAllister Towing.

Westerman Joins Parsons Brinckerhoff

Al Westerman has been named a Port/Maritime Security Specialist in the Tampa office of Parsons Brinckerhoff.

Capo Named SVP for Maher Terminals

Maher Terminals LLC announced the appointment of Frank Capo as Senior Vice President-Commercial.

K&L Gates Enhances NY, Boston

Michael G. Chalos has joined the New York office of global law firm K&L Gates LLP as a partner in the maritime practice. Chalos is accompanied in his move by associates Luke Reid and George Kontakis in the firm's Boston and New York offices.

PEOPLE & COMPANY NEWS

Signet Acquires OTV Fleet

Signet Maritime Corporation has completed its acquisition of eight Harvey Gulf International Marine offshore towing vessels (OTVs), including all spares, business and supplies. The modern fleet will average just 11 years of age.

AWO Celebrates 70th Anniversary

The American Waterways Operators recently celebrated its 70th anniversary as a trade association. Founded on May 20, 1944, the association has grown into a national organization representing tugboat, towboat and barge operators on the inland waterways, along the coasts, on the Great Lakes, and in ports and harbors around the country. AWO President & CEO Tom Allegretti noted the association's seven decades of contributions to its members and to the country, emphasizing AWO's focus on safety, stewardship and service.

Oregon Iron Works, Vigor Combine

Oregon Iron Works (OIW) and Vigor Industrial (Vigor) said the companies are merging to unite their strengths in advanced manufacturing, shipbuilding and ship repair. OIW will become a wholly owned subsidiary of Vigor.

Foss Maritime Celebrates 125 Years

Seattle's Foss Maritime, a company that has evolved from a single rowboat into one of the world's leading marine transportation and harbor services companies, celebrates its 125th anniversary this year. The company was founded in Tacoma, Washington by Thea Foss in 1889, and now serves customers around the world, operating over 130 vessels and employing 1,500 people. Employment at Foss Seattle shipyard has risen to 265, its highest levels ever.

Westport Shipyard Purchased

Representatives of Westport Shipyard, Inc. (Westport, WA), the largest yacht builder in North America, said the company's assets have been acquired by Westport, LLC, an ownership group that includes members of the Chouest family.

SPI Appoints Thibodeaux President

Superior Performance Inc. (SPI), appointed Mitch Thibodeaux as president. Thibodeaux will oversee the company's field service operations, rental tool equipment line and new product development.

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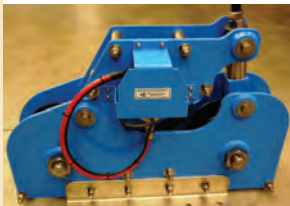
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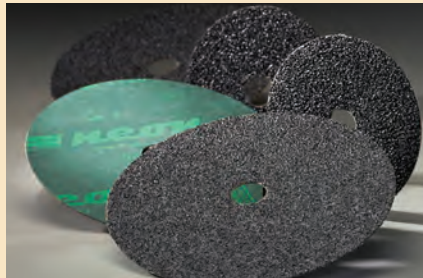
PRODUCTS

Measurement Technology NW's Running Line Tensiometers

Measurement Technology NW's RL10 VWD and RL20 VWD running line tensiometer product group provide a versatile solution for monitoring line tension speed and payout on multiple wire rope diameters. Suitable for aggressive offshore marine applications with anti-corrosive thermoplastic coated Alloy Steel frames, the fully hardened 4340 Alloy Steel sheaves with spherical roller bearings offer high line speed rating, increased wear resistance and service life.



www.mfnw-usa.com



Norton Aluminum Oxide Fiber discs

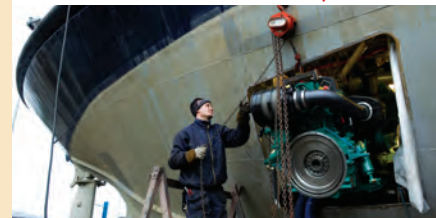
Norton / Saint Gobain Abrasives recently introduced a line of resin fiber discs — Norton Neon F726. The line of Aluminum Oxide (AO) fiber discs offers a proprietary aluminum oxide and organic grain blend, resulting in three times the normal AO cut rate, life and overall performance — at an economical price. An improved resin bond system and heavy-duty fiber backing provide enhanced grain adhesion.

www.nortonabrasives.com

Volvo Penta Quickline: Fast Delivery of Custom Engines

Volvo Penta's new Quickline custom production line is now running full steam, reducing lead times for commercial marine customers with short-fuse requirements for replacement engines. Quickline runs parallel to the regular production line at the plant, producing custom-built, classified and non-classified 300- to 750-hp D9MH, D13MH or D16MH propulsion engines within seven days of order, regardless of the make of engine the customer was using.

www.volvopenta.com



CMR Smart Sensor Improves Engine Temperature Measurement

The new Connect CAN digital smart sensor from electrical wiring control and instrumentation specialists CMR Group provides reliable and accurate temperature measurement for diesel and gas engines. Designed for unforgiving operating environments, the robust thermocouple sensor features embedded industry compliant J1939 technology, enabling real-time diagnostics and digitized connections to an engine ECU or other monitoring system operating under a controller network (CAN) bus.



www.cmr-group.com

Axial Fans: the Heart of Engine Room Ventilation

Marine engines require a continuous supply of fresh air. With moisture eliminators, dampers and control systems, Delta "T" axial fans form an engineered ventilation package. Designed for the marine environment, axial fans come with single and three-phase motors, in 50 and 60 Hz and in a range of voltages, to fit any application for worldwide use. I-EEE-45 certification is also an available option.

www.deltasystems.com



Caterpillar Secures Complete Propulsion Order

Cat power and propulsion solutions were selected to provide an optimized package for a 55T ASD tug. Two Cat 3512C EPA Tier 2 propulsion engines will power the tug, with 2 MTA 523FP Azimuth thrusters. Each Cat 3512C marine propulsion engine will provide 2x1765 kw @1800 rpm of rated power. Auxiliary power will be delivered through 2 x Cat C9 engines.

www.cat.com



First Workboat with MAN EPA Tier 3 Rated Engine in US

“Ava Jane” was launched in Washington State in April as the first workboat with a MAN EPA Tier 3 commercially certified engine. The German engine manufacturer’s entire product line conforms with the current emission standards, optimizing internal engine design without increasing fuel consumption at full load using a MAN in-line six cylinder engine with an output of 537kW (730hp) at 2,300 rpm.

www.engines.man.eu



Coastal Marine Equipment Delivers

Coastal Marine Equipment has delivered over 100 Anchor Windlasses in just the past 2 years. From their Gulfport, MS facility, Coastal Marine manufactures and delivers these windlasses as well as an entire product line of American Made, built to last deck equipment which includes Solas Approved Rescue Boat Davits, Capstans, Mooring Winches, Tow Winches, Reels and Construction Winches.

www.cmei.biz

Krill Systems Introduces Bunkers Solution

Krill Systems Inc. has introduced an advanced, bunkering solution which 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 for comprehensive fuel management, including bunkering. KRILL BUNKERS uses OIML/MID approved, third party, mass-measuring meters to minimize inherent inaccuracies found in two and three phase Heavy Fuel Oil (HFO) transfers.

www.krillsystems.com



PPG PMC Made-to-Order Capabilities in Little Rock

PPG Industries’ protective and marine coatings (PMC) business announced that it has manufactured more than 100,000 gallons of coatings in a new small batch process that began operation at its Little Rock, Arkansas, manufacturing facility in January. PPG invested in the new batch process to satisfy customers’ needs for small quantities and made-to-order products such as military-specified coatings, PSX(R) polysiloxanes and MEGASEAL(TM) flooring coatings.

www.ppgpmc.com/northamerica



www.marinelink.com



Cummins Launches QSK60 Emergency Genset for Offshore

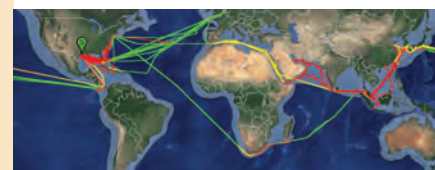
Cummins’ QSK60 C Power (CP) emergency generator set, is engineered for the demands of offshore applications. Driven by the QSK60 marine auxiliary engine with MCRS fuel system, it has been used in diesel electric propulsion and power generation since 2008. The 60-liter genset comes with certificates from all major marine classification societies, compliant with EPA and IMO regulations.

www.cummins.com

Pioneering Intertrac Software for Vessel Specific Hull Coatings

AkzoNobel’s Marine Coatings has developed a software system that enables shipowners to assess and predict the risk of hull fouling dependent on a vessel’s transit route. Intertrac overlays a vessel’s route, speed and location data with comprehensive fouling challenge datasets enabling coating specifications to be tailored specifically to an individual vessel’s trading routes, ensuring effective cost management for hull coatings, maximizing vessel’s operational efficiencies.

www.akzonobel.com



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www.petersen-stainless.co.uk



SCIGRIP Adhesives Certified by ABS

SCIGRIP, a global supplier of smart adhesives, has been awarded the ABS (American Bureau of Shipping) certification for its SG230 HV (high viscosity) range of structural products. SCIGRIP bonding solutions are already used extensively by many US and European boat builders. SCIGRIP maintains ISO 9001 certification for all of its manufacturing facilities and has achieved multiple third party product certifications, including Lloyd's.

www.scigrip.com

Unitec's Trelawney Floor Planer

CS Unitec's Trelawney Floor Planer tackles the most demanding surface preparation and material removal applications. The TFP 200 is ideal for the removal of coatings and corrosion from concrete and steel surfaces to prepare for recoating. In addition, this walk-behind planer produces a keyed or grooved profile for waterproofing and non-slip surface applications. The electric-

powered Model 320.2004T features a 3HP, 220V-240V motor.

www.csunitec.com



Intel, Miros, Moxa Produce Offshore Oil Spill Detection System

Miros AS, has selected Moxa's MC-5150-AC-DC series (built around advanced Intel processors) as the base platform in their advanced oil spill detection (OSD) system. Basic OSDs must integrate radar sensors, processors, and advanced central controls. In Miros' system, X-band radar is used to produce sea clutter images that allow the OSD to detect distant oil spills, even in the dark, enabling around-the-clock skimming operations.

www.moxa.com



Altra Industrial Motion Launches New Website



Altra Industrial Motion has launched www.AltraPumps.com, a website that offers the global pump industry convenient access

to Altra brands and products critical to all types of pumps applications. The pump industry website is organized into all pump solution product categories, including Sure-Flex Couplings and Dura-Flex couplings, and myriad others. Product photos, features, benefits and specifications are included for each Altra brand product.

www.AltraMotion.com

Product Identification Label Material Guides

A new pocket material reference guide lets users see, feel, and test popular materials, adhesives, and product I.D. label design options is being offered by Nameplates For Industry, Inc. The NFI Material Reference Guide consists of six business card sized samples featuring different materials, finishes, and adhesives, with typical application photos to help select the best options for product identification requirements.

www.NameplatesforIndustry.com



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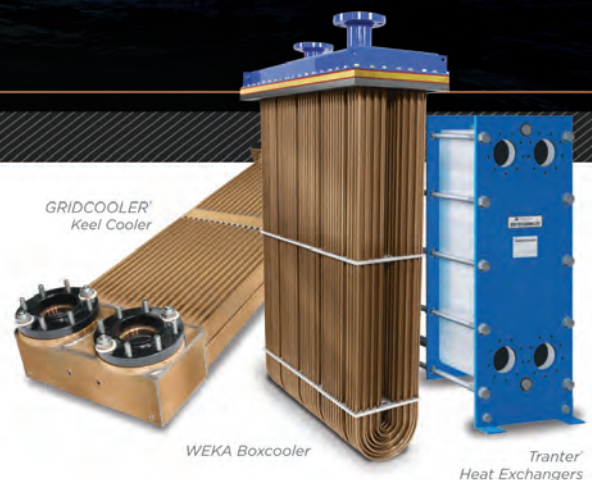
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