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BPA WORLDWIDE BUSINESS

On the Cover

24 Laying the Keel; Carefully

Candidates for welding courses at South Seattle's new Harbor Island Training Center observe a live welding demonstration. Starting on page 24, Susan Buchanan outlines the new and innovative training partnership between Vigor Industrial, the local community college, labor, community and state government leaders.

(Photo: Courtesy of Vigor Industrial)

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Headlong into the hot and heady days of summer, your thoughts may be turning more towards that well-deserved summer holiday than anything on the waterfront. Having just returned from my own vacation, I find myself invigorated and ready for what comes next. It is clear that several emerging trends are looming just over the horizon. Whether you operate boats, educate maritime professionals, or produce hardware for the marine sector, staying ahead of those curves will be *Job One*.

Beyond the omnipresent regulatory gauntlet hanging over the maritime industry, perhaps the number one challenge involves recruiting, training and retaining qualified employees. At sea and ashore, employers and trade associations are ramping up efforts to attract new talent. Part of that involves making the general public more aware of what the waterfront has to offer. Within this edition, we chronicle two potential templates for success. One or both might just offer the panacea that we all seek.

Following closely in the wake of the quest for quality talent is unquestionably the challenge faced by an American workboat industry to comply with current emissions and environmental standards – and those coming just around the next bend. With 40 percent of our workboat fleet in excess of 25 years of age, the good news for OEM engine firms is that is a good time to be in that particular business. On the other side of the equation, operators faced with repowering and replacement decisions can also smile just a bit, as well. That's because the race to provide environmentally compliant workboat engines is fierce. Starting on page 20, ***MarineNews*** readers can get a glimpse of what is to come next, 'looking under the hood.' It turns out that competition is a very good thing.

Finally, it's probably no secret that I love statistics. For that reason, putting together our regular **BY THE NUMBERS** feature is one of my favorite tasks. This month, the numbers were especially telling. Starting on page 8, it's easy to see that the inland, brown water sector – followed by the rapidly expanding offshore sector – is the core of our nation's merchant fleet. And, it has been that way for quite a while. More importantly, the numbers tell us that the need to renew this fleet is urgent and that bodes well for the shipyard and support sectors that rely upon these operators for a healthy chunk of their business.

Beyond this, and just as importantly, we as an industry are doing far better in terms of our environmental footprint than the regulators and environmental gadflies would have you believe. The numbers don't lie. That said; we need to do better on the waterfront to tell our story. That involves educating prospective employees, the general public and the regulators themselves. Only then will the seemingly elusive and steady prosperity enjoyed by the other transportation modes come to the docks as regular event, and not some mysterious, cyclical phenomena. Count on us to do our part. What about you?

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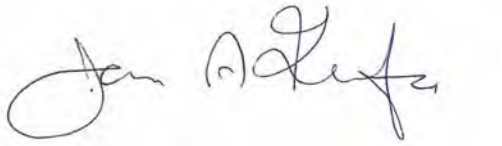

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U.S. Flag Vessels by Type and Age (Number of vessels)

The latest statistical roundup of the U.S. flag fleet (2012) shows some interesting trends. We know that the U.S. blue water, deep draft fleet continues to dwindle in size and numbers – albeit some exciting recent orders for tankers and containerships. But virtually 99 percent of our commercial fleet is now represented by inland and coastal pushboats, barges and offshore service vessels. Or, in other words, the demographic represented by the readership of *MarineNews* magazine. What else do we know? A look at Table 1 below tells us that over the past 20 years – since 1992, when decent records started to be kept for such things – *the nation's offshore supply and related service fleet grew by more than 50 percent. The advent of the deepwater offshore play means that the energy and maritime industries are now inextricably connected.* And, with operators such as Hornbeck and Harvey Gulf (and others) embarking on aggressive domestic building programs, that trend continues today. A look at the age of our collective fleets also portends future trends. That's because while the percent of the fleet which is younger than 6 years of age has jumped from 10 to 20 percent in just under 20 years, it is also true that *the portion of the U.S. fleet that is more than 25 years old has more than doubled during the same time frame; from 18 to 40 percent.* What does that mean? For starters, we are slowly building replacement tonnage in all categories, but at the same time, there is still much to be accomplished. *We think that bodes well for our shipbuilding industry; especially the tier II yards that concentrate on smaller tonnage and OSV projects.*

Table 1 (Age)	Dry cargo	Tanker	Towboat	Passenger	OSV, etc.	Dry barge	Tk. barge	Total
1992, total	**497**	**249**	**5,203**	**1,201**	**1,205**	**26,981**	**3,864**	**39,313**
<6	36	5	134	219	93	3,224	296	4,012
>25	124	82	1,874	287	53	3,496	1,123	7,049
1995, total	**726**	**178**	**5,127**	**954**	**1,288**	**27,375**	**3,985**	**39,641**
<6	38	5	168	149	119	3,975	489	4,943
>25	213	64	2,146	263	92	3,966	1,403	8,148
2000, total	**737**	**135**	**4,995**	**918**	**1,414**	**29,141**	**4,011**	**41,354**
<6	66	11	325	134	246	6,721	582	8,085
>25	263	48	2,497	271	214	6,461	1,714	11,470
2005, total	**969**	**100**	**5,290**	**841**	**1,768**	**27,901**	**4,151**	**41,028**
<6	115	11	336	62	244	4,140	743	5,651
>25	419	39	3,406	321	629	8,113	1,985	14,918
2010, total	**875**	**77**	**5,466**	**843**	**1,817**	**26,848**	**4,564**	**40,512**
<6	61	17	573	27	271	5,391	1,170	7,511
>25	421	38	3,964	395	949	8,184	1,969	15,933

U.S. Waterborne Freight

As goes the volume and tonnage of waterborne cargo for an island nation, so goes her economy. And, the sharp drop in tonnage seen during the period between and including 2005 and 2010, depicted in Table 2 (in millions of short tons), is ample testimony to that. The severe recession experienced during that time had a profound effect on all transport sectors. Speaking more to long term trends, we can see that waterborne freight has more than doubled in the past 50 years, but during that time (no surprise here), the domestic share of that pie has shrunk from about 70 percent to just under 40 percent. But, owing to the importance of our inland sector, the inland share of total freight has remained steady at about 25 percent. In the Great Lakes – and no doubt this is (partly) a function of inadequate dredging and short loaded cargoes, the domestic share by Lakers has shrunk to just 3 percent from about 14 percent in 1960. Our intraport cargoes – now called shortsea shipping – have dipped from 10 to a dismal 3 percent. *So much for America's Marine Highways …*

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Table 2	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010
TOTAL freight	1,100	1,273	1,532	1,695	1,999	1,788	2,164	2,240	2,425	2,528	2,334
Foreign	339	444	581	749	921	774	1,042	1,147	1,355	1,499	1,441
Imports	211	270	339	477	518	413	600	673	940	1,097	883
Exports	128	174	242	272	404	362	442	475	415	402	558
Domestic	761	829	951	946	1,077	1,014	1,122	1,093	1,070	1,029	893
Inland	291	370	472	504	535	535	623	620	628	624	566
Coastal	209	202	238	232	330	310	299	267	227	214	164
Great Lakes	155	154	157	129	115	92	110	116	114	96	81
Intraport	104	103	81	78	94	74	86	83	95	90	78
Intraterritory	1	1	2	3	4	3	5	7	6	5	5

Petroleum Oil Spills Impacting Navigable U.S. Waterways

Don't believe the hype. We are getting cleaner as an industry. In less than 15 years, the number of total spills and incidents has nearly halved, and in terms of the tankship and tank barge sectors, spills and related barrels per spill have dropped dramatically. As a percentage of barrels spilled, for example, tank vessels now account for less than 10 percent of all spills in U.S. waters, down from more than a 50 percent share just 15 years ago. In terms of total incidents, tank vessels now account for about 4 percent of total incidents, one half of what it was in 1985. *Those metrics continue to improve every day.*

Table 3	1985		1990		1995		2000		2005		2009	
Source	**Spills**	**Bbls.**	**Spills**	**Bbls.**	**Spills**	**Bbls.**	**Spills**	**Bbls.**	**Spills**	**Bbls.**	**Spills**	**Bbls.**
All spills	6169	200863	8177	188453	9038	62815	8354	34080	3881	236347	3304	5038
Vessels	1662	115784	2485	152075	5478	38670	5560	24611	1,835	50591	1645	3016
Tankship	164	17438	249	118506	148	2988	111	14480	37	71	28	343
Barge	385	87704	457	23620	353	26237	229	3180	126	47780	98	105
Other	1113	10642	1779	9950	4977	9446	5220	6951	1672	2739	1519	2567
Nonvessels	2802	77386	2584	33535	1116	22815	1645	8899	1146	185039	979	1292
Mystery	1705	7693	3108	2842	2444	1330	1149	571	900	717	680	730

All statistics in this report reflect information obtained via the Research and Innovative Technology Administration of the U.S. Department of Transportation's Bureau of Transportation Statistics. Access the maritime database on their site by visiting: http://www.rita.dot.gov/bts/data_and_statistics/index.html




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John Lotshaw

Gulf Coast Director of Training and Workforce Development Ingalls Shipbuilding

When it comes to training, recruitment and retention issues – serious matters facing all maritime employers today – John Lotshaw probably knows better than most; what's best for you. And, no matter what end of the maritime business model that you hail from, the challenge of hiring good people, training them and keeping them on payroll is an ongoing problem. Lotshaw joined Ingalls Shipbuilding in August of 2002 as the Director of Trades at the Avondale Site, responsible for workforce development and training and Operations support. He was subsequently assigned as the Program Director of LPD 21(USS New York) a $1 billion ship construction program. He has since served in many senior roles, but currently serves as the Gulf Coast Director of Training and Workforce Development, responsible for training all craft personnel at Ingalls Shipbuilding Facilities. Beyond this, he also serves as the inaugural chair of the *National Maritime Education Council (NMEC)*, a group seeking to standardize and improve craft training within the maritime industry. As the spearhead for efforts to standardize and provide credentials for shipyard workers, backed by a coalition of 20+ industry trade groups and companies, what he and the NMEC do next could well be the template for industry human resources development that we have been thirsting for. Listen in as he gives us a glimpse of what is to come next.

The new shipyard workforce development effort on the Gulf Coast is an exciting concept. What does the National Maritime Educational Council (NMEC) do, when it was started and what are its mission(s)?

The initial efforts at standardized curriculum development were started with a post-Katrina Department of

Commerce grant in 2006. The Alabama, Mississippi and Louisiana Manufacturing Extension Partnerships (MEPs) joined together with gulf coast shipyards to form the Gulf States Shipbuilders Consortium (GSSC). After considerable effort and three years of development GSSC rolled out the Shipfitting Boot Camp. The program has been very successful with a 100% rate of employment for graduates. Based on the success of the program, GSSC wanted to expand the curriculum and credentialing effort from a regional to a national effort. GSSC launched what was termed The Lighthouse Campaign to raise funds to move development and distribution to a national platform. NMEC was established in March of 2012 with 12 founding members representing the shipbuilding and ship repair industries. NMEC's mission is to lead the industry in the development of a standardized and credentialed set of craft training that will change the landscape of maritime labor. To work from a common set of definitions, we are defining exactly what each craft does, documenting each craft's required skill sets, and based on those skill sets, developing curriculum and assessments that ensures craftsmen who are certified through the system can perform to industry standards.

A key part of your program is your partnership with the National Center for Construction Education & Research (NCCER). Tell us about NCCER and your relationships there. Why is this important?

When we were searching for best practices to implement our vision, we looked at what NCCER is doing in industrial construction, pipeline and power line curriculum and credentialing. We found that when NCCER was formed as a non-profit education foundation in the early 1990's, those industries were facing the same challenges that the shipbuilding and repair industry is facing now. Their model is effective, efficient, and has made measurable impacts related to safety, profitability and workforce development in those industries. We were offered the opportunity to partner with them and build on their success. They already have in place professional curriculum and assessment developers, scheduled reviews and updates for each craft title, a publishing partnership, accredited training sites, a secure National Registry where craft training and assessment records are available for review by potential employers (with applicant approval), and a proven track record. Partnering with NCCER gives our industry the best bang for the buck and the quickest, surest pathway to meeting our goals.

Tell us more about the "Introduction to Maritime Industry" module recently released through NCCER for NMEC.

The Introduction to Maritime Industry module supplements NCCER's Core curriculum which provides a broad base of basic skill sets for the craftsman. What the maritime module does is include additional information for personnel entering maritime career fields. Taken with NCCER's traditional core, it provides basic training in safety, math, blueprint reading, and hand tools in addition to introducing specific knowledge factors unique to the maritime industry such as terminology, confined spaces, construction drawings, and other topics that are fundamental to all crafts. The module was published by NCCER this past spring.

How will the curriculum that NCCER is developing on behalf of NMEC be delivered? Where will training take place and how will it be delivered?

NCCER's model offers flexibility in that each task-oriented module can be used for specific task training on site, for remediation, or as part of a larger course of study like those offered through formal apprenticeship programs, high schools, and community colleges. There are currently 4,000 points of delivery for NCCER training and assessments under 912 individual programs. The NCCER model also supports delivery of training in a blended learning environment.

One of your goals is to not only standardize shipyard education but also to create a credentialing system that would assure employers of what they are getting. For employees, it provides a verifiable standard of skills that they could shop throughout industry. Explain how that's going to work.

Every NCCER craft training level consists of both knowledge and performance- based assessments. After a person has been trained and assessed, they are issued a portable credential. With the applicant's approval, the credential can be verified online through NCCER's National Registry. Regardless of where the individual receives training, employers have assurance that persons with this credential are well trained and have the skill sets they need.

You've identified "shipfitting" as one of the most in-demand skills and one of the first to be standardized within your curriculum. But, what is "ship fitting" defined?

Think of shipfitting as carpentry with steel or aluminum. A skilled shipfitter knows how to read a blueprint, measure accurately, and how to cut and join metal to form different structures. He or she understands basic metal working and is familiar with maritime terminology.

You've been around since 2012 – a little over one year. How far have you gotten with your efforts?

What we've accomplished in the past year is remarkable. Our initial focus was to raise the funds to begin development of Pipefitting, Shipfitting, and the Core supplement; all of those will be released this year. During this process, NCCER facilitated a number of meetings with subject matter experts from across the country to identify common skills sets and to validate curricula and assessments. Since the NCCER curriculum is not fully published, we do not have measureable metrics/benchmarks. However, I mentioned GSSC's successful shipfitting boot camp program earlier. It and the shipfitting curriculum were the precursors to and the main reasons behind the establishment of NMEC. During the program's pilot period, the boot camp was offered three times and graduated 31 entry-level shipfitters. Instructors used and vetted the shipfitting curriculum during the pilot. The outcomes were impressive. In addition to 100% placement of its graduates, after employment, employers reported savings on initial training costs and declines in probationary releases, disciplinary actions, and absenteeism. Perhaps a better indicator of employer satisfaction, though, is the fact that employers wanted more workers trained under the model using the curriculum. As a result, it has been adopted by at least three community colleges and one for-profit training provider, and the interest in the program continues to grow.

There are many similar efforts for the waterfront ongoing – west, east and gulf coasts. Are there any efforts to connect with these and provide some economy of scale in terms what you are already doing?

In fact, this was one of the reasons we formed NMEC and partnered with NCCER. A national approach to training, assessment, and credentialing makes sense. The common skills sets required of craft workers in the maritime industry do not vary based on the region of the country. The curriculum used to train workers should not either. We are trying to get the word out about this effort. Our membership currently includes several trade associations, including GSSC and the Virginia Ship Repair Association. We have presented at a number of conferences and association meetings across the country. NMEC is a membership-based organization and dues are used to fund this initiative. NCCER's model is that sales of the training materials support keeping the curricula current. So, if we do it right, we have industry created and certified curriculum and assessments, we have a professional organization that maintains the training and certification process, and, with portable credentialing, we enable the workforce more easily stay in the industry. In the end, industry wins, our workers win, and we use training dollars a lot more efficiently.

As shipyards try to bridge the gap of skilled workers today, they increasingly look to training boot camps as a way to recruit. Recruitment and retention are key ingredients to any shipyard. Tell us how that works.

The beauty of using the boot camp model as a recruitment tool is that it gives employers valuable insight into the likelihood of a candidate's success on the job before investing recruiting, training, and development dollars. GSSC's boot camp model utilized a prequalification process that included drug testing, WorkKeys testing, shipyard tours, and personal interviews with shipyard representatives. Applicants who did not pass the drug test were not eligible to participate in the program. During each boot camp, punctuality and attendance were stressed. In fact, students were assessed points each time they were late or absent. If they exceeded the maximum number of points allowed, they were dismissed from the program. Throughout the boot camp, employers observed students in a performance-based learning environment. These measures combined with pre-employment testing, gave employers insights not typically afforded through traditional recruiting models.

With 19 members now, you've got some momentum with the program. What's next on your horizon?

Near term, we're starting to roll out curriculum—the maritime supplement to the Core is now available. We will get two levels of Pipefitting completed this fall and two levels of shipfitting by the end of the year. That's exciting. In the long term, we have to focus hard on explaining to industry why it's important and what they stand to gain. Hopefully, that will drive membership so that we can continue to fund our development efforts. To date, we have raised about 25% of the total we need to fund our initial target set of maritime craft curricula and assessments. We haven't started marine electrical, or coatings, or other crafts that also need to be addressed. Our ability to do that is dependent on the industry's coming together and supporting the initiative.

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Cellular Signal Boosters:
Relief for Inland & Coastal Mariners

By Joseph Keefe

Wilson Electronics, a U.S.-based manufacturer of cellular signal boosters, is targeting inland and coastal waterway users with a new marine initiative. The development of a signal booster kit that improves cellular coverage for boaters on inland waterways and for near-shore mariners means that dropped connections and no-service zones may be a thing of the past. Cellular booster systems take a weak signal – sometimes too faint for a cellular device to detect – and boost it so that strong, reliable signal coverage is available inside a vehicle, home, office, commercial building, warehouse or other structure.

The Marine Signal Booster Kit (SKU# 841246) pairs Wilson's well established AG SOHO 60 signal booster with the its marine antenna, and includes all cables and components needed to complete and install the system. FCC approved for use in February, the Wilson product had, until now, been targeted mostly for home and auto. Selling robustly into consumer markets – with as many as 35,000 units being moved monthly – Wilson now looks to the largely untapped marine markets.

"Mariners who try to use a cellular device while on the water experience dropped connections and no-service zones just as cellular customers occasionally do on dry land," said Laine Matthews, business development director for Wilson Electronics. "Installing a Wilson mobile signal booster provides boaters the same signal boosting benefits that drivers of cars, trucks and RVs have enjoyed for years." For Workboat mariners who need reliable communications for voice, data transfer and other tasks, the signal booster may be just the ticket – especially for those who cannot afford SATCOM prices in areas where cellular coverage is less than perfect.

Wilson claims that their signal boosters, in some cases, are capable of delivering faster data downloads – up to 20 times faster in some 4G service areas. And, most signal boosters are manufactured to be carrier and device agnostic – they work no matter which operating system and provider network a device employs. For the operator running management software or those considering SMS SubM software purchases, the improvements could make all the difference.

Wilson signal boosters have proven their value for sporting craft, houseboats and even ocean-going vessels. When Hurricane Irene battered the Caribbean and U.S. East Coast in 2011, one vessel equipped with a Wilson cellular signal booster sought refuge off Compass Cay in the Bahamas. The crewmembers were the only mariners in the area able to maintain cell phone contact as the eye of the hurricane passed just 12 miles east of their position. The cell signal they picked up originated from another island, and was too weak to allow voice calls. Using the Wilson signal booster, the crew was able to send and receive text messages even as the hurricane raged. Crew members were able to get weather updates from Florida by text, which they then relayed, via two-way radio, to other ships in the area.

Wilson Electronics, Inc. has been involved in the wireless communications industry for more than 40 years, producing a wide range of components that significantly improve cellular communication (10db improvement or about 10 miles on average) in mobile, indoor, marine and machine-to-machine (M2M) applications. All Wilson products are engineered, assembled and tested at the company's U.S.-based headquarters. Wilson boosters fully comply with FCC regulations for cellular devices and are FCC type accepted and Industry Canada certificated. All Wilson Electronics boosters employ techniques that prevent the possibility of interference with any nearby cell tower.

U.S. Maritime Strategy: a Time for New Beginnings

By Rear Admiral Wendi B. Carpenter, President, SUNY Maritime College

The imperative for a holistic United States maritime strategy has never been greater. This is not news to many of you, but the call must be raised more persistently, more vocally and by many more of us, in order to drive action beyond rhetoric.

The National Strategy for the Marine Transportation System was published in July 2008 by the previous administration. We are now in the second iteration of leadership changes at the Department of Transportation and Maritime Administration since the strategy was issued. The White House, the Congress, and the maritime industry should collectively and collaboratively address the evermore pressing need for a national maritime strategy and pass long-overdue legislation to re-invigorate the maritime industry – an essential component of a strong national economy and a vital pillar of national security. Key areas include domestic and international commerce, maritime security, marine environmental policy, workforce development, maritime education and training funding, and strengthening our American merchant marine.

All of these intersect with actions which must also be taken to ensure the strength of our entire transportation industry across intermodal networks, so that we generate the right capability through the right sort of balanced long-term investment in infrastructure, technology, the environment, education and the like. With planned and focused effort, we will generate capability and while doing so, promote short and long term employment opportunities across various industries, benefiting the economic vitality of the nation and extending positive second and third order effects, including increased tax revenues.

The time is now for the White House and Congress to work together on a bipartisan effort. Working closely with DOT and MARAD, a high level working group should be convened from the broad cross section of individuals such as key members of Congress, leaders from the U.S. maritime industry, labor, DOD, DHS, as well other industry experts and educators to develop maritime strategy, policy with executable action plans, and legislation. The Committee on the Marine Transportation System should be widened to include stakeholders from outside of the government and so serve as a central board for the long-term development and oversight of a full scale effort.

The American maritime industry stands at a crucial intersection. Investments must be made to provide opportunities for our maritime industries and ensure that our ports, waterways and recreational centers are modernized, efficient, environmentally conscious, and secure and remain attractive for business. Since 1981 the MARAD budget has dwindled from $568 million (which constituted 2.39 percent of the DOT budget) to $346 million backing up only 0.47 percent of the DOT budget).

The Jones Act must also be shored up to properly support the many facets of our domestic maritime industry – all essential components of national security and capability. Statistics support the need for ensuring that the Jones Act remains viable:

- *90% of global commerce moves by sea.*
- *The sufficiency of the mariner pool to support a large-scale activation of DOD and DOT sealift fleet depends on the health and size of the US-flagged commercial fleet. History has repeatedly proven it is in the best interest of the US to maintain and support a strong active, competitive and military useful privately-owned U.S. flag merchant marine. Sealift is the primary means for deploying most of the combat equipment and sustainment for ground forces. During Operations Enduring Freedom and Iraqi Freedom (2002 - 2010), U.S. flag commercial vessels, including ships drawn from the domestic trades, transported 90% of all military cargoes moved to Afghanistan and Iraq.*
- *More than 40,000 American vessels of various types, built in American shipyards and crewed by American mariners, operate in U.S. waters in different segments of the industry such as offshore, coastal, inland, and Western rivers. The Act results in nearly 500,000 jobs, $29 billion in labor compensation, and more than $100 billion in annual economic output according to a study by Pricewaterhouse Coopers for the Transportation Institute.*
- *The privately owned and operated U.S. merchant marine is responsible for one-third of the shipbuilding industry's activities. The Act ensures that our nation maintains a shipbuilding and repair industry that directly supports over 28,000 jobs in the United States and is capable of building domestically ships for national defense.*
- *We live in uncertain times, in a post- 9-11 world, with local events suddenly mushrooming into international ones which can threaten our way of life. In our many U.S. ports and miles of inland rivers and waterways, as well as in*

the global commons, our merchant mariners are truly a first line of defense, not only transporting economically essential goods and services, but acting as the watchful eyes and ears of security in these vital areas.

- *Environmental standards, liability, safety, and enforcement are improved by having American-owned vessels and U.S. citizen-crews responsible for safely delivering the goods along our nation's waterways.*

Our hope for the future lies in ensuring that the White House will, with the support of the new team at DOT and MARAD, immediately work for creation and implementation of this historic maritime planning team. We have strong supporters in Congress with Subcommittee Chairman Duncan Hunter Jr. and Rep. John Garamendi who have voiced support for the Jones Act as an integral part of our national defense strategy and the maritime industry as a whole. Others such as Congressmen Dan Young, Nick Rahall, Elijah Cummings, and Scot Rigell have been staunch advocates of reversing cuts as a result of changes to U.S. Cargo preference statutes.

It is up to us to encourage Congress to support and work ever more closely with leaders of the American maritime industry to create "THE" comprehensive maritime strategy and pass legislation that will not only support, but also spur further growth in our industry. History has shown us what can happen when stakeholders come together, roll up their sleeves and work toward feasible solutions. Since the Maritime Security Program fleet was established by the Maritime Security Act of 1996, the fleet has expanded to include 60 U.S. flagged, privately owned, militarily useful vessels.

The American maritime industry is much too valuable to be allowed to be any less than the world's leader. The time to act is now. I encourage the leadership of the U.S. maritime industry, Congress and the White House, as well as other stakeholders and my fellow educators, to create a comprehensive and long-lasting maritime policy and legislation focused on promoting economic growth by encouraging domestic ship building, providing opportunity for international and domestic commerce, securing our ports, and working to ensure that we are training and educating tomorrow's maritime industry leaders.

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Good News Comes in 'Threes'

Caterpillar, Wärtsilä and Volvo Penta introduce new, efficient and environmentally compliant engines. A crowded market becomes even more competitive.

Edited by Joseph Keefe

Forget all the worries about how industry would be able to comply with the coming changes to the regulatory scheme that affects marine propulsion and related emissions. Demand has met supply and it has done so robustly and in impressive form. And, if the past month is any indication, the innovation in the market is more than keeping up. This month, we provide just a sampling of the impressive developments in marine propulsion. Clearly, workboat operators now have a cornucopia of options for the repower and newbuild market, alike.

Caterpillar: MaK Dual Fuel Engine

At the end of May, Caterpillar Marine Power Systems announced the development of a second High Performance MaK Dual Fuel Engine. According to Caterpillar, the MaK M 34 DF, a new marine dual fuel engine platform for the commercial marine industry, boasts a power rating of 500 kW per cylinder at 720 and 750 rpm in diesel and gas modes, and will share the same footprint as the highly successful M 32 C engine series. The M 34 DF will be capable of running on natural gas as an alternative to marine diesel oil or large and complex scrubber installations for Emission Control Areas (ECA) operation as of 2015. First engine deliveries are foreseen for October 2014.

"We're pleased to continue to deliver on our commitment to bring innovative, efficient solutions to the commercial marine market," said Carsten Seeburg, MaK product definition manager. "Our customers want a fuel-efficient, sustainable propulsion product with operational flexibility for both IMO and EPA regulated waters and we're aiming to exceed their expectations with the M 34 DF engine."

Driven by upcoming fuel sulfur and NOx regulations in ECA, the M 34 DF will provide full flexibility for vessels operating in regulated and/or lesser regulated areas without major changes to the engine room or exhaust gas system, supporting the ease and simplicity of engine installation and certification. Although designed for unlimited operation on LNG, marine diesel oil and heavy fuel oil, the M 46 DF will reach industry- leading efficiency in gas mode.

With a bore of 340 millimeters and stroke of 460, the engine was designed to be the preferred choice for gas electrical and mechanical propulsion applications notably in the offshore and cargo segments. The engine design features new real-time combustion monitoring, Flexible Camshaft Technology functionality as well as a lower valve train and several innovative monitoring and component solutions to ensure maximum safety during operation. Caterpillar will offer its renowned service and support for the new MaK dual fuel engine, including installation and application, system integration support, as well as customer and crew training. The M 34 DF will pass customer acceptance tests and classification approvals in Rostock, Germany and will be sold through Caterpillar's MaK dealer network.

Wärtsilä Launches New, Powerful 34DF Engine

Wärtsilä has further developed its dual fuel technology and has introduced a more powerful version of its

Wärtsilä 34DF engine. The upgraded version of the engine increases the efficiency in both liquid and gas operating modes and offers a power increase up to 500kw per cylinder. When operating in gas mode, the Wärtsilä 34DF engine is already compliant with IMO Tier III regulations without any secondary exhaust gas purification systems. SOx and CO2 emissions are notably reduced and smokeless operation is attained.

When operating in gas mode, the Wärtsilä 34DF engine is already compliant with IMO Tier III regulations without any secondary exhaust gas purification systems. Also when fueled by gas, the SOx and CO2 emissions are notably reduced, and smokeless operation is attained. In liquid fuel oil mode, the Wärtsilä dual-fuel engines are fully compliant with the IMO Tier II exhaust emissions regulations set out in Annex VI of the MARPOL 73/78 convention. The engine is able to operate efficiently and economically on low sulphur fuels (<0.1% S), making it suitable for operation in emission-controlled areas.

The Wärtsilä 34DF engine has proven to be a highly efficient and reliable solution for a wide range of vessel applications. The latest version is expected to expand that range even further. Lower fuel consumption of this engine will further improve its environmental performance. Since 2003, the Wärtsilä 34DF has paved the way in the LNG-fuelled offshore support vessel market. Today this product is being mainly used in tugs, ferries, Ro-Ro, Ro-Pax and workboats. The new and upgraded version of the Wärtsilä 34DF engine increases the efficiency in both liquid and gas operating modes and offers a power increase up to 500kw per cylinder.

This increased output means that the Wärtsilä 34DF now covers a power range from 2,9 MW to 8 MW. In

addition to the increase in power, fuel economy is also enhanced, especially when operating in liquid fuel mode. This, together with the high loading capability and the proven reliability of the Wärtsilä 34DF engine, is seen as giving the new version a strong competitive advantage.

"By improving both the power and fuel efficiency, we aim to maintain the leading position that we have in gas engine technology and as a gas engine manufacturer. It is also important to point out that the environmental performance of the Wärtsilä 34DF is already excellent, and by lowering the fuel consumption we are also lowering the exhaust emissions even further," said Giulio Tirelli, Director, Wärtsilä Ship Power, 4-stroke Portfolio & Applications.

The engine is able to operate efficiently and economically on low sulphur fuels (<0.1% S), making it suitable for operation in emission-controlled areas. The newly obtained certification of emission standard compliance from the United States Environmental Protection Agency (EPA) (17 January 2013) for the Wärtsilä 34DF further underscores the environmental compliance of this engine. EPA certification applies to United States flagged vessels.

"The Wärtsilä 34DF is the first dual-fuel engine fulfilling the EPA requirements and this is a very important statutory recognition of Wärtsilä dual-fuel technology," says Andrea Bochicchio, Director, Product Management & Engineering, Product Centre 4-stroke, Wärtsilä PowerTech. With the passing of this compliance milestone, Wärtsilä anticipates that market demand in the USA for its range of dual-fuel engines will further increase. The first engines will equip the ***'Harvey Energy'***, an offshore supply vessel built for Harvey Gulf International Marine. Four sister vessels will shortly be supplied with the same Wärtsilä engines, thus further demonstrating both the viability of liquefied natural gas (LNG) as a marine fuel and its growing popularity among ship owners and operators. LNG fuelled vessels offer compelling operational cost savings and significant environmental benefits.

Two for the Money: Volvo Penta's D13 & IPS900

Volvo Penta D13 has now further been developed to meet EPA Tier 3 – the new marine environmental emission standard. The new version of D13 offers improved environmental properties with basically unchanged low-fuel consumption. The D13 is a diesel engine that has been developed within the Volvo Group. It is currently in operation in more than 450,000 heavy-duty applications, including buses, trucks and construction equipment. At Volvo Penta, this engine is further developed for use in industrial applications for both off-road and electricity production and in unique custom marine applications.

The full range of Volvo Penta D13 marine engines is now upgraded to meet the requirements of EPA Tier 3, which will take effect from 1 Jan. 2014. EPA Tier 3 involves a 40 percent reduction in particulate matter in the exhaust gases and a 20 percent reduction in NOx and hydrocarbon. These high standards are met by the new D13 with the same power and basically identical fuel consumption. It is world-class fuel efficiency together with less environmental impact.

The upgrading of the environmental characteristics will neither change the performance, nor the fuel efficiency. Nor does it imply any changes in terms of design, size or installation – in these respects there will be no difference to the boat builder, owner or operator. Volvo Penta D13 is available both as a propulsion engine (D13 MH) or as a marine genset (D13 MG) equipped with different cooling systems as an option.

Separately, Volvo Penta is also launching IPS900 with Rating 3 for commercial boats, allowing more commercial boats to take advantage of IPS benefits – improved fuel economy, better maneuverability and lower overall operating costs. The IPS900 – with a unique IPS, Inboard Performance System – is now available for boats in the Coast Guard & Patrol, Supply Vessels, and Offshore Energy and Passenger Transport segments. This means great handling and operational benefits for boats used by, for example, police, customs, coast guard, rescue boats, pilots and sea ambulance, but also smaller passenger vessels and yachts.

According to Volvo Penta, the new launch also means easier maintenance, longer lifecycle and higher increased uptime. Combined with superior fuel consumption, this provides a lower total cost of ownership; including extended oil change intervals; longer intervals for propeller seal replacement and increased reliability.

The IPS900 package uses the Volvo Penta D13 diesel engine with a power output of 700 hp. It is an ideal solution for boats with Rating 3 (medium-duty use, approx. 2,000 service hours/year). The low-power usage means re-

Facts, Features and Benefits with Volvo Penta IPS

30 pct reduced fuel consumption	40 percent longer cruising range	20 percent higher top speed
0 percent less CO2 emissions	50 pct lower noise/vibrations	Joystick docking and driving
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Displacement: 12.78 l	Meets EPA Tier 3	24 valves, replaceable cylinder liners

duced load, lower oil temperature, lower engine temperature and thus reduced stress on components – and by that increased durability and longer life. It also means longer service intervals for the whole package, for the IPS unit as well as the engine itself.

A Full Suite of Clean & Efficient Engines

In a North American workboat market where the collective fleet is getting progressively older, more – and better choices for operators is always a good thing. That's because – as we note in this edition's ***BY THE NUMBERS*** report, the percent of the American fleet (alone) which is older than 25 years old has more than doubled during the past twenty years; from 18 to 40 percent. In the workboat market served by the engines described above, the rebuilding of replacement tonnage in all categories, and in some cases, retrofitting existing tonnage to meet more stringent environmental requirements, will continue for the foreseeable future. It simply has to.

Think about it: as many as 15,405 hulls in the domestic brown water trades are now older than 25 years. Certainly, some have enjoyed the benefit of a re-power refurbishment. Most, however, have not. Fortunately, the choices are to get the job done are many; they are fully compliant and they represent the vast array of the world's best engine OEM's. Let's get to work.

Laying the Keel; Carefully

Vigor Industrial Opens Maritime Training Center on Seattle's Harbor Island

By Susan Buchanan

Looking towards the future and with a weather eye on what could come next, Oregon-based Vigor Industrial launched a six-month training program this July in welding, fabricating and fitting with South Seattle Community College at a new center on Harbor Island. Vigor acquired the site overlooking downtown Seattle when it bought Todd Pacific Shipyards in 2011. And, as an active bidder for the U.S. Coast Guard's coveted Offshore Patrol Cutter (OPC) program, Vigor also knows that they'll need to perform when the time comes. A skilled workforce will be an important part of that equation. Training will be the key.

As one of Seattle's oldest industries, shipbuilding is holding its own against foreign competition. This spring, South Seattle Community College promoted its new Harbor Island welding program, saying "Maritime industry booming! Help wanted!" Located at one of Vigor's shipyards, the Harbor Island Training Center will serve companies in the Puget Sound region. The center's initial class of 24 students is enrolled in a program that will end in mid-December, when grads will earn their welding certificates.

West Coast Weigh-In

Vigor Industrial, with 2,000 employees, is the top provider of shipbuilding and repair services in the Pacific Northwest and Alaska. The company produces cargo ships, work boats, barges, ferries and fishing vessels. Workers maintain icebreakers for the U.S. Coast Guard and renovate aircraft carriers for the U.S. Navy. "Our new Seattle training program will give students skills they need for family-wage jobs at industries in the area," said Sue Haley, Vigor's senior vice president of human resources, last month. "We don't necessarily have enough people coming

Image above: welding demonstration at Harbor Island training center on June 7.

out of high schools in Seattle to build a skilled workforce. This program will increase the number of skilled individuals that can apply for jobs."

Seattle's job market is strong at this juncture. Unemployment was 5.8 percent in April, below the national average of 7.5 percent, according to the latest numbers from the U.S. Dept. of Labor's Bureau of Labor Statistics.

Welding Pays Well In Seattle

"An entry-level welder makes $14 to $20 an hour, pre-apprenticeship, in the Seattle area," Vigor spokesman Brian Mannion said last month. "Seattle has hundreds of openings for welding jobs and not enough workers with the skills to fill them," he said. "Lots of people want to learn these skills." In addition to their standard hours, welders often earn overtime that can be double or triple an hourly wage.

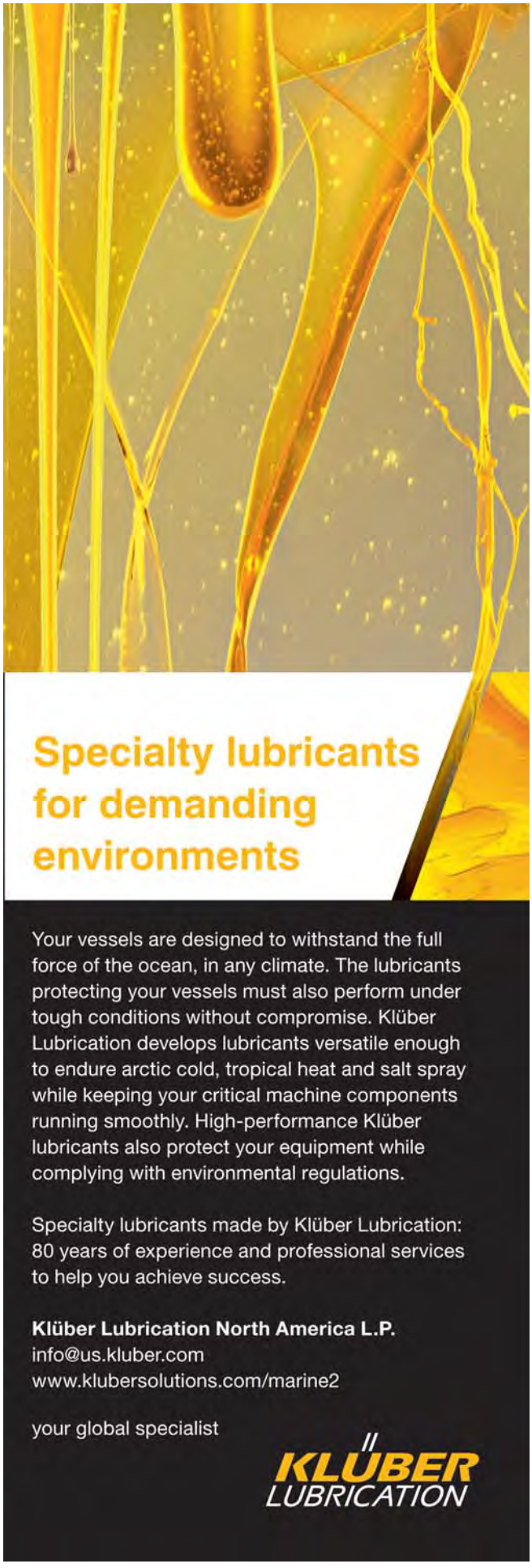
For the current Harbor Island program, which will be repeated in January, applicants must be 18 years of age or older; have a high school diploma or GED, math skills at a pre-algebra level, and some mechanical abilities. They must read and write English at an intermediate level and be able to pass a drug test. Some previous welding experience is preferred. Haley didn't have data on characteristics of the Harbor Island center's first class by age, sex or ethnic background. Nevertheless, she insisted, "We look for a diverse population."

Harbor Island is similar to the Swan Island Training Center for welding, opened by Vigor and Portland Community College in 2008. "The Portland Community typically has more than a hundred people on its waiting list for that program," Mannion said.

Separately, the new Seattle course teaches students how to diagnose and address welding defects; demonstrate safe-equipment operations; complete welds in a vertical position for marine work; learn about joint fit-ups, pre-weld preparations, back gouging, shear points, weld stress and warpage; execute other shipyard skills and weld outdoors in any weather. Seattle, of course, tends to be rainy.

Vigor has invested over $500,000 in seed money to build and outfit the Harbor Island facility and to get it up and running, Mannion said. "South Seattle Community College is leasing space from us, administering the program and paying instructors' salaries." The United Association of Plumbers and Pipefitters and Local 32 supplied the center's new welding machines.

"We're exploring funding options and workforce development resources for the center with the federal government, the state, the county and nonprofits," Mannion said. "Nothing's written in stone at this time." Tuition, workforce development grants and other funding could be enough to



make the Harbor Island program self-sustaining eventually, Haley said. "The center is holding day classes now but we might add evening classes at some point," she also said.

Looking Ahead

Mannion said Vigor wants the center to expand instruction to machining, blue-print reading and related skills down the road. The Harbor Island center relies on experience. Ken Johnson, lead instructor at the program, has spent more than thirty years in welding trades. He works on U.S. Navy projects at Vigor and joined the company from Todd Pacific Shipyards. Johnson has taught community college classes for almost twenty years.

In addition to acquiring Todd Pacific in Seattle two years ago, Vigor bought Alaska Ship and Drydock in Ketchikan last year. Vigor has managed to grow despite competition from Asian yards that build more cheaply and from European yards that are known for their quality workmanship. Nevertheless, healthy U.S. government and private industry work is looming large on the horizon. Vigor aims to compete and be ready, when and if that work does come.

Prospects Are Good For Welders with Up-To-Date Training

Nationally, employment of welders, cutters and other similar trades should increase by 15 percent this decade, similar to the average rate for all U.S. jobs, according to the BLS last year. Demand for welders in Washington state is strong, however. Washington, like most economies that rely partly on manufacturing, has a number of welding programs. Over a dozen of its community and technical colleges offer pipe welding and most of them provide certification.

That said; training is needed in Seattle. The Harbor Island program will expand the pool of skilled individuals within the immediate Seattle area and will help Vigor and other companies identify welding candidates," Haley said. When asked about the advantages of hiring grads from the Harbor Island center, versus training entry-level workers on the job, she said, "We're not educators at Vigor."

Some U.S. manufacturers do hire and prepare entry workers for welding jobs but many companies prefer welding-program grads, according to the BLS last year. Employers tend to view extra coursework, including blueprint reading, shop mathematics, mechanical drawing, physics, chemistry and metallurgy, as particularly useful, the BLS said.

U.S. welding schools report that their graduates have little trouble finding work. However, welders who don't have up-to-date training may face competition. The Harbor Island Training Center expects to produce marketable students for the area's flourishing maritime industry, according to South Seattle Community College.

Vigor Industrial says that while it's privately owned, the company is publicly minded. Mannion said Vigor has hired a number of graduates from Portland's Swan Island training program. An open-minded, innovative, and aggressive approach to developing and retaining a skilled workforce will likely serve Vigor well as it eyes bigger prizes – both in the public and private domains. Those firms hoping to compete in the same markets might want to keep their collective eye on the ball, as well.

The Kennewick ferry was completed at Harbor Island in Seattle in 2011.

The ABC's and 123's of the EPA's VGP

By Gary English

If you are following along and keeping a scorecard, then pay attention. Summer School is officially in session. The first iteration of the Vessel General Permit (VGP) expires on December 19, 2013. The Environmental Protection Agency (EPA) is issuing a replacement VGP permit under its authority from the Clean Water Act (CWA). The CWA and its implementing regulations contain standards that govern EPA's imposition of National Pollution Discharge Elimination System (NPDES) permit conditions. The provisions of this permit are established under these authorities. Hereinafter the term VGP or permit shall mean the VGP replacing the permit expiring on December 19, 2013. But, what does all of that really mean to you?

Does it Apply to Me?

The VGP applies to vessels operating in a capacity as a means of transportation, that have discharges incidental to their normal operations into waters subject to this permit, except recreational vessels as defined in the CWA. Unless otherwise excluded from coverage, the waters subject to this permit means "territorial seas" of the U.S. The CWA does not require NPDES permits for vessels or other floating craft operating as a means of transportation beyond the territorial seas, such as in the contiguous zone or ocean. Therefore, the VGP does not apply to discharges in such waters.

Vessels operating in a capacity as a means of transportation are eligible for coverage under the VGP. The types of vessels covered under the VGP include commercial fishing vessels, cruise ships, ferries, barges, mobile offshore drilling units, oil tankers or petroleum tankers, bulk carriers, cargo ships, container ships, other cargo freighters, refrigerant ships, research vessels, emergency response vessels, including firefighting and police vessels, and any other vessels operating in a capacity as a means of transportation. Vessels of the Armed Forces of the United States are not eligible for coverage by the VGP. While all non-recreational vessels, which are not vessels of the armed forces, may seek coverage under this permit, the permit requirements are generally targeted to vessels that are at least 79 feet in length. A separate, streamlined permit is available for vessels less than 79 feet.

How Many Vessels Impacted?

The EPA estimates that the domestic vessel population subject to the VGP is approximately 60,000 vessels. Using the Foreign Traffic Vessel Entrances and Clearances (FTVEC) database, EPA estimates approximately 12,400 foreign flagged vessels are subject to the VGP requirements.

The VGP provides effluent limits for twenty-seven specific discharge categories. This article concentrates on ballast water and leaves it to the reader to investigate the twenty-six remaining discharge categories.

Ballast Water

Ballast water discharge volumes and rates vary by vessel type, ballast tank capacity, and type of deballasting equipment. Typical cruise ships have a ballast capacity of 1,000 cubic meters or approximately 264,000 gallons of water and can discharge at 250-300 cubic meters per hour. Cargo ships carry anywhere from 2,900 cubic meters to 93,000 cubic meters or approximately 766,000 gallons to 24,568,000 gallons of water. Ballast water may contain rust inhibitors, flocculent compounds, epoxy coating materials, zinc or aluminum (from anodes), iron, nickel, copper, bronze, silver, and other material or sediment from

inside the tank, pipes, or other machinery. Ballast water may also contain marine organisms that originate where the water is collected. When transported to non-native waters, these organisms may upset the environment or food web as "invasive species." Table 1 below summarized the number of vessels subject to the ballast water requirements as calculated by the EPA and Coast Guard.

Table 1: Population of Vessels Subject to Ballast Water Requirements

Vessel Type	Domestic Vessels Subject to Ballast Water Requirements	Foreign Vessels Subject to Ballast Water Requirements
Commercial Fishing	93	18
Freight Barge		
Freight Ship	450	3,189
Passenger Vessel	154	144
Tank Barge		
Tank Ships	72	1,862
Utility Vessel	895	57
Total	**1665**	**5,269**

The VGP has finalized new, more stringent numeric technology-based effluent limitations to replace the non-numeric limitations in the 2008 VGP for ballast water. As part of the VGP, the EPA has also established discharge limitations for certain biocides and residuals, expressed as an instantaneous maximum.

Vessel owner/operators subject to the concentration-based numeric treatment limit may meet their obligations in one of four ways: (1) discharge treated ballast water meeting the applicable numeric limits in the VGP; (2) transfer of the ship's ballast water to a third party—which may be onshore or on another vessel such as a treatment barge; (3) use treated municipal/potable water as ballast water; or (4) by not discharging ballast water.

VGP in Inland Applications?

The EPA believes that no existing ballast water treatment systems are widely available for inland or seagoing vessels smaller than 1600 gross registered tons. Hence, inland or seagoing vessels smaller than 1600 gross registered tons are not required to meet the numeric ballast water effluent limitation. However, these vessels must meet all other ballast water requirements of the VGP.

Separately, the Coast Guard has determined in their analysis that an estimated 1,459 domestic flagged vessels are expected to install Ballast Water Treatment Systems (BWTS) through 2018 at costs that range from $258,000 for chemical application in offshore supply vessels to more than $2.5 million to retrofit Very Large Crude Carriers (VLCCs) with ozone generating systems. The Coast Guard estimated the total annual cost for the rule at $90 million (at 3 percent discount rate, in 2007 dollars). Capital costs primarily vary with pumping capacity and technologies utilized, but are also slightly influenced by differences between the vessel categories.

The EPA has found that requiring installation of ballast water treatment will impose no incremental cost to the regulated community over meeting the Coast Guard standards. The Coast Guard rulemaking requires ballast water treatment systems be installed on the same schedule as today's final permit. Meanwhile, the EPA believes that installation of BWTS is economically practicable and achievable even if costs are fully attributable to this permit alone. This determination considers the full installation and operation cost of BWTS on applicable vessels.

The VGP requires monitoring of the ballast water dis-

charges from vessels employing ballast water treatment systems. Effluent samples for biological indicators (i.e., E. coli and enterococci), residual biocides and biocide derivatives must be collected during an actual ballast water discharge. The monitoring is divided into three components. The first component requires functionality monitoring to assure the system is operating as designed. Vessels conducting this monitoring also must adequately calibrate their equipment. The second component requires monitoring from all ballast water systems for selected biological indicators. The third component requires monitoring of the ballast water discharge itself for biocides and residuals to assure compliance with the effluent limitations established in the permit, as applicable.

Costs – the Bottom Line

There are three main categories of costs for complying with the ballast water treatment requirements:

1. *costs associated with purchase, installation, & operation of treatment system;*
2. *costs associated with BWTS functionality monitoring and equipment calibration; and*
3. *costs associated with discharge monitoring.*

The EPA concurs with both the cost assessment developed by the USCG and their conclusion that based on the analysis of this available information, technology should be available for installation onboard vessels to meet the 2013 initial implementation date. The EPA finds that revisions in the VGP requirements could result in aggregate annual incremental costs for domestic vessels ranging between $7.2 and $23.0 million. This includes the paperwork burden costs and the sum of all practices for applicable discharge categories for all vessels estimated to be covered by the revised VGP.

All of that said; there is considerable uncertainty in the assumptions used for several practices and discharge categories for ballast water. Tank ships have the highest average compliance costs; this is driven by potential incremental costs for oil tankers exclusively engaged in coastwise trade that may install and operate onboard ballast water treatment systems to meet the 2013 VGP requirements applicable to ballast water discharges. Therefore, annual cost estimates were calculated for a low and high end. Table 2 (on page 30) provides the low-end and high-end estimate cost by vessel type for each practice required by the VGP. It is expected to cost the industry between $667,068 and $3,471,394 to comply with the VGP.

Table 3 (on page 31) provides the EPA's projected low end and high end estimates concerning the General Inspection

and Paperwork costs associated with compliance across the board for the VGP. Not all of these costs are associated with ballast water, but it is safe to assume significant portions are attributable to the VGP's ballast water requirements.

Assumptions & Deadlines: Not always one in the same

In estimating the total cost, USCG assumed that vessels would be in full compliance with the requirement by 2018. The BWTS equipment installation requirements are phased-in for existing vessels over the 2014 through 2016 period.

All newly built vessels constructed on or after December 1, 2013 will have to comply with the discharge standards upon their delivery, while vessels constructed before December 1, 2013 will have to comply with the discharge standards as early as their first drydocking after January 1, 2014 or January 1, 2016, depending on their ballast water capacity.

Although EPA was unable to evaluate the expected benefits of the permit in dollar terms due to data limitations, the EPA collected and considered relevant information to enable qualitative consideration of ecological benefits and to assess the importance of the ecological gains from the revisions. The EPA expects that reductions in vessel discharges will benefit society in two broad categories: (1.) enhanced water quality from reduced pollutant discharges and (2.) reduced risk of invasive species introduction and dispersal.

Table 2: Ballast Water Treatment Sensitivity Analysis

Vessel Type	Total Annual Cost Low End Estimate	Total Annual Cost High End Estimate
Treatment Cost		
Commercial Fishing		
Freight Barge		
Freight Ships		
Passenger Vessel		
Tank Barge		
Tank Ships		$1,911,104
Utility Vessel		
Sub Total		$1,911,104
BWTS Monitoring		
Commercial Fishing	$2,579	$3,855
Freight Barge		
Freight Ships	$12,445	$18,668
Passenger Vessel	$4,258	$6,387
Tank Barge		
Tank Ships	$2,001	$3,001
Utility Vessel	$24,756	$37,135
Sub Total	$46,039	$69,045
Sampling & Testing (biological)		
Commercial Fishing	$16,699	$26,148
Freight Barge		
Freight Ships	$80,866	$126,624
Passenger Vessel	$27,668	$43,324
Tank Barge		
Tank Ships	$12,999	$20,355
Utility Vessel	$160,862	$251,886
Sub Total	$299,096	$468,338
Sampling & Testing (biocides)		
Commercial Fishing	$9,368	$39,898
Freight Barge		
Freight Ships	$45,366	$193,208
Passenger Vessel	$15,522	$66,106
Tank Barge		
Tank Ships	$7,293	$31,058
Utility Vessel	$40,518	$384,336
Sub Total	$167,792	$714,606
Great Lakes Requirements		
Commercial Fishing		
Freight Barge		
Freight Ships	$82,888	$165,777
Passenger Vessel	$31,593	$63,187
Tank Barge		
Tank Ships	$14,843	$29,687
Utility Vessel	$24,825	$49,651
Sub Total	$154,151	$308,301
Total	**$667,068**	**$3,471,394**

Table 3: General Inspection and Paperwork Costs

Vessel Class	Low End Estimate	High End Estimate
Commercial Fishing	$34,496	$254,545
Freight Barges	*$193,893*	*$193,893*
Freight Ships	$20,593	$20,593
Passenger Vessels	$15,322	$15,322
Tank Barges	*$34,839*	*$34,839*
Tank Ships	$8,661	$8,661
Utility Vessels	*$102,182*	*$102,182*
Total	**$409,986**	**$630,036**

Gary English *is President of Marine Forensic & Investigation Group, LLC. Mr. English focuses on Marine Accident Investigation, Forensic Analysis, Risk Assessment & Management, Regulatory Compliance, Expert Testimony, Consulting, and Mediation Services. Mr. English graduated from the United States Naval Academy, with a Bachelor of Science in Applied Science, the Naval Postgraduate School, with a Master of Science degree in Applied Science, and the Charleston School of Law—Cum Laude.*

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Vessel Communications: *Inland Comms Evolve*

SATCOM's Availability, Pricing and Utility tempts marine users left unsatisfied by limitations of cellular communication.

By Joseph Keefe

The inland operator hoping to survive in tomorrow's rapidly emerging business environment using cellular communications alone is likely to be, as a minimum, disappointed. In a worst case scenario, they may find themselves out of business. That said; there are options that inland transportation businesses can turn to when trying to effectively manage their far-flung businesses. One such option involves the KVH inland solution.

According to Steve Griffin, Manager, Commercial Sales at KVH Industries, Inc., the launch of the TracPhone V3ip gave inland operators a solution that had not previously been made available to them; A small antenna that can fit on this size vessel, as well as a compact and fully integrated below deck unit which provides VoIP, complete network bandwidth management, data compression, least cost routing, and 4 Ethernet ports. Griffin adds, "Not only is it clean – it is simple. This simplicity results in lower installation costs. Combined – the market now has a solution that can completely control every aspect of data and voice on their fleet of vessels, directly from the IT Manager's office."

Coverage, Price and Everything in Between

While there is still a difference in costs between operating within a cell phone companies' non-roaming footprint, SATCOM delivers something that is truly lacking – complete coverage along the inland water ways. According to Griffin, his customers say that they can count on cell coverage around 60 percent of the time – and it appears to be getting worse. Unlike the usual usage areas for the majority of the US population who live within major cellular regions, the reality is that the inland riverways are extremely remote at times. Griffin insists, "It then comes down to how productive and efficient a company wished to be while in these areas … the other 40%."

The most difficult thing for an Operations or IT Manager to do, in regard to upgrading communications, is justify their internal budget – as well as to request increases when needed. Many inland operators have been utilizing the same service for many years. Thus, their annual communications budgets haven't changed too much. With the ongoing demand to operate a more efficient fleet – they must run like clockwork, regardless of where they are located. To continue to drive towards better efficiency – having access to all vessels in their fleet at any time is truly critical. If reports can't be sent – and proactive communications can't take place – then the company is not operating at 100%. This touches all aspects of their business (Crew / HR, technical training, vessel operations, vessel maintenance, and most importantly – the customers). It all comes down to the company being able to justify the benefit of always being connected to their vessels with the supporting expenses. As these requirements grow – so will their potential communications budgets. However, the ROI over the course of 3 to 5 years will certainly be in their favor – as more data than ever will need to be consumed in order to be compliant with various maritime regulations, both current and future.

For the time being, and while the cost of SATCOM and broadband remains higher than cellular plans, the difference between the two has closed measurably in the last five years.

SATCOM for Inland Business

SATCOM has the advantage of being able to handle large data packages and increased bandwidth for marine operators who are increasingly running more sophisticated monitoring systems for a myriad of purposes. Vessels which are operating within cellular coverage will certainly enjoy a good experience when it comes to connectivity and the amount of bandwidth that is available. Many of these large file transfers (Daily Reports, Grocery Lists, Support and Maintenance manuals, etc.) are becoming an extremely important part of vessel operations, and this trend can be expected to continue. The real question, then, is how vessel owners and operators will be able to run their businesses efficiently when outside of cellular coverage. As the demand for customers wanting to always have connectivity increases – SATCOM becomes that much more attractive.

Partnerships

KVH partners with many software providers – as they need a vehicle to deliver their solutions. In particular, their relationship with Boatracs is an interesting one. And, that's because Boatracs has their own narrow band solution that they offer in conjunction with their software. Nevertheless, about one year ago, KVH teamed up with Boatracs to offer a "one-stop" fleet management solution that in-

Irwin Rodriguez, President and CEO of Boatracs

cludes the TracPhone V3, mini-VSAT Broadband service, and Boatracs BT-Connect and Boatracs BTForms. For its part, Boatracs saw that the next wave of solutions would need to include true broadband connections. And, according to Irwin Rodriguez, President and CEO of Boatracs, "In the future, mission critical operations on the water will not be supported by cellular communications alone." As for KVH, and aside from extolling the quality of their offerings, Rodriguez told ***MarineNews*** in June, "KVH is, in our experience, the lowest cost broadband provider out there today. They do a great job of simplifying pricing plans for operations."

Intangibles

Steve Griffin maintains that there are many layers to the broadband onion. He explains, "The market has showed me two things; Crew Welfare is extremely important, and budgets are very tight. What really needed to be done was for a solutions provider to offer an easier way for operators and owners to manage their communications. In many instances, least cost routing (utilizing multiple platforms for communications – with an order of priority being in place) has helped overcome these issues. KVH V-series IP products all come with least cost routing built in, so that the company can offer a certain level of usage to operations and crew based on the current connection. If the customer is using the V-series product as back up to an existing cellular network (for out of coverage areas only), they can limit the amount of users and / or data consumption on the satellite connections – however leave it wide open for all on the cellular connection."

KVH's Commbox technology can also allow IT and HR managers to control what type of content is available on their vessels – should they wish to block certain website categories all together (regardless of the connection – cellular or mini-VSAT). These types of solutions allow managers to truly manage their vessels communications the way it is managed within their offices. Griffin adds, "At the end of the day, the vessels are offices, and most likely the biggest assets that these companies own."

Boatracs and KVH

The Boatracs / KVH partnership is a curious one. With Boatracs already providing a narrow band solution in-house for their customers to transmit date back and forth, customers already have exactly what they need to get the job done. Using the Boatracs narrow band solution, customers get the benefit of a slow, but extremely reliable connection. On the other hand, and with sophisticated engine monitoring software and other data demands evolving for this industry, the need for what Irwin Rodriguez calls "mission critical, 24/7" information is growing. Accordingly, so is the customer demand for SATCOM and broadband solutions.

"We are very excited to integrate KVH's industry-leading mini-VSAT Broadband service with Boatracs software for our customer base," said

Rodrigues. "We work with small to medium operators in the offshore, coastal and inland waterways, as well as commercial fishing vessels. These companies want voice and data services for crew welfare, increased compliance and greater productivity, as well as a powerful fleet management solution to track, message and operate their vessels efficiently.

The Boatracs Broadband Fleet Management Solution provides a complete, reliable, and affordable way to meet these needs."

The TracPhone V3 is the world's smallest maritime VSAT antenna, designed for vessels as small as 30 feet. With airtime rates 1/10th the cost of L-band systems, the TracPhone V3 offers downloads as fast as 2 Mbps at $0.99 per MB and phone calls worldwide at only $0.49 per minute. The TracPhone V3's small size, fast data rates, and affordable service have brought the power of satellite communications within reach for commercial vessels.

Looking Ahead

As *MarineNews* went to press, KVH had announced yet another partnership; this time with Jeppesen, supporting Jeppesen Chart Subscribers with New IP-MobileCast Content Delivery Service. According to KVH, the plan involves economical, weekly, multicast delivery of the entire updated Jeppesen ENC and Professional+ Chart Databases over the Mini-VSAT Broadband Service. Clearly, that can't be supported over a cellular connection, either.

Separately, the looming subchapter M regulatory scheme may be just around the corner and has some operators scrambling to find a software solution to organize their compliance plans. Scores of smaller and medium sized companies who had never before considered management software – or SATCOM, for that matter – are taking a hard look at both. And, for those hoping to connect with the main office intranet or company servers, there may be no other alternative going forward.

Cellular communications for inland operators, slow and sometimes unreliable, will be a part of the vessel-to-shore equation for a while longer. In the meantime, operators are weighing the increased costs of Broadband and SATCOM against the obvious advantages that the latter option provides. Arguably, it only a matter of time before the scales tip the other way.

Campbell Transportation

Christens New Towboats, Drydock

Campbell Transportation, Inc. last month christened two newly built state-of-the-art towboats and a drydock. This marks the first new vessel construction in Pittsburgh in 30 years, a significant investment that will help create jobs and benefit the economy. The drydock was partially built with a small shipyard grant from the U.S Maritime Administration (MARAD) and constructed at the Campbell Transportation shipyard in Congo, West Virginia. The construction of the two towboats at the Campbell shipyard in Dunlevy, Pennsylvania also benefitted indirectly from stimulus money provided through MARAD in 2009 for new industrial fabrication. The two new towboats, m/v Renee Lynn and m/v Alice Jean, have been constructed to comply with new U.S. Coast Guard Subchapter M inspection regulations.

Renee Lynn & Alice Jean at a glance

Official Number: 1240413 / 1244619	Dimensions: 65'-0" x 24'-0" x 8'-0"	Red. Gear: 2-Twin Disc MG-5170, 5.03:1
Year Built: 2012 & 2013	Registered Tonnage: 125 GT	Generator Sets: 2-John Deere 55 KW
Builder: Campbell Transportation	Propulsion: 2-CAT C-18 Engines, 1200 HP (*)	Propellers: 54" x 49.5" pitch, 4 bladed,
Rudder System: 4 Flanking, 2 Steering	Winches: 2 Patterson, 20 tons low profile	Fuel Capacity: 6,000 (6600) gallons

(*) Alice Jean engines: 2-Cummins QSK-19 Series Engines, 1320 HP

Apalachee Delivered

Geo Shipyard Inc. recently delivered the R/V "Apalachee", an aluminum catamaran for Florida State University Coastal and Marine Laboratory, St Teresa, Florida. Designed by Fyffe Yachts with NC lofting by Eli Ring, VP of Advance Fabricating, both of Kemah, Texas, the 48 passenger T-boat will support a verity of research missions in the Gulf of Mexico. DeJong & Lebet, Inc., Jacksonville, Florida provided construction oversight and plan review. Power for the new boat is supplied by a pair of John Deere 6135 SFM engines rated at 500 hp at 1900 rpm from Allemand Industries, Harvey, La. The six cylinder engines turn Twin Disc MGX-5114 SC gear boxes, Driveline Service of Portland shafts and ZF 36 inch diameter nybral 4-blade propellers. Twin Northern Lights generators of 30 kw each are fitted with a Gems split bus switchgear and Panel Tronics distribution to supply three phase power to Cruiseair conditioners, a full galley, wet lab, dry lab, watermaker, dive air compressor and small ROV. The Apalachee structural design exceeds ABS high speed code for exposed routes and is USCG approved for 21 knots in 10 foot seas. The boat is outfitted with a custom 3000 pound capacity A-frame and trawl winch for over the stern operations. A Rapp Hydra Pro 5.5 mt knuckle boom crane on the port side is utilized for shore side transfer as well as offshore deployment of the Zodiac utility boat.

R/V Apalachee at a glance

Mission: Research	Depth: 9'3"	Cruise Speed: 18 Knots
Hull: Twin Hull (Catamaran)	Draft: 4'8"	Fuel Capacity: 2600 Gallons
Length Over All: 64'6"	Electronics: Furuno	Potable Water Capacity: 325 Gallons
Beam: 21'6"	Top Speed: 24 Knots	Water maker: 450 GPD

(*) Alice Jean engines: 2-Cummins QSK-19 Series Engines, 1320 HP

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Visit http://www.sname.org/2013AnnualMeeting for up to the minute information.

Kvichak Delivers Patrol Vessel to Boston Police Department

Kvichak Marine Industries, Inc. recently delivered the Patrol 28, a 28'x 9'3" all-aluminum vessel to the Boston Police Department Harbor Unit (BPD). Designed by Kvichak/Amgram Ltd., UK and built by Kvichak Marine, the Patrol 28 is effective for operation in port and coastal waters, including shallow areas. Missions for the Patrol 28 include search and rescue, border patrol and maritime security. Powered by twin Honda 225 hp VTEC outboards, the Patrol 28 cruises at speeds over 45 knots.

Length (waterline): 25' 11"	Length (overall): 30' 10"	Fuel: 115 gallons
Beam: 9' 3"	Depth: 2' 4"	Speed (approx): >45 knots
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Scott McClure Elected SNAME Fellow
Alan C. McClure Associates (ACMA) President Scott McClure has been presented with his Certificate as a Fellow by the council of SNAME (Society of Naval Architects and Marine Engineers). McClure follows in the footsteps of his father, the late Alan C. McClure, who was elected a Fellow of SNAME in 1987.

AEU Adds to Staff
Andrea Mills has joined the American Equity Underwriters (AEU) staff as Senior Vice President – Director of Strategic Business Development.

Baker, Lyman Hires Consultant
Baker, Lyman and Co., Inc. has hired John Scarborough as senior consultant. He is an authorized agent for Germanischer Lloyd on the Corsair Towing Safety Management Systems (TSMS) Strategic Alliance for Subchapter M compliance software for the domestic towing industry.

Krawiec Joins Global
Global Diving & Salvage, Inc. hired Tracy Krawiec, who joining the Health, Safety, & Environment (HSE) Group as the Dive Safety Specialist, based out of Global's corporate headquarters in Seattle, WA.

HII Names Perkins VP
Huntington Ingalls Industries (HII) announced that Don Perkins has been named vice president of contracts and pricing for the company's Ingalls Shipbuilding division.

Bollinger Receives SCA Safety Award
Bollinger Shipyards won the 2012 "Award for Excellence in Safety" by the Shipbuilders Council of America for the eighth consecutive year. The Award for Excellence in Safety is given to member companies with the lowest Total Recordable Incident Rates (TRIR) based on a quarterly injury and illness survey conducted by the association.

EBDG Builds Team in Seattle
Elliott Bay Design Group (EBDG) has welcomed two new hires to the Seattle office. Zach McKinney and Jeremy Rice are the latest Marine Engineers to join the firm. Elliott Bay Design Group (EBDG) also added Ron Dunning and Joseph Hudson to its Gulf Coast Office.

STX Appoints VP of Operations
STX Marine has announced that Bill Lind has joined STX Marine as Vice President of Operations (Houston, TX) to continue STX Marine's success in providing engineering services to clients worldwide and the Gulf Coast. Bill will be handling marketing and business development as well managing the overall Houston operations.

W&O: New Senior Leadership
W&O Supply has re-defined the roles of its senior leadership team as it continues to pursue new opportunities in the domestic and international marine markets. Michael Page now serves as the Vice President-East and West Coast Operations, leading W&O's expansion in four key regions. Greg Lechwar has been promoted to the role of Chief Financial Officer for W&O. Kurt Gibson, formerly W&O's Director of Sales, is now Director of International Business Development and Marketing. Fred Loomis is now W&O's Director of Technical Projects.

ACL to Serve on IWUB
American Commercial Lines (ACL) has been selected to serve as a representative on the Inland Waterways Users Board (IWUB). ACL's President and CEO Mark Knoy will represent ACL on the IWUB for a two-year term that began in May 2013. This is Mr. Knoy's fourth term on the IWUB, his first representing ACL.

IMUA Honors Three
Grace D. Thomas, Senior Vice President at Great American Insurance Company and a former Chairperson of the Inland Marine Underwriters Association (IMUA), was presented with a Lifetime Achievement Award. Also honored were Arthur L. Flitner, CPCU, Senior Director of Knowledge Resources at The Institutes – Excellence in Education; and Julie A. Saunders, Inland Marine Business Unit Audit Lead, Travelers – 2012 Outstanding Committee Person.

Bollinger Shipyards, Inc.

Rice

McKinney

Lind

Loomis

GulfMark Offshore Appoints CFO

GulfMark Offshore, Inc. announced the appointment of James (Jay) M. Mitchell as Executive Vice President and CFO. Mitchell replaces Quintin Kneen who assumed the role of President and CEO.

Regulating MODU's

U.S. Coast Guard Rear Admiral Joseph Servidio, Assistant Commandant for Prevention Policy and Bureau of Safety and Environmental Enforcement (BSEE) Director James Watson signed a Memorandum of Agreement (MOA) for regulating mobile offshore drilling units (MODU) on the Outer Continental Shelf (OCS). Under the current regulatory system, both the U.S. Coast Guard and BSEE have shared responsibilities for the regulation of safety management systems on the OCS.

Duluth Seaway Port Authority Executive Director to retire

Adolph Ojard, Executive Director of the Duluth Seaway Port Authority, will retire this year after serving in that leadership role for the past 10 years.

NOAA Seeks Comment

NOAA Fisheries is seeking comments on its proposal to make permanent the rules it implemented five years ago to reduce the number of collisions between ships and North Atlantic right whales. The rules, part of NOAA's long-standing efforts to recover right whales, are currently scheduled to expire in December 2013. NOAA's proposal to make them permanent, which includes a 60-day public comment period, was filed at the Federal Register in June. Written comments on the proposed regulations filed must be sent to NOAA Fisheries no later than August 6.

Foss Wins CSA Safety Awards

The Chamber of Shipping of America (CSA) has recognized the Foss family of companies for its commitment to safety by granting Jones F. Devlin Awards to 81 of its tugs and manned barges.

U.S. Lakers' and St. Lawrence Seaway Cargoes Both Down

U.S.-flag Great Lakes freighters carried 7.3 million tons of dry-bulk cargo in April, a decrease of 11.4 percent compared to 2013. The April float was also down from the month's 5-year average, but much less so - 5 percent. Through April, the U.S.-flag float stands at 12.5 million tons, a decrease of 14.6 percent compared to a year ago. The largest decrease has come in iron ore; shipments are off by 1.1 million tons or 11.4 percent. However, compared to the 5-year average for the January-April timeframe, U.S.-flag cargos are down by just 2.2 percent, and iron ore up by 8.7 percent. Separately, the St. Lawrence Seaway reported that year-to-date total cargo shipments for the period March 22 to May 31 were 8.1 million metric tons, down 12 percent over the same period in 2012.

Harvey Gulf Receives Moody's Rating

Moody's Investors Service assigned a first time corporate family rating (CFR) of B1 to HGIM Corp (Harvey), and a B1 rating to the company's proposed credit facility consisting of $250 million revolver and $750 million Term Loan B. According to Harvey Gulf CEO Shane Guidry, the Moody's public rating will assist growing Harvey in order to meet client's demands while increasing EBDITA to over $500 million in 2016, through additional new builds and acquisitions. Proceeds from the financing transaction will be used to refinance $534 million of existing debt, acquire nine Offshore Supply Vessels (OSV) and fast service vessels from Gulf Offshore Logistics, LLC (GOL) for $189 million, adjust for acquisition related excess working capital, and pay related fees and expenses. The company expects to close on two additional GOL vessels in the spring of 2014, for a total transaction valued at $268 million. Harvey's stable outlook reflects Moody's expectation that the company will maintain its EBITDA margins and good safety record, positive fundamentals in the GOM E&P activity will allow for absorption of additional servicing capacity.

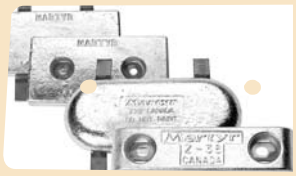
PRODUCTS

DNV Nod for NLI, WTI Designed LNG Tank

Wilhelmsen Technical Solutions (WTS) and NLI Solutions (NLI) have received Approval in Principal (AiP) from Det Norske Veritas (DNV) on a jointly-developed marine LNG fuel tank design. In development since 2009, in response to growing interest in the use of LNG as marine fuel, the tank is designed to IMO-B standards and is a prismatic, atmospheric and self-supporting LNG steel tank with state of the art cryogenic insulation. The NLI LNG tank design is well-suited for applications including ship board LNG bunker tanks, tanks for LNG bunker vessels and small LNG carriers.

www.wilhelmsen.com / www.nli.no/solutions

Cadmium Free Anodes Satisfy 2013 VGP



The EPA expects vessel owners and operators to comply with regulations regarding discharges. VGP requirements for cathodic protection can be met with environmentally-friendly Martyr brand cadmium-free aluminum and magnesium anodes from Canada Metal (Pacific) Ltd. CMP makes its Martyr brand aluminum and magnesium anodes with no traces of toxic cadmium. Besides helping to protect the marine ecology, Martyr cadmium-free anodes weigh far less than comparable zinc anodes, so vessel owners gain fuel savings as well as peace of mind. Cadmium-free anodes also offer excellent performance and efficiency, lasting longer than their traditional counterparts.

www.canmet.com

MAN's Propulsion Solution for Tuna Vessel

PEVASA Group recently ordered a complete propulsion system from MAN Diesel & Turbo for a new tuna vessel. The system is unique in that it comprises a package of three high-efficiency products, including a modern, medium-speed MAN 8L32/44CR engine with common-rail (CR) technology, a Renk RSVL-950 gear unit, and an innovative MAN Alpha VBS1100 CP propeller with Kappel propeller blade designs and rudder bulb. This combination increases the propulsion system's efficiency by up to at least 9%, thereby helping to decrease costs, fuel consumption, and exhaust emissions.

www.man.eu

Promas with Nozzle Improves Efficiency and Bollard Pull

Promas is a Rolls-Royce propulsion system that integrates the open-water propeller and rudder of a conventional shaftline into a hydrodynamically-efficient entity. A tapered hubcap is fitted to the hub of the propeller and leads the water flow on to a bulb which forms part of the spade rudder. Promas installations have given propulsion-efficiency improvements up to 6-8 % on newbuildings, and up to 15% on upgrades. The complete AHTS installation can reduce fuel consumption by 15%, with a consequent cut in emissions. It can also improve the bollard pull by typically 5%.

www.rolls-royce.com

Simrad's Professional Autopilot

Simrad Yachting's AP60 Professional Autopilot is a distinctive entry-level commercial autopilot. The AP60 completes the Simrad autopilot range by complementing the premium AP70 and award-winning AP80. Simrad autopilots provide the ultimate vessel heading control and network integration for every class of commercial vessel. Unlike many other entry-level commercial autopilots, the Simrad AP60 includes thruster integration for improved low speed maneuvering. Easy to use, the AP60 includes NoDrift steering, thruster integration and turn patterns such as U-Turn and S-Turn.

pro.simrad-yachting.com

MacGregor Offshore Winches

MacGregor has secured new offshore winch contracts from three Chinese shipyards, Fujian Southeast, Fuzhou Baima and Guangdong Yuexin Ocean Engineering. The winches are destined for 22 anchor handling tug supply vessels (AHTSVs) under construction for a number of international owners. The scope of deliveries includes windlasses, mooring winches, capstans, tuggers, anchor handling/towing winches and storage reels; some of the vessels will also be fitted with MacGregor shark jaws/towing pins. Deliveries will begin in August this year and will continue at intervals until March 2014.

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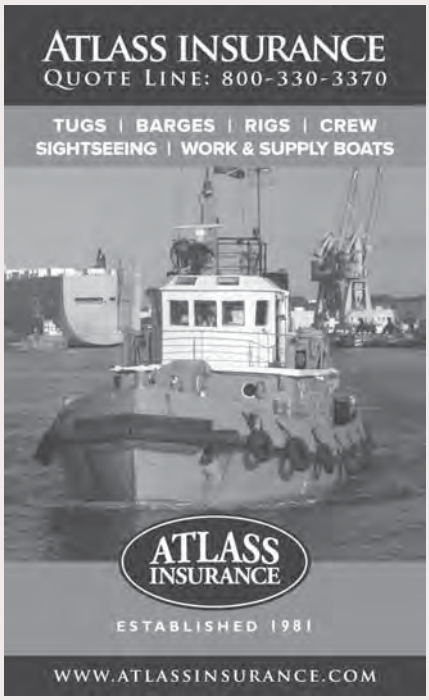

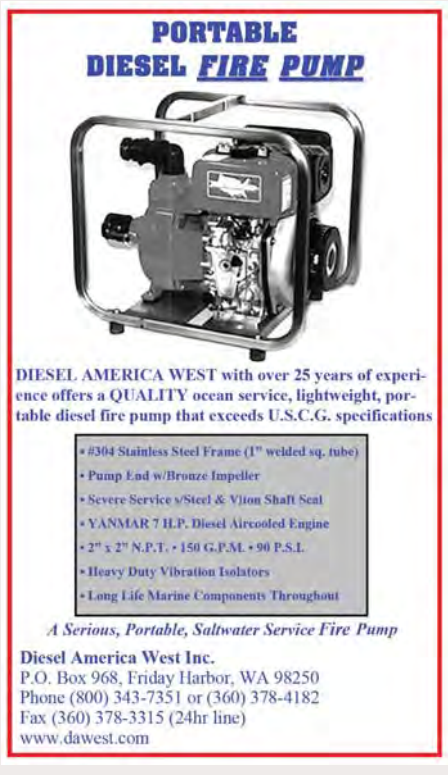

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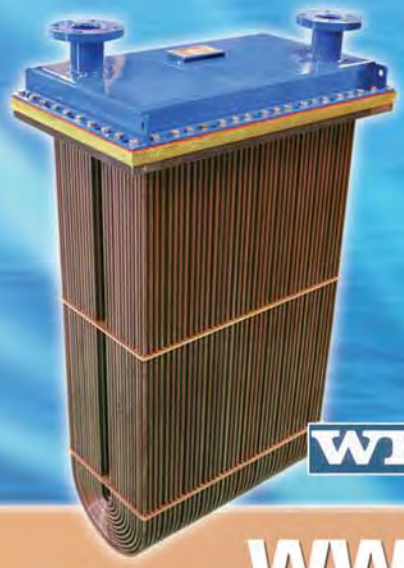

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