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Marine News

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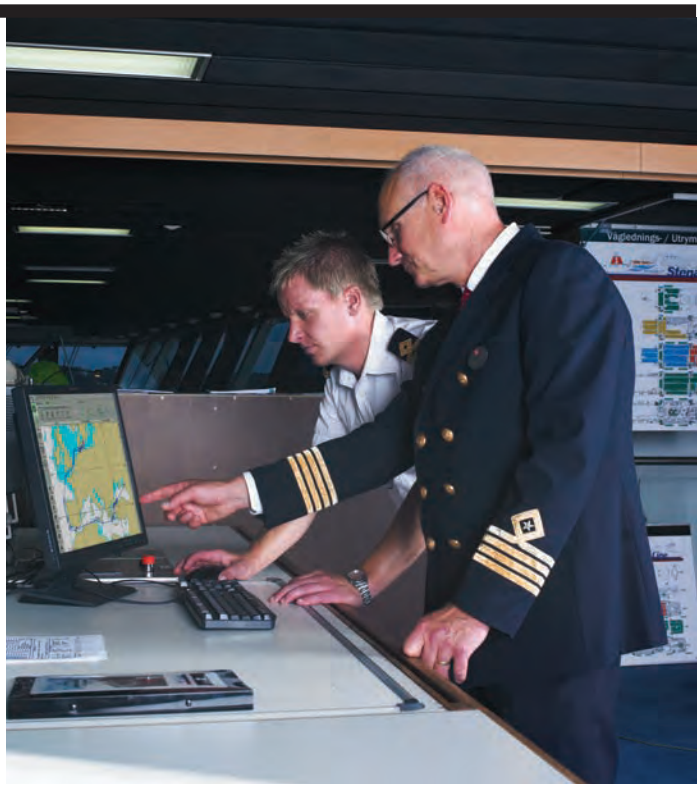

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Features

ON THE COVER

The Columbia and Snake River waterways demand special equipment, dedicated mariners and local service. In this image, Tidewater Transportation & Terminals' pushboat Defiance navigates the lock at Ice Harbor Dam.

(Photo: Captain Fletcher)

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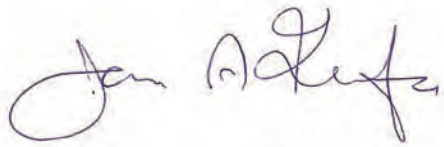
If you open this edition of *MarineNews* – the number one ranked audited magazine in this genre – with an edgy feeling of uncertainty of what's to come next, then you can also take solace in the fact that you are not alone. You've also come to the right place for answers. Now well into the first quarter of the New Year, the DHS promise of a February delivery of the final subchapter M rule has come and gone and we are collectively left hanging with the vague threat that it might just come in April. That doesn't mean that we don't have to prepare for what will – at some point – arrive in our in-box. We do.

This month's ***BY THE NUMBERS*** entry (typically my favorite part of the magazine) gives an especially good snapshot of the nation's inland and domestic waterfront, all courtesy of the federal Bureau of Statistics' annual look at *'Freight Facts and Figures.'* It's but a small part of the 111-page document produced by the federal government which examines virtually every aspect of the nation's intermodal transport equation, with an excellent window into the nation's towboat and barge industry. I encourage you to check out the full document (linked within our feature) to really sink your teeth into the numbers.

Armed with that primer on the nation's inland numbers, you are now ready to launch into the rest of the book. With tugs and pushboats as our headliner, we also touch upon fleet optimization in this edition. Both go hand-in-hand in a pre-sub M world and there's no one better to explain how to 'optimize' your fleet than *MarineNews* contributor Kathy A. Smith. Her look at how technology is already transforming the North American workboat market is telling. That story begins on page 32.

It is at times like this that I am often reminded by my good friend – and fellow Mass. Maritime alumni, Bob Kunkel – that the world of workboats includes more than just tugboats. He's been proving that to me and everyone else for many years. His latest effort, for example, is ample testimony to the fact that shortsea shipping can and does work. Consistent with our East Coast focus for this edition, the former Federal Chairman of Marad's Short Sea Shipping Cooperative Program also put his money where his mouth is as he drives an innovative Long Island Sound-based transport service for local agricultural interests in the congested I-95 corridor. Kunkel aims to take the traffic off the parking lot otherwise known as the Long Island Expressway and put it onto the water – getting it to consumers faster, cheaper and putting less NOx, SOx and particulate matter into the air. I wouldn't bet against him.

Scanning the horizon, it is also a good idea to read yesterday's logbook. That's because today's commercial picture is, at least in part, governed by the regulatory climate that looms ahead. Can those two variables peacefully coexist? I think that they can. Do we have any other choice?



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Freight Facts & Figures 2015:
The Bureau of Transportation Statistics (BTS) Weighs in.

The 11th edition of the BTS Freight Facts and Figures is an in-depth 111-page report touches upon on the volume and value of U.S. freight; condition and performance of transport infrastructure; economic conditions, and the safety, energy, and environmental implications of freight. That's a mouthful. The document, intended to help decision makers and planners understand the importance of transportation metrics, discusses all modes of transport. At *MarineNews*, we'll focus on the waterfront.

We'll start with Energy: Texas was the largest oil producing state in 2014, while North Dakota is the fastest growing oil producer. North Dakota produced 397 million barrels, or 12.5 percent of total U.S. production. Expanded U.S. oil production and changes in where oil is produced have increased the use of rail and barges to move oil to refineries and terminals for distribution to consumers. Although pipelines continue to be the predominant transport mode, tankers and barges move crude oil on U.S. inland waterways, from port to port and on the Great Lakes. The use of tankers and barges for oil transport has risen from 2.1 percent in the first 6 months of 2010 to 3.2 percent in the first 6 months of 2015. … *Still – we could be using our waterways more often, and more efficiently.*

Vessels: The age of the domestic fleet has decreased measurably since 2000. That's the good news. Inland barges accounted for the largest share (78%) of U.S. vessels. Towboats are the oldest vessels with 69 percent older than 25 years. As the subchapter M towboat rules loom just around the corner, the age of that fleet might make shipyards happy as they look forward to more repair/newbuild work, but probably gives operators heartburn as they ponder what to do in a challenging market and a tightening regulatory noose. On the other hand, barges are among the youngest vessels due to a combination of retirement and replacement of older dry cargo barges and acquisition of new tank barges. *And, the inland waterways continue to account for more than 98 percent of all U.S. flag vessels.*

Locks make it easier for vessels to navigate U.S. Rivers, but increasing traffic and aging locks create massive delays while locks are shut down for maintenance/repair. The average age of all locks in 2014 was a whopping 59 years. Between 2000 and 2014, average delay per lockage nearly doubled from 64 minutes to 121 minutes. In 2014, the highest average lockage delay was on the Tennessee River at 277 minutes, while the Gulf Intracoastal Waterway had the highest percent of vessels delayed at 90. *Time is money.*

The top 25 water ports by tonnage handled 68.5 percent of the weight of all domestic and foreign goods moved by water. Notably, from 2006 to 2011, the number of calls by containership with capacities of 5,000 TEUs or more increased by 78 percent. These boxships accounted for 27 percent of total containership calls at U.S. ports in 2011, up from 17 percent in 2006. Beyond this, the average vessel size per call at U.S. ports increased from 50,653 DWT tons in 2006 to 53,832 DWT in 2011, or about 6 percent. The average size of containerships increased by 13 percent (TEU's) and (9.9 percent (DWT). As the Panama Canal nears completion of its historic expansion, the above metrics will only widen. *That's good news for domestic dredgers.*

Shortsea Shipping: Assuming no change in network capacity, the number of miles with recurring congestion and the number of large trucks is forecast to increase significantly between 2011 and 2040. On highways carrying more than 8,500 trucks per day, recurring congestion will slow traffic on close to 7,400 miles and create stop-and-go conditions on an additional 22,000 miles. *Opportunities abound for shortsea entrepreneurs.*

Number of Domestic Vessels: 1990 – 2013 ...

	1990	2000	2010	2011	2012	2013
All Water	39,445	41,354	40,512	40,521	40,530	39,999
Non-Self Propelled	31,209	33,152	31,412	31,498	31,550	31,081
Self Propelled	8,236	8,202	9,100	9,023	8,980	8,918

Avg. Hourly Wages on the Waterfront: ($)

Occupation	2000	2010	2013	2014
Sailors and marine oilers	13.94	18.28	19.56	19.70
Captains, mates, pilots of vessels	23.30	33.89	36.34	38.07
Ship Engineers	23.12	34.09	36.37	35.87
Dredge Operators	14.32	17.59	21.91	21.94
Transportation Inspectors	21.25	30.31	32.83	34.05
Tank car, truck, & ship loaders	15.62	21.40	21.80	21.41

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Employment in the transport sectors has grown since 2000, with only air transport experiencing a decline in employee numbers. Between 2000 and 2014, air transport declined by 28.2 percent. **Average hourly wages** for different freight-related occupations vary widely. In 2014, ship engineers and captains and pilots of water vessels were among the highest paid freight transportation occupations. The highest wage occupations employ relatively few workers, while lower-wage occupations account for millions of workers. *The waterfront remains a pretty good place to make a living.*

The Environment: Trucking accounts for 77 percent of freight emissions with rail a distant second. It shouldn't be surprising that the mode that emits the cleanest environmental signature per ton-mile is the marine industry. Regulatory pressures during this time have cleaned up that signature even more. Water Quality is affected by oil spills from vessels and facilities. In 2014, vessel related spills accounted for 40.9 percent of total gallons spilled. But, while the amount of oil spilled annually varies considerably, data shows a marked decrease in spills since 1990. *The marine industry has much to be proud of in this way.*

Table 3-7 U.S. Flag Vessels by Type and Age: 2000, 2010, and 2013

(percent)

	Vessel type							
Age[1]	Dry cargo	Tanker	Towboat	Passenger	Crewboat	Dry barge	Liquid barge	Total
2000, total vessels	**737**	**135**	**4,995**	**918**	**1,414**	**29,141**	**4,011**	**41,354**
Age (%): <6	9.0	8.1	6.5	14.6	17.4	23.1	14.5	19.6
6–10	6.8	3.0	2.9	12.9	7.5	10.5	8.2	9.2
11–15	15.3	5.9	2.8	19.4	4.1	5.4	1.2	5.1
16–20	18.5	25.2	18.6	13.5	32.1	20.1	15.0	19.6
21–25	14.2	22.2	19.1	9.8	23.5	18.4	17.8	18.3
>25	35.7	35.6	50.0	29.5	15.1	22.2	42.7	27.7
2010, total vessels	**875**	**77**	**5,466**	**843**	**1,817**	**26,848**	**4,564**	**40,512**
Age (%): <6	7.0	22.1	10.5	3.2	14.9	20.1	25.6	18.5
6–10	12.6	9.1	5.5	7.0	11.7	12.7	12.0	11.5
11–15	12.7	11.7	6.0	10.9	12.7	20.8	11.2	17.0
16–20	7.2	3.9	2.7	13.5	5.6	10.3	7.2	8.7
21–25	12.5	3.9	2.7	18.4	2.8	4.5	0.8	4.2
>25	48.1	49.4	72.5	46.9	52.2	30.5	43.1	39.3
2013, total vessels	**844**	**65**	**5,473**	**833**	**1,645**	**26,387**	**4,694**	**39,999**
Age (%): <6	6.9	25.4	11.3	4.1	13.2	20.4	30.3	19.4
6–10	10.7	22.2	6.4	5.9	12.3	12.9	15.7	12.2
11–15	12.6	12.7	6.6	7.8	14.8	17.0	10.4	14.4
16–20	10.2	3.2	4.0	11.3	6.7	17.3	8.2	13.6
21–25	8.9	3.2	2.8	17.2	4.7	9.1	5.2	7.7
>25	50.7	33.3	68.9	53.7	48.3	23.3	30.2	32.7
>25 Change from 2000	15.0	-2.2	18.9	24.2	33.1	1.1	-12.6	5.0
Median age range, years								
2000	16-20	21-25	21-25	16-20	16-20	16-20	21-25	16-20
2010	21-25	21-25	>25	21-25	>25	11-15	16-20	16-20
2013	21-25	11-15	>25	>25	21-25	11-15	11-15	16-20

[1] Age is based on the year the vessel was built or rebuilt.

NOTES: Figures include vessels available for operation. Totals may be greater than sum because of unclassified vessels and vessels of unknown age, hence percentages may not add to 100, and also due to rounding.

SOURCE: U.S. Army Corps of Engineers, *Waterborne Transportation Lines of the United States, Volume 1: National Summaries* (Washington, D.C.: 2014), available at www.navigationdatacenter.us/veslchar/veslchar.htm as of July 2015.

See the full version of the Report at:

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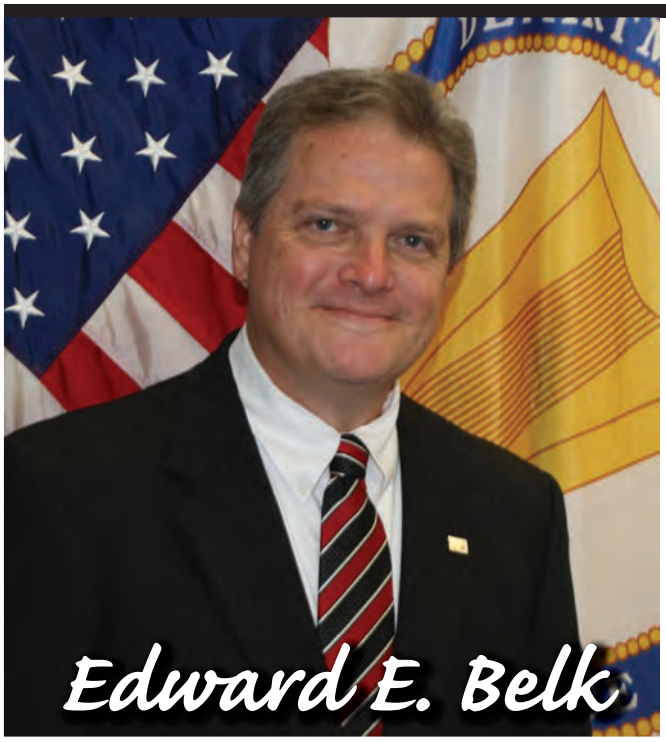

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Chief, Operations and Regulatory Division Directorate of Civil Works,

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Edward E. Belk, Jr. currently serves as the Chief of Operations and Regulatory Division for the U.S. Army Corps of Engineers at Corps Headquarters in Washington, D.C. He also provides leadership and oversight for activities and programs within the Corps' Lakes and Rivers and North Atlantic Regional Integration Teams. Selected by the Secretary of the Army into the Senior Executive Service in May 2012, Mr. Belk provides national oversight of the development, resourcing, and delivery of Operations and Maintenance (O&M) programs for the Civil Works infrastructure portfolio and for Corps operational programs such as hydroelectric power, public recreation, environmental restoration, wildlife management, and the regulatory oversight of waterways and wetlands. Previous to this, Belk served as Director of Programs for the Mississippi Valley Division (MVD) and Mississippi River Commission (MRC) in Vicksburg, Mississippi. He was the principal advisor to the Commander, MVD, and President, MRC, for the development, defense, and execution of the Civil Works Program across the twelve states served by the Mississippi Valley Division. He provided leadership and supervision for the Programs Directorate with regional staff oversight for programs, planning, operations, real estate, and project management activities in the Division's six subordinate District commands located in St. Paul, Rock Island, St. Louis, Memphis, Vicksburg, and New Orleans. Belk has extensive experience in the development and delivery of large, complex water resource solutions (including navigation, flood risk management, coastal restoration, and ecosystem restoration sectors) across the full spectrum of program life cycle (planning, design, real estate acquisition, environmental compliance, construction, and operation/maintenance). Along the way, he has shown himself to be adept at developing and strengthening strategic relationships at the local, regional, and national levels. These relationships enable mission execution and program delivery. Notably, Belk has also completed two tours in Iraq in support of Operation Iraqi Freedom, where he served as the senior U.S. Army Corps of Engineers civilian in the seven Provinces of northern Iraq and senior advisor to the Commander, Gulf Region North District, with headquarters initially in Mosul and later in Tikrit. Belk holds Master of Science in Engineering Management and a Bachelor of Science in Civil Engineering, both from Christian Brothers University. Additionally, he is a Registered Professional Engineer in the State of Mississippi. A recipient of many significant awards during his tenure at USACE, there is arguably no other individual within the USACE with more knowledge and experience in the effort to properly maintain, upgrade and improve our inland waterways. Listen in this month as Edward Belk weighs in on the USACE mission, its goals, successes, and the many challenges that still loom ahead.

Tell us a little about USACE: How many individuals are under your umbrella – civilian and uniformed?

The U.S. Army Corps of Engineers (USACE) employees about 37,000 dedicated civilians and Soldiers that deliver engineering services to customers in more than 90 countries.

What is your primary mission? Where are you headquartered?

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and reduce risks from disasters. Additionally, USACE has nine division or regional offices; 43 district offices; six main engineering, research and development, finance, and technical centers; the 249th Engineer Battalion; and the 412th and 416th Theater Engineer Commands. USACE primary Civil Works missions are Navigation, Flood Risk Management, and Aquatic Ecosystem Restoration, but we also have important Hydropower, Emergency Management, Environmental Stewardship, Recreation, Water Supply, and Regulatory missions.

What is the primary source for your mariners - military, merchant marine or a healthy mix of both?

USACE primary navigation responsibilities include planning and constructing new navigation channels and locks and dams, and dredging to maintain channel depths at U.S. harbors and on inland waterways. We operate and maintain 12,000 miles of inland and intracoastal waterways and navigable channels, including 192 commercial lock and dam sites, and we are responsible for ports and waterways in 41 states. In partnership with local port authorities, USACE personnel oversee dredging and construction projects at hundreds of ports and harbors at an average annual cost of more than $1 billion. USACE dredges more than 250 million cubic yards of material each year to keep the nation's waterways navigable. Much of this dredged material is reused for environmental restoration projects including the creation of wetlands.

Tell us about the USACE fleet? How many vessels do you operate and how many of those are dedicated dredges?

USACE owns and operates approximately 2,900 vessels, ranging from skiffs to tugs barges, to self-propelled ocean-going hopper dredges. Of these, there are eleven dredges consisting of a mix of hopper, dustpan, sidecasting, special purpose, and cutterhead dredges (*Yaquina, Essayons, Wheeler, McFarland, Murden, Merritt, Goetz, Hurley, Jadwin, Potter, and Currituck*).

What percentage of your funding goes towards projects that are primarily (if not totally) accomplished by the Corps internally and what percentage do you sub out to others?

Public Law 95-269 (1978) requires the Secretary of the Army to have dredging and related work done by contract if the Secretary determines private industry has the capability to do such work and it can be done at a reasonable price and in a timely manner. To carry out emergency and national defense work the Secretary shall retain only the minimum federally owned fleet. Accordingly, the majority of dredging projects accomplished by USACE are performed by private industry dredges. The rule of thumb is that about 85% of the dredging is performed by contracts, the other 15% by USACE-owned dredges. For FY14 - the latest year we have finalized data – it was 91% of expenditures for dredging was by contract, the other 9% was by USACE-owned dredges. While most of our lock operations and some maintenance is performed with in-house forces, a significant portion of our coastal and inland navigation work on structures is performed by contract.

One issue today facing some waterways is that USACE funding is (primarily) based on tonnage numbers alone. Some of the smaller waterways – AIWA for example, directly parallel to I-95 and potentially a valuable shortsea shipping corridor, say that they can't get the tonnage if they don't have the maintenance dredging to maintain draft. What can be done to change that metric?

There are many factors that are evaluated when funding projects including project conditions, commercial marine traffic, subsistence harbors, harbors of refuge, commercial fishing, public transportation (passenger ferries), energy generation and consumption, and use by other Federal or state agencies.

Tell our readers what the biggest priority for USACE going forward in 2016?

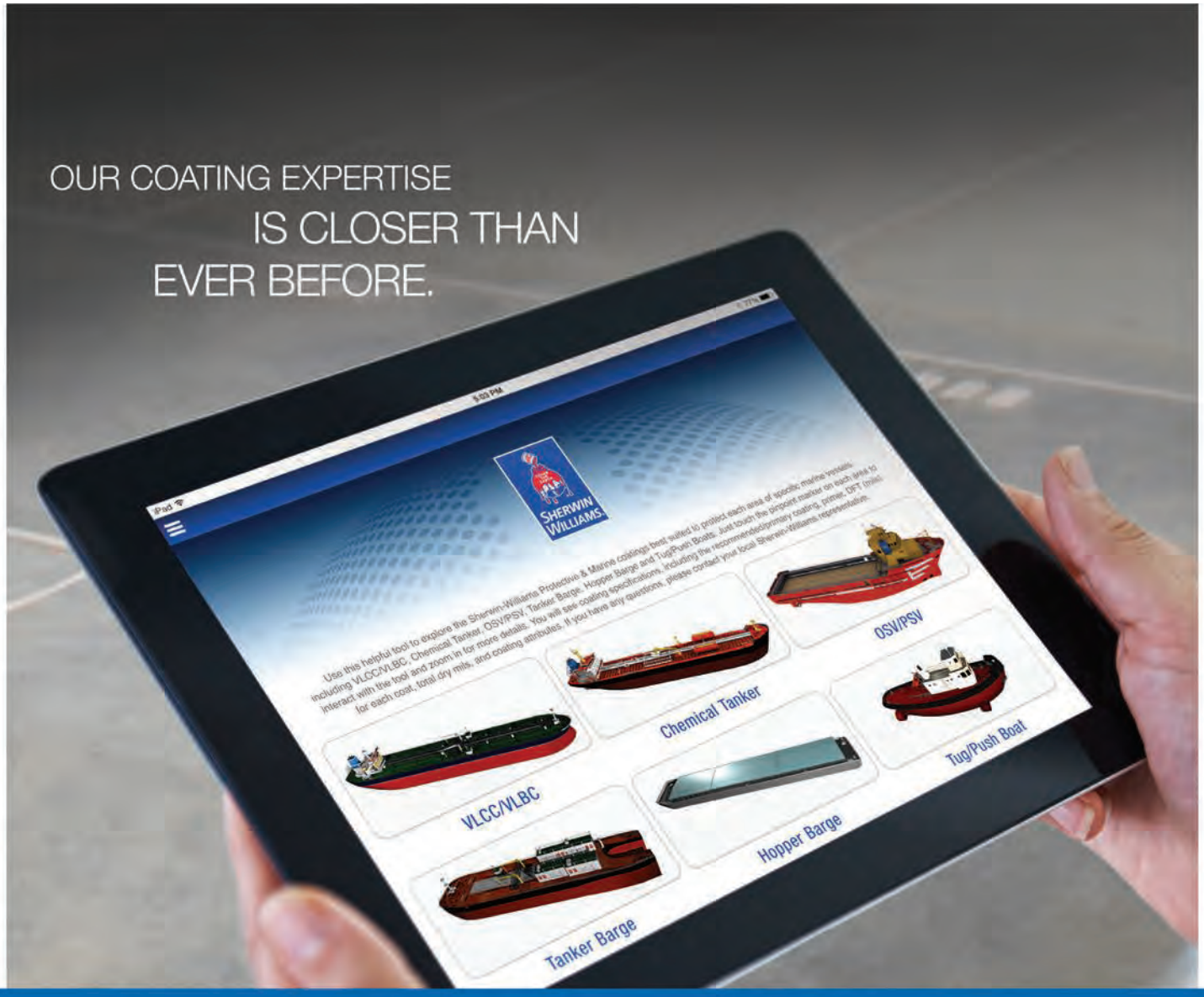
From a Navigation perspective, it is critical to keep the Federal navigation channels, waterways, and locks open to provide for the safe and reliable movement of commercial vessels, as well as meeting commercial navigation demands in the future. This, of course, needs to be performed in an environmentally acceptable, cost effective and efficient manner.

What's the most significant challenge to the USACE in 2016 – is that aligned with your biggest priority? And, looking five years down the road, will those challenges remain the same?

The most significant challenge is the asset management of aging infrastructure including locks, dams and navigation channels due to the age of the facilities for prior funding limitations.

I understand that the Corps is trying to improve its data collection at lock sites. This is important to industry, but why is it also important to the Corps?

In order to most efficiently maintain USACE locks and dams, it is important that there is relevant, accurate data to help guide investments in our existing lock infrastructure and determine the need for infrastructure improvements.



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It is also important to have timely data to understand and determine the impacts of lock and channel performance on commerce, and allows USACE to better-understand where the system may experience navigation closures and delays, which affect the overall inland waterways system reliability.

The U.S. Department of Transportation and its Maritime Administration predict that freight will increase significantly on all modes ahead, but often the Corps' tonnage numbers can be 2 to 3 years behind, making it hard to calculate future freight needs and logistics. What can be done to square those numbers?

The data are assembled from many sources, but mostly from the Department of Commerce and other Federal Agencies. There is a lot of data and since many critical decisions are based on the data, it is essential that the data is carefully evaluated and verified as well as involve trend analysis. Extensive data from projects experiencing rapid growth or decline is reported to USACE staff regularly.

Based on the record FY 16 funding levels, it appears that the Corps can fund all four of the top priority projects (Olmsted, Lower Mon, Kentucky and Chickamauga) at full, efficient levels, but this is up to the Corps to decide. Just what will be the plan for this year?

The FY 2016 Workplan and FY2017 President's Budget are under development and information will not be available until they are released by the President on February 9, 2016. (Editor's Note: *MarineNews* was headed to the printer at that time).

The Waterways Council, Inc. (WCI) and its members and stakeholders pushed and prodded until the U.S. Senate passed a 9-cent increase to the barge diesel fuel user fee. Effective April 1, 2015, the 9-cent-increase should add around $40 million annually to the IWTF, augmented by another $40 million in matching funds. How much of a help is this for the mission in the coming years?

The additional funding from the $0.09 per gallon diesel fuel tax increase to a total of $0.29 per gallon is estimated to generate an additional $35 million per year. This would enable construction and major rehabilitation of justified inland waterways projects to proceed at a faster rate and be completed sooner, the reduction in the Inland Waterways Trust Fund share of the Olmsted Locks and Dam project as authorized in the Water Resources Reform and Development Act, 2014 and could also enable other projects to move at a faster pace to improve the Inland Waterways System.

The WCI applauded the final agreement for an FY 2016 Omnibus Appropriations bill that funds the Corps of Engineers' Civil Works program under the Energy & Water Development Appropriations bill. FY '16 funding for the Corps' Civil Works mission is $5.99 billion, and Inland Waterways Trust Fund (IWTF)-supported projects should receive record-level funding of $405.2 million for priority navigation projects in FY '16. Looking further at federal funding, on the Navigation Ecosystem Sustainability Program (NESP), Statement of Manager language makes clear that "the next appropriate step is to complete PED" (Pre-Construction Engineering and Design) and requires monthly briefings for the committees on any economic update or re-analysis that is done for the project. The authority of the Corps will be the deciding factor on where the funding will be allocated. How will that process move forward?

USACE provided $50,000 in the FY 2015 Workplan to determine how to proceed with updating project costs and economics, and completing a decision document. A decision on allocating additional funding for the project will be made upon completion of the decision document.

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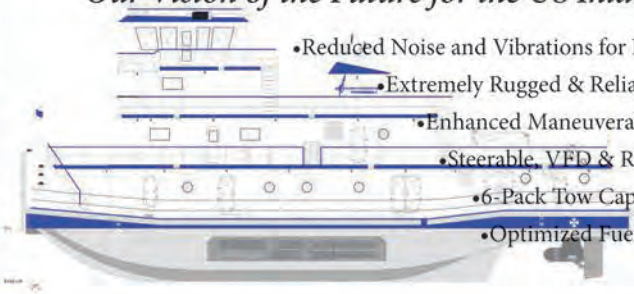

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NEW CONSTRUCTION • REPAIRS • CONVERSIONS

The (Updated) Responsible Carrier Program

A Primer: (...and Please Don't Shoot the Messenger).

By (Captain) Katharine Sweeney

Sweeney

Last summer, the United States Coast Guard (USCG) announced their intent to accept the American Waterway Operators (AWO) Responsible Carrier Program (RCP) as an acceptable Towing Safety Management System (TSMS) under pending Subchapter M regulations. The acceptance did not come without some major changes to the RCP, changes that were needed to ensure the RCP would meet USCG requirements and become a viable option for operators once new Subchapter M regulations take effect. When that happens is anyone's guess.

At the AWO Safety Conference in New Orleans in February, the USCG stated their preferred method was for companies to have an audited TSMS in place with the continual improvement aspect of the company's operation and maintenance of the company's vessels an audited TSMS brings. Further, the USCG did not want the "USCG Option" available to operators. They also admitted that two years after publication of Sub M, only 25% of the current uninspected fleet will have been audited. There will be growing pains, but the Coast Guard remains committed to working with companies to work out the kinks.

RCP Modifications

The modifications are extensive. It is very important to realize all of these changes were the result of input from the USCG and the AWO partnership to ensure all requirements for approval as a TSMS were met. Beyond this, these changes were not proposed by the facilitator of the RCP, the Towing Vessel Inspection Bureau (TVIB). The revised worksheets for both the RCP Management Audit and the RCP Vessel Worksheet were approved by the AWO and are available to download from the TVIB website. Any concern over these changes should therefore not be directed at the TVIB. As Cathy Hammond, immediate past President of the TVIB implored, "Don't shoot the messenger."

If you performed internal audits last year of both your offices and vessels, then your document control procedures should have required you to use the most recent version of the RCP checklist or worksheet. If that was the case, then you are ahead of the game, as some of the changes to the management worksheet were already underway. Your procedure for control of records hopefully required you to keep this documentation as it will be of interest at external (RCP initial or renewal) audit time. This year, all vessels will need to be internally audited utilizing 100% of the worksheet or whatever internal auditing tool your company develops.

No longer is it sufficient to audit each vessel utilizing a portion of the RCP, merely ensuring 100% of the RCP is covered by your fleet at large. Each vessel is required to be audited completely, utilizing all elements of the RCP vessel worksheet. These audits need to happen every 12 months, but unlike the ISM code, the anniversary of when the audit is required for each vessel can remain the same, provided the audit is completed in the 3 month window prior to the audit anniversary date. Originally when the ISM came out, only periodic internal audits were required. In 2010, the wording was changed to 'at least every 12 months.' It is also assumed, that it is a metric of the company's management system as to the ability to conduct thorough internal audits in a timely fashion. Meaning, that if you don't get it done in 12 months, this could be construed as a sign that *your* company is *not* committed to the continual improvement process.

The internal management audits are much the same story. Every year, 100 percent of the RCP management audit worksheet must now be completed, at all offices of your organization that have an input in managing the vessels. These audits must be completely every 12 months, and they can be completed early (up to 3 months prior to the annual date) and still maintain the original anniversary date. Unlike the ISM code, towboat operators won't suffer from "certificate creep."

Your system should further include a policy for internal audits and that a review of the management system is completed as part of the internal audit (or in addition to) and procedures outlining as to what this review will contain at a minimum. Also required are procedures outlining an internal auditor's minimal educational requirements, training and experience, as well as any other qualifications required and the procedures should clearly dictate the parameters to allow for independence with respect to the assets being audited.

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Renewals: 180 vs. 90 Days

Also starting in 2016, the RCP renewal window for re-certification had been shortened from 180 days to 90 days. However, 180 days is being allowed for in the recently published AWO *'frequently asked questions'* guide. It does appear that when you are at the 5 year (not the previous 3 year) renewal of your RCP status, the window will shrink to 3 months prior to the renewal date. You can still have your RCP audit conducted by a TVIB certified RCP auditor 180 days prior to your RCP renewal date (the date listed on the RCP "status" page of the AWO website), and still keep the same renewal date with no "certificate creep," but next round, it shrinks to 90 days. The requirement to have all non-conformities corrected prior to recertification is still in place. You'll only have 180 (then 90) days to correct any line items on the worksheet or checklist with which your company is not in compliance. The need for a pre-audit to find these issues prior to your external audit cannot be emphasized enough.

For vessel RCP audits (each vessel must now get audited once every 5 years) corrective actions resulting from the RCP audit must be resolved with 90 days. In addition, you are only allowed a maximum of 90 days prior to renewal date to commence an audit. Once the audit is completed on a vessel, another audit is due 5 years later, and can be completed up to 90 days prior to the anniversary. This is one-half as many audits required by the ISM Code. And, if your vessel does not have any other certificates, Class must sign off annually. You may be having ISM external audits more often than that (as often as yearly, in addition to you thorough internal audit).

Vessel non-conformities also now require action within 90 days. It is through this metric that AWO is requiring members to comply with to ensure that management systems are adept and nimble enough to address problems within three, rather than six month time frames.

Avoiding 'Procedure Churn'

While not implicitly listed in the changes, having effective measures in place to vet any changes to your management system also is incredibly important. 'Procedure churn' – for example, issuing a new procedure merely to ensure conformity, only to have the new procedure itself later revised and re-issued – should be avoided at all costs. It makes for a lot of extra work and an unhappy crew. It is better (and less time consuming) to spend a little extra time making sure the procedure fits, rather than 'churning' your management system. The first method embodies the whole notion of 'continual improvement' with respect to a management system; the second is its antithesis.

RCP Renewal Cycle Phasing into a Five Years

Previously, the RCP renewal cycle was every three years. This has now been increased to every five years, with a mid-period RCP external audit to be conducted between Years two and three, or between Months 24 to 36. The requirement is to be phased in over time, based on the company's current RCP renewal status date. Also, the requirement to have 100 percent of all vessels audited (as opposed to as little as 10 percent) will be phased in over the five year cycle. Equipment in lay-up status will not need to be audited, however, if they are in use just prior to the five-year renewal date and have yet to be audited, these vessels will need to be audited prior to the company being issued a renewal certificate. This adds another item to your lay-up checklist: whether or not to have the vessel go through an external RCP audit prior to lay-up.

External Vessel Audits

Previously, the RCP required vessel audits took place in conjunction with the management audit, with 10 percent of all vessels to be audited during the RCP recertification (or initiation) process. Now, whereas every vessel must go through an audit once during the five year process, the vessel audits are no longer a part and parcel element of the management audit. The vessel audit worksheet has been expanded greatly, and includes many of the line items covered during the management audit. This duplicate work is needed as different RCP auditors may be conducting these audits. Moreover, the management audit may have been conducted a year or two before the vessel audit, which requires more evidence of compliance with procedure. Mere documentation of a procedure is no longer enough; proof of compliance is now required. Any finding of non-compliance with the RCP requires 90 days for correction(s) before the external audit is deemed successfully completed.

Designated Person Ashore (DPA) – More Defined, and Playing a Starring Role

Straight out of the ISM (International Safety Management) Code, the DPA must be an integral part of your management system. A DPA's minimum educational requirements, training and education, and other qualifications must be clearly documented as well as his or her independence (from the chain of command) and access to top level management. Strictly speaking, your port captain cannot be a DPA. The DPA needs to be a person outside of the fleet management structure and one able to effect

change, if needed, for issues regarding safety of the crew and/or vessel, and of the environment. Any crewmember who feels that a safety concern is not being addressed can reach out to the DPA who will then listen to their concern, investigate its merits, and find a solution if needed. The DPA also must have access to resources to implement a solution or plan when warranted.

Personnel need to understand who this person is, his or her purpose and why they might contact this individual. The contact information should be posted on all vessels and in all offices. Resources necessary for this person to perform his or her job as DPA cannot be withheld. In fact, failure to have a designated DPA is a show stopper; it effectively negates the whole system. From a legal perspective, lack of a performing DPA is the equivalent of handing a blank check to a plaintiff. Imagine having an employee that reports an unsafe condition on a vessel to the company's DPA, but without any follow-up from said DPA, followed by a later injury or circumstance related to the condition that gives rise to a claim. A potentially bad situation has developed into a far worse one, both morally and legally.

Mission Statement: Clear, Concise, and Easy to Remember

Myriad other items also need to be included in your management system. Each of these items could be the subject of a valuable article, in and of itself. Lastly, when reviewing you management plan, make sure your company's overall mission statement is short, clear, and easy to remember; the fewer words, the better. Everyone on board should have a clear understanding as to the company's principal goals. Ultimately, that's the route to becoming a *Responsible Carrier.*

***Captain Katharine Sweeney** is CEO of Compliance Maritime, provider of independent internal auditing of security, safety, quality and environmental management systems for vessel operators. Captain Sweeney is an experienced Master Mariner, safety expert and federally licensed pilot with over 25 years in the Maritime Industry. Contact her at ks@compliancemaritime.com*

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Galley Grease Harms Equipment – and the Environment

By John Paparone

Paparone

Cleaning up the wastewater stream on marine vessels isn't just about removing hydrocarbons out of oily separators and bilges. Workboat galleys harbor a tremendous amount of FOGs (fats, oils and grease) that, if not properly disposed of, can be a health risk, damage equipment and add to overall operational costs.

Even if vessels are equipped with sophisticated grease trap systems, the introduction of non-toxic, neutral pH biologic compounds into the trap and/or waste stream is a necessary step to reduce toxic build-up and environmental pollution. Without pre-treating the 'junk' where it accumulates – and continuing to treat it regularly – the operator never really gets rid of it.

Look, for example, at a typical grease trap issue: passenger vessel restaurants and galleys deal with FOGs on a daily basis. Food grease gets washed down the sink, ground up in the disposal, and ends up in the grease trap. A grease trap is typically a holding tank that separates FOGs from the galley's drain prior to moving to the gray water holding tank. The solids will naturally build up at the bottom of the trap. But grease and oil will always float to the top of the water, making the water murky. This waste has to be disposed of.

On board, the waste stream from the galley gray water holding tanks – depending on regulations related to vessel size, trading pattern, etc. – is held for pump out at a port facility or may be pumped overboard. This relocates the 'problem' and transfers responsibility to someone else to deal with; a costly and time consuming process. Pump out at the port facility is expensive, and discharge into the ocean is nothing but 'permitted' pollution.

Industry did the same with plastic over the years, resulting in huge floating gyres (floating plastic debris fields) that we are now trying to clean up. These gyres affect our food supply and needlessly kill and mutate ocean creatures. Wouldn't it stand to reason that FOGs, detergents, and cleaning chemicals – even if they are touted as phosphate free or readily biodegradable – will have a negative impact as well?

This is where the science of bioremediation plays a big role. Bioremediation is nothing new. It has been around for centuries and has been studied more extensively, since the 1940s. It's been used with success in several industrial industries, but its adoption into the maritime industry remains slow. Why? Because people haven't been educated on how to compare the mainstream 'green' cleaning and cleaner/degreaser products they use now and the ones that actually stop toxic build up and have no toxic compounds in them.

Bioremediation is the process of using naturally occurring, safe and beneficial micro-organisms to degrade environmentally harmful contaminants and turn them into non-toxic compounds. In particular, these organisms will break down petroleum hydrocarbons and transform them into carbon dioxide (CO2) and water. Further, this natural process will produce valuable bio-nutrients that can be utilized by both plant and aquatic life.

According to a study carried out at the student center of the Texas Christian University by the Environmental Science Department entitled *"Comparison of Four Treatment Methods for the Removal of Lipids and Food Waste in a Grease Trap Environment,"* the use of bioremediation made a significant difference in the amount of FOGs.

The study compared pumping the trap, bacterial inoculation (introducing bioremedial microbes), aeration, and a combination of aeration and inoculation over a several-month period at the University's cafeteria. The paper states that "when microorganisms are exposed to contaminants over a period of time, they tend to mutate (due to their rapid cell division) to a strain of microorganism that is capable of utilizing the contaminant as an energy source." That means that using non-toxic and non-caustic bioremedial products introduces bacterial microbes that love to "eat" grease. These grease-eating microbes start to break down the FOGs, and over time, continually eat them, reducing the amount of "junk" to deal with in the disposal stage.

Any food establishment – whether on land or at sea – increasingly has to keep up with stringent environmental regulations for dealing with grease and hydrocarbons. The standards are getting more complex by the day. That's why pre-treating waste water is essential before it goes any farther. In fact, the paper also states: "While frequent pump-outs of the trap can greatly reduce the odor and clogging problems, there is still the problem of disposing the accumulated waste contents (oil, grease, settled food particles, and gray water) of the trap … The process of breaking a compound down to CO2 and H20 is very complex, and can only be accomplished by a living organism through many metabolic steps (Grubbs, 1991)."

The study concluded that "Even with the slower-working anaerobic bacteria in treatment II, there was still a significant removal rate that was comparable to having a grease trap pumped every two weeks." Results illustrate the fact that there is sufficient retention time in the grease trap environment for bioremediation to be effective when the trap environment is augmented using aeration and specific bacteria. The study continues, "This therefore decreases energy usage and costs to the treatment plant and increases the life of the treatment facility." Aeration may be accomplished via the natural water flow moving through the galley/kitchen drainage system, thus not requiring any additional mechanical insertion of aeration capability.

In another study, a non-toxic, non-caustic bioremediation product called GTO was introduced. Developed for the food processing and manufacturing industries by EnviroLogics BioBased Technologies, Inc., the product digests the grease, fats and organic wastes that accumulate in grease traps and drain lines. GTO was introduced to see if the waste system could work more efficiently at breaking down FOGs and reduce the monthly disposal costs. A Comparison of Before and After the study began is depicted in Table 1:

Table 1.	Before	After (< 30 days)
BOD: biochemical oxygen demand	2328mg/L	1086mg/L
TSS: total suspended solids	2660mg/L	568/L
Surcharge (disposal costs - $)	1,030	376

By the end of the study period, the BOD level was <200 and the TSS was <240 – meaning negligible. Best of all, there were no surcharges incurred. All this meant a significant bottom line savings. When maritime problem solvers tend to focus on adding another mechanical device to manage these situations, that 'solution' involves additional space, engineering solutions, and/or power requirements, just to name a few impacts. And, while Vessel General Permit and other regulations 'require' detergents that are phosphate free and degreasers that are rapidly biodegradable, these are NOT standards. Standards should be based on toxicity to the aquatic environment.

The only part of the cleaning detergents that is readily biodegradable is the cleaning solution itself; the result is the chemicals are biodegraded, but the FOG, bacteria, etc., they removed or cleaned, still remain. That's why it's imperative to constantly clean and maintain grease traps with the right cleaning solution so they can function as they're designed.

We have done little to tax the chemical industry to develop cleaning products that fit our definition rather than theirs. The technology to develop cleaners, degreasers, etc., does exist to manufacture non-toxic, non-corrosive, and non-caustic solutions for areas such as bilges and galleys. The Centre for Environment Fisheries and Aquatic Science (Cefas) based in the U.K., has demonstrated this in the North Sea. Beyond this, these products will compliment and reduce the strain on existing systems, thus allowing installed mechanical systems to have a longer service life.

The maritime community needs to take the initiative to develop acceptable aquatic toxicity standards and drive industry to meet those standards. Bioremedial products are not an end-all, but rather compliment existing technology, will extend the useful service life of existing systems and will save money in disposal costs.

John Paparone *is Principal of Environmental Solution, Inc., a veteran owned business that sells and distributes more than 30 EPA-approved products to marine and other industrial industries.*
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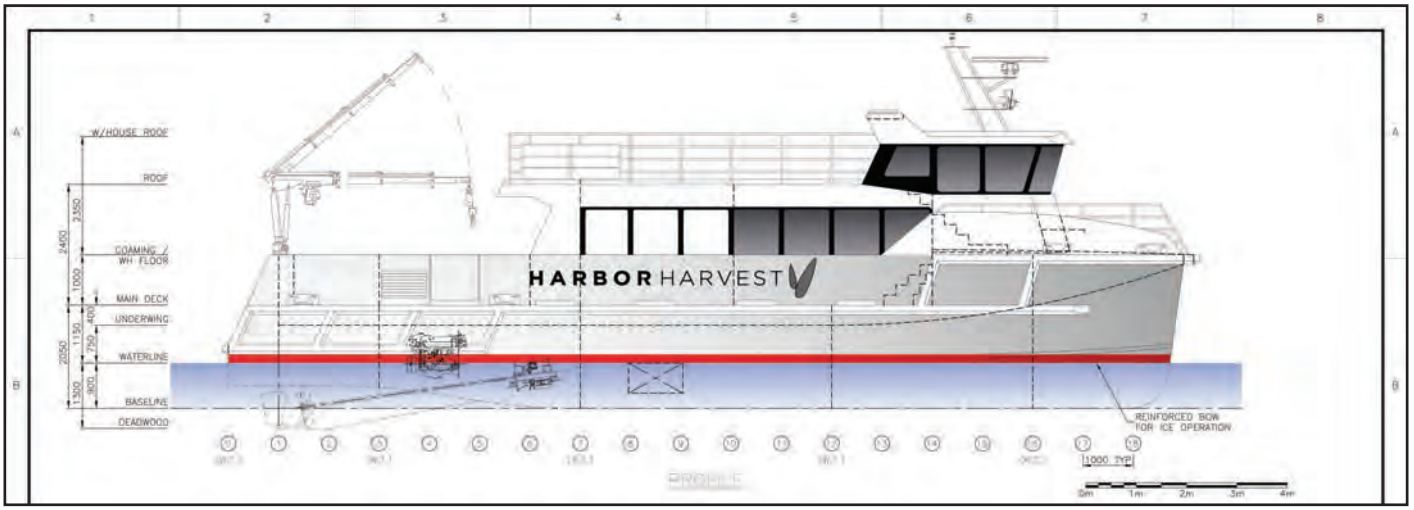

Shortsea Shipping is alive and well on America's East Coast. *MarineNews* contributor Bob Kunkel explains how, why and when that could happen.

By Robert Kunkel

In the United States, counties and states directly on the shoreline constitute less than 10 percent of the total land area (not including Alaska), but account for 39 percent of the total population. From 1970 to 2010, the population of these counties increased by almost 40% and are projected to increase by an additional 10 million people or 8% by 2020. Coastal areas are substantially more crowded than the U.S. as a whole, and population density in coastal areas will continue to increase in the future. In fact, the population density of coastal shoreline counties is over six times greater than the corresponding inland counties. And that's the problem. Population density creates congestion and pollution along our Interstates, our highways and local roadways.

Shortsea Shipping & Harbor Harvest

Recognizing the roadway congestion problems, Europe developed the Marco Polo Plan and invested billions in the development of a short sea-shipping program in early 2004. In the Americas, the U.S. Department of Transportation and the Maritime Administration started by first building a short sea cooperative program with private industry and following with the America's Marine Highway under legislation established by Section 1121 of the Energy Independence and Security Act of 2007 and amended in Section 405 of the Coast Guard and Maritime Transportation Act of 2012. The mission was to integrate a marine highway system into the U.S. surface transportation system and relieve congestion.

Has it worked? Simply put, it has been difficult. The coastal movements of container and trailer into and out of the noncontiguous zones have finally drawn new tonnage and technology into the trade. That said the development of actual coastal movements on the East or West coasts of the country have difficulty competing with the cost of trucking and the finest Interstate highway system in the

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Draft: 1.6 meters	Crew: 3 crew	Cargo Capacity: 12,000 pounds
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world. Taking all that into consideration, Harbor Harvest and Amtech may have found a small niche that can work towards solving some of those cost issues by developing a shorter trade route and embracing the local farm-to-market movement in agriculture and food service.

The project intends to provide an alternative transportation platform coupled with a vertical integration of retail space and support of the organic farm market located along the Connecticut/Long Island Gold Coast and Hudson River area. The U.S. Maritime Administration has designated these two Marine Highways as M295 and M87. Both are considered eligible Marine Highway corridors for government and public support. Harbor Harvest intends to provide an emission free "eco-delivery" marine coastal network based upon proven Hybrid propulsion and aimed at providing environmental sustainability to an agriculturally based cargo.

The Hybrid Vessel

Alternative Marine Technologies recently delivered a Lithium powered Hybrid research vessel to the Maritime Aquarium of Norwalk Connecticut. The Spirit of the Sound has operated nearly flawlessly for over one year and has been a major factor in proving that the *BAE HybriDRIVE* system developed to power the vessel is both efficient and dependable. The project completed by Derecktor Shipyard, BAE Hybrid Systems, Corvus Energy and Amtech has received awards at several marine conferences and industry functions. A follow on vessel is currently being constructed at Derecktor for CUNY Brooklyn for research projects in New York's Rockaway Inlet. Amtech is the construction supervisor for the second vessel in the series.

Using the same Catamaran design and Hybrid propulsion system, Derecktor and Amtech reconfigured the future series of vessels to carry 9,000 pounds of protected refrigerated cargo and 3,000 pounds of deck cargo. Vessel speed is 15 knots and the Lithium battery component allows emission free operation for approximately 3 voyage hours before charging is required. The vessel can be charged at a shore side facility or while underway. The envisioned trade routes have been tested with the Norwalk Research vessel to confirm fuel

efficiency, battery life and the use of several proposed dock locations in Long Island and Connecticut. In all of the tested routes, the vessel can deliver the required cargo in nearly half the time required along the congested land based routes.

Taking into account the 'gentrification' of the Connecticut 'Gold Coast,' the Hybrid cargo vessel will be quiet, fuel-efficient and without exhaust emission while carrying local farm produce, dairy, wine and meat products on refrigerated pallets. The vessel's maximum draft is less than 4'6" and is easily accepted at Marinas, Yachting centers, Ferry terminals or industry based working berths. Door to door delivery will be completed by Pedago Lithium electric bikes, capable of 400 pounds of cargo carriage and by small EV vehicle where longer distance delivery is required.

Bluezone refrigeration technology allowing extended storage periods of the organic products both aboard the vessel and at the distribution centers is also employed. A retail farm-to-table retail market and butcher shop has been successfully introduced in East Norwalk, Connecticut to allow a vertical integration of revenue from distribution, delivery services, product transportation and retail sales. The retail center has been featured in *Modern Farmer*, the Connecticut Northeast Organic Farmers Association and several Connecticut local news programs to rave reviews.

The Cargo and Trade Routes

The millennium generation is returning to the cities and neighborhood small businesses in an attempt to reduce their carbon footprint. They live, shop, eat and play where they can walk to work, ride their bike to the Farmers Market or use mass transit to meet their long distance transportation needs. The environmental benefit that accompanies this 'Local' mentality needs to also translate into our maritime transportation systems. We owe them an emission free and sustainable system of moving goods into and around the local economy they have embraced.

In 2011, the Lower Hudson & Long Island Resource Conservation and Development Council completed the Hudson River Foodway Corridor Study sponsored by NYSERDA. 36,000 farms and 7 million acres of farmland were identified in the study. The value of the products sold was estimated at $4.4 billion. As much as 75% of the farms were identified as family owned and had annual sales below $50,000 simply due to the fact that they could not get their products to consumers in New York City. As a result, 670,000 acres of farmland have been lost between 2000 and 2010. Similar conditions were found in Connecticut as the geographical relationship of point of farm origin compared to consumer and wealth location created logistics issues. An efficient marine transportation system can open new markets along the Hudson River corridor of Marine Highway 87 and across Long Island Sound on Marine Highway 295. The Harbor Harvest Hybrid vessel provides that efficiency and looks to service those new markets.

Amendments have been added to recent Marine Highway legislation to allow parcel cargo movements within designated projects. Existing legislation targeted only containers and domestic trailers. The movement of parcel cargo by pallet or box is handled by LTL (Less than Full Load) trucking and that market provides a more stable playing field for the movement of parcel cargo on water. There are limited LTL trucking services that provide refrigerated movements and the roadway congestion, bridge tolls, parking issues and diesel emissions have both extended the time required to complete a Connecticut to Long Island or a Kingston to New York City movement which in turn has increased the quoted price. The marine Hybrid movement is now cost and time competitive.

Based upon previous attempts to move freight off the

congested highways and along the U.S coasts, this is the first time Amtech has seen the numbers work; a surprising fact considering the current cost of diesel fuel and price of oil. In the meantime, Harbor Harvest is working with several environmentally based groups, the States of Connecticut and New York to gather public support and work towards raising additional capital to support the construction of ten vessels.

Green, clean, efficient and workboat powered shortsea shipping is coming to Long Island Sound and the Hudson River. This is truly an event that can only be described as one small step for shortsea shipping and one large step for the Northeast agricultural community. And, not a moment too soon.

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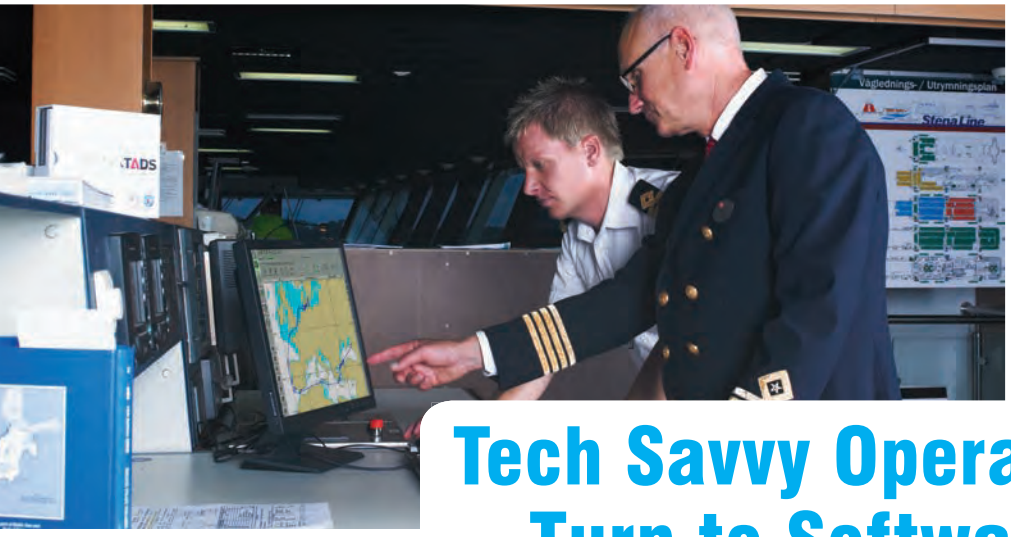
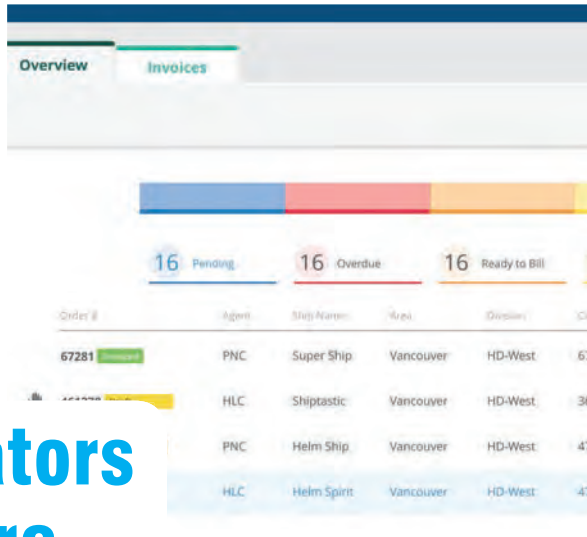
Robert Kunkel, *President of Alternative Marine Technologies, previously served as the Federal Chairman of the Short Sea Shipping Cooperative Program under the Maritime Administration and the USDOT from 2003 until 2008. A past Vice President of the Connecticut Maritime Association, he is a contributing writer for MarineNews. A graduate of the Massachusetts Maritime Academy, Kunkel sailed as a licensed engineer and continued his career in ship construction at NASSCO and Hyundai Heavy Industries, among others. He is a senior member of the Special Committee on Ship Operation with ABS and an elected member of the NCB.*





Tech Savvy Operators Turn to Software Based Solutions

Optimizing fleet operations means streamlining procedures to meet impending regulatory pressures and challenging market conditions alike. Subchapter M is just one of many reasons to look at software solutions.

By Kathy A. Smith

Creating 'paper trail' efficiencies, reducing risk and managing people and processes are all part of the trend towards increased use of computerized operations. And while workboat companies are facing incoming Subchapter M regulations – which for some will entail big changes to their operations – it still pays to optimize fleets with software solutions for a myriad of reasons.

ABS Nautical Systems

Texas-based ABS Nautical Systems' NS Enterprise suite is an integrated fleet management system with several modules that cover a range of solutions such as compliance, workforce and asset management. A number of modules support these solutions, including maintenance and purchasing as well as a sophisticated dry dock mod-

Images above
Top Left: Voyage planning on board Stena Germanica (Transas), Top Right: Helm CONNECT Jobs billing status overview.
Bottom Left: NS Core offers a streamlined introduction to Fleet Management software, while maintaining the option of the full NS Enterprise suite for those who may want to upgrade later.
Bottom Right: A screenshot of the main menu (MarineCFO).

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"We've also built a Subchapter M solution specifically for workboats. The product is called NS Core, which is a slimmed-down version of NS Enterprise for just the core processes workboats need in order to effectively run their maintenance and compliance activities on those small boats. That's a way of us leveraging our blue water solution into the brown water area in a way that we think is going to be very effective for people."

– Stephen Schwarz, Vice President & Chief Operating Officer, ABS Nautical Systems

el. The HSQE and document manager modules support compliance and safety processes and procedures.

"We've also built a Subchapter M solution specifically for workboats," says Stephen Schwarz, Vice President & Chief Operating Officer. "The product is called NS Core, which is a slimmed-down version of NS Enterprise for just the core processes workboats need in order to effectively run their maintenance and compliance activities on those small boats. That's a way of us leveraging our blue water solution into the brown water area in a way that we think is going to be very effective for people."

ABS Nautical Systems has also developed a set of services to assist workboat companies in the transition. They've launched a cloud (web-based) service so that if companies are small and don't need an IT staff, they can purchase a subscription. Support options have also been enhanced to walk people through the system as needed and can be customized support to particular requirements as well. The entire system is built around a concept where when you log in, you basically land on a workspace that's customized to you, your role, and it's very visual-oriented," explains Schwarz. "It's built around this 'my workspace' concept, but with customized dashboards." The NS Core system also provides wizards that prompt the user through tasks, even if the user doesn't have a lot of computer experience.

Operators can choose whether they put the software on their vessel fleet – the data can be replicated with the office – or if they want to manage operations solely from the office. ABS Nautical Systems has plans to roll out a mobile app by year's end for the brown water market that will, at first, be designed for purchasing approvals because, as Schwarz says, the number one request customers have is allowing the appropriate managers the ability to give approvals away from their desks. No doubt this offering will also make its way into the workboat sector.

The company also plans to gradually move to an all-web-based interface for all its software applications and invest heavily in making the user experience as easy as possible. "For workboat companies facing Subchapter M regulations, we have a solution that doesn't disrupt your business," adds Schwarz. "I think software companies in general are faced with becoming business solution companies. That's why you see people moving to 'software as a service' so they don't have to keep upgrading their own infrastructure."

Helm Operations

Helm Operations, based in Victoria, BC is rolling out its latest product targeted at the harbor docking market. The unique software module called Helm CONNECT Jobs provides several advantages in that it can accommodate a wide variety of billing variables, something which can get out of hand if there are many independent agreements with different customers.

The biggest advantage of the new software, according to Helm, is in the setup of new rate tables, which can be done relatively quickly due to the variables that can be easily chosen ahead of setting up the tables. This reduces the need to search through columns and columns of information, which is a fairly standard process today.

In fact, the software can help not only streamline the variances, but can assist in generating revenue from past billing mistakes. "If companies are using systems like Excel, they may not invoice until the end of the week or after a couple of weeks," says Daniel Gort, Product Manager. "If certain events happened on the job, they can charge a surcharge for those extra things but if those are not being captured properly, they're missing out on revenue."

Through utilizing the software, harbor docking compa-

nies gain insight into fleet utilization. For example, tracking when tugs are requested and if they're on time, or if some boats aren't being utilized, adjustments can be made to put a tug into (better) use, instead of going to the expense of building a new boat.

When logging into the software, users will see three options: dispatch, sales, and billing. The billing screen shows a queue of all the jobs coming in, what is overdue, which is ready to bill and what has already been invoiced. With the click of a button, a completed job can be billed. If there is no current contract in place with a particular customer, Helm CONNECT Jobs will warn the user if no contract is available.

Having the ability to choose event types is also an advantage. For instance, if tugs encounter icy conditions during their harbor docking job, the event can be added to invoices to ensure the extra variance is accounted for and billed. The software can be purchased one of two ways; either by subscription, which gives instant online access or customers can also purchase the in-house option that offers an entire IT infrastructure set up, but still have access to the web-based version.

Another big benefit, Gort says, is the capturing of information as it happens on the tugs by the vessel captains. "A lot of times, even if a dispatcher is filing in that information, they might be doing it after the fact when they get the log from the boat," he says. "You get a lot more insight into what's going on when you get the captains logging in as it happens and the information gets transferred straight into the dispatching and billing areas."

MarineCFO

Before developing marine-specific software, New Orleans-based MarineCFO designed accounting systems used by businesses worldwide, as well as a maintenance system that was primarily used by very large manufacturers. Through customizing and adding new features, the MarineCFO family of software products continues to make headway in the marine industry.

In particular to help optimize a marine company's fleet, MarineCFO's Fleet Maintenance module provides at least 18 different processes such as scheduling, preventative maintenance, maintenance orders, materials requisitions, ISM compliance and more. Like all of the company's soft-


Dean Shoultz, MarineCFO CEO

"If companies are using systems like Excel, they may not invoice until the end of the week or after a couple of weeks. If certain events happened on the job, they can charge a surcharge for those extra things but if those are not being captured properly, they're missing out on revenue."

– Daniel Gort, Helm Operations Product Manager

ware modules, each can be purchased as traditional software that is hosted for the customer – the front end is built in Microsoft Office, so it manages all the productivity of analytics – or as a web-based subscription solution called Vessel Live.

The maintenance module deals with maintenance as well as groceries and procuring supplies for boats, and in the course of processing recurring maintenance, the vessel can record a deficiency or non-conformity. "We also track hazardous materials for our inland customers," says MarineCFO CEO Dean Shoultz. "We're tracking that and alerting them to the changing landscape of the regulations that they may be subject to because of that particular type of material."

The software also has built-in checklist architecture for the incoming Subchapter M regulations. The shore-side team can create a checklist and schedule it accordingly so it shows up on the vessel's computer with a "please record your safety meetings today" reminder.

Flexibility allows for using single modules, particularly smaller fleets can use the Vessel Live web-based option. "There's a shore side component where all the data sort of rolls into a web console that the administration could have," explains Shoultz. "So they're seeing their logs and the different activities happening on the vessel. You don't need the maintenance or purchasing or other modules we have. You can use just the Vessel Live primarily to stay compliant with Subchapter M and other regulations."

From a maintenance perspective, it's important to keep everything in running order to prevent down time. The other goal MarineCFO has is to make sure the inland operators stay in compliance so if the Coast Guard walks onto the vessel and wants to see the logs from a certain day, they can just hand it to the inspector and not have to deal with deficiencies that can lead to other problems.

"Our key differentiator is that our software is very configurable," says Shoultz. "We've got thousands of switches behind the scenes, and how they're thrown enables our software to customize to the needs of the customer. Our largest customer has 300 concurrent users on the shore and hundreds of vessels communicating. Then we've got guys with two vessels. It's the same system, just with the switches thrown differently."

Transas

When it comes to voyage planning software, Transas' Navi-Planner is a highly-sophisticated, yet easy-to-use program that is offered free as part of the company's Navi-Sailor 4000 ECDIS system. Navi-Planner 4000 offers complete voyage planning which is fully compliant with all the recommendations for voyage planning and the recording of events related to navigation made by the IMO.

Also integrated with Navi-Planner is an AtoBviaC autorouting module for exact route planning based on thousands of deep sea vessel routes. It's based on the preference of the navigator, and allows for quick route changes to be made in transit.

"We have a licensing agreement with AtoBviaC. We take their routes and have embedded them into Navi-Planner software," explains Paul Welling, Regional Sales Director, On Board Systems, Americas. "So if a captain wants to go from A to B but stop at C, it will then calculate the route and immediately put the whole route on the screen."

As part of the voyage planning through Navi-Planner,

Paul Welling,
Regional Sales Director, On Board Systems, Americas

charts and publications can be ordered. Once the licenses are purchased and applied, the charts are available. Navi-Planner allows for complete management of all electronic charts and with the click of a button, navigators can select charts based on area or route. The system works both in a bridge environment and ashore as a management and planning tool.

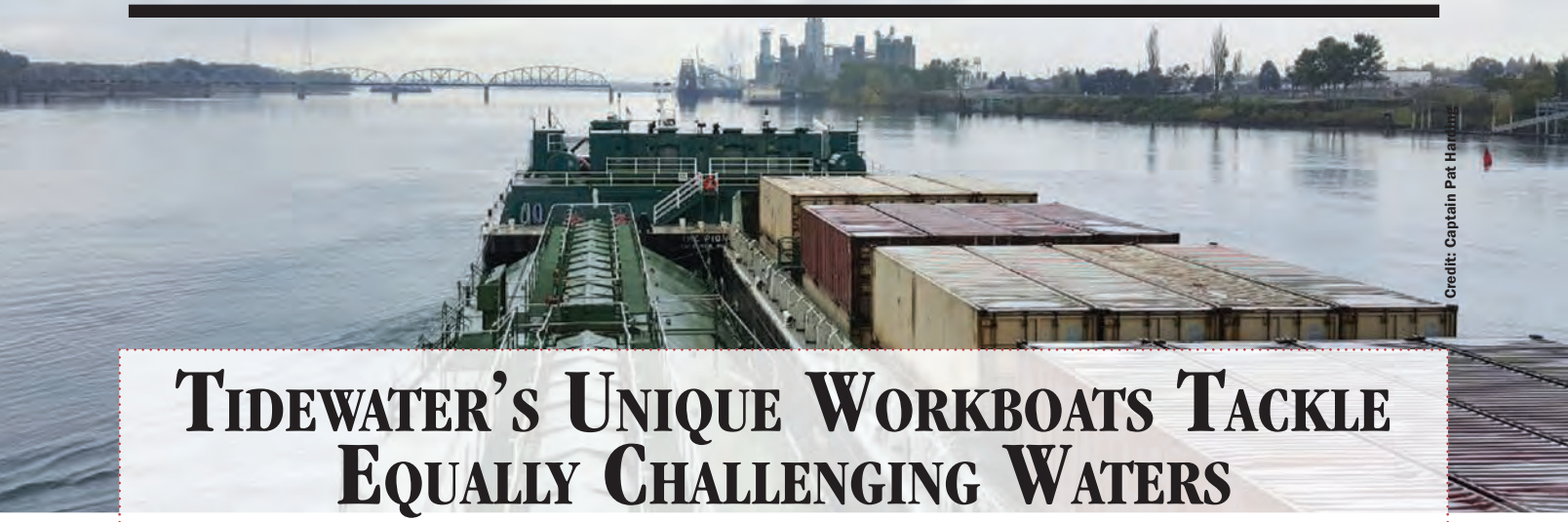
Weather can also be downloaded, so navigators can view both actual weather conditions as well as weather during the intended voyage to help with fuel and speed optimization as well as situational awareness. "There are many parameters the system needs such as the size of the vessel, shape of the hull, etc., so that it can calculate the most optimized voyage for the ship," says Welling. "The captain, of course, still has the final word. He can take the system's advice or ignore it."

A tide and current planner is also part of the software, and navigators can also create their own maps, reference points and "No-Go" areas. Routes will take environmental boundaries into consideration to ensure compliance. Under Keel and Overhead Clearance calculations help navigators set parameters for certain shallow passages and transiting under certain bridges.

"The other part of Navi-Planner is if a ship owner wants to do some of his own planning in the office, we can give him the software package where he can upload it to his office computer and do the planning from there," adds Welling. "Not a lot of manufacturers have that capability."

Fleet Optimization: Multiple Routes to the Promised Land

What if you could manage your purchasing more efficiently, more closely track the personnel and qualifications necessary on each unique hull, satisfy regulatory requirements and better plan a more efficient, economical and speedy route to your next port of call? All of that is possible, and more. How you get there is your business – and the concern of multiple technology providers in this space. In a challenging business environment made even more difficult by a regulatory hammer that is poised to come down on any number of fronts, you can use all the help you can get. Fortunately, it's all there for the asking.



Credit: Captain Pat Harrison

Tidewater's Unique Workboats Tackle Equally Challenging Waters

The Columbia and Snake River system of waterways demands special equipment, dedicated mariners and local service. Fortunately, all three metrics are present – for today and tomorrow.

By Kathy A. Smith

When one thinks of the vast inland marine supply chain in the United States, the Columbia and Snake River (CSR) system may not first come to mind. But the once un-navigable 465-mile waterway was substantially changed during the 20th century when a series of eight hydro-electric dams with eight navigation locks were built by the Army Corps of Engineers, allowing for the movement of goods between the Pacific Coast Port of Astoria Oregon and the inland Port of Lewiston, Idaho.

Today, over 46 million tons of international trade occurs along the deep draft channel of the Columbia Snake River. The inland navigation channel moves over 12 million tons of this commercial cargo, such as grain, wood products and refined petroleum products. These cargoes are ferried between the many ports, elevators, and terminals that dot the system's landscape. The largest inland barge transportation provider along this important gateway, serving over 85 percent of the commodities they serve, is Tidewater Transportation & Terminals.

Tidewater Transportation & Terminals

The long-serving Vancouver, Washington-headquartered marine enterprise owns and operates a fleet of 16 towboats (several have been repowered with new diesel engines) and 150 barges as well as four strategically-located terminals that provide, among other services, liquids and solids terminaling and transloading. Three of the company's newest vessels have been purpose-built for this unique waterway based on decades of intimate knowledge with the changing tides of this challenging inland river system.

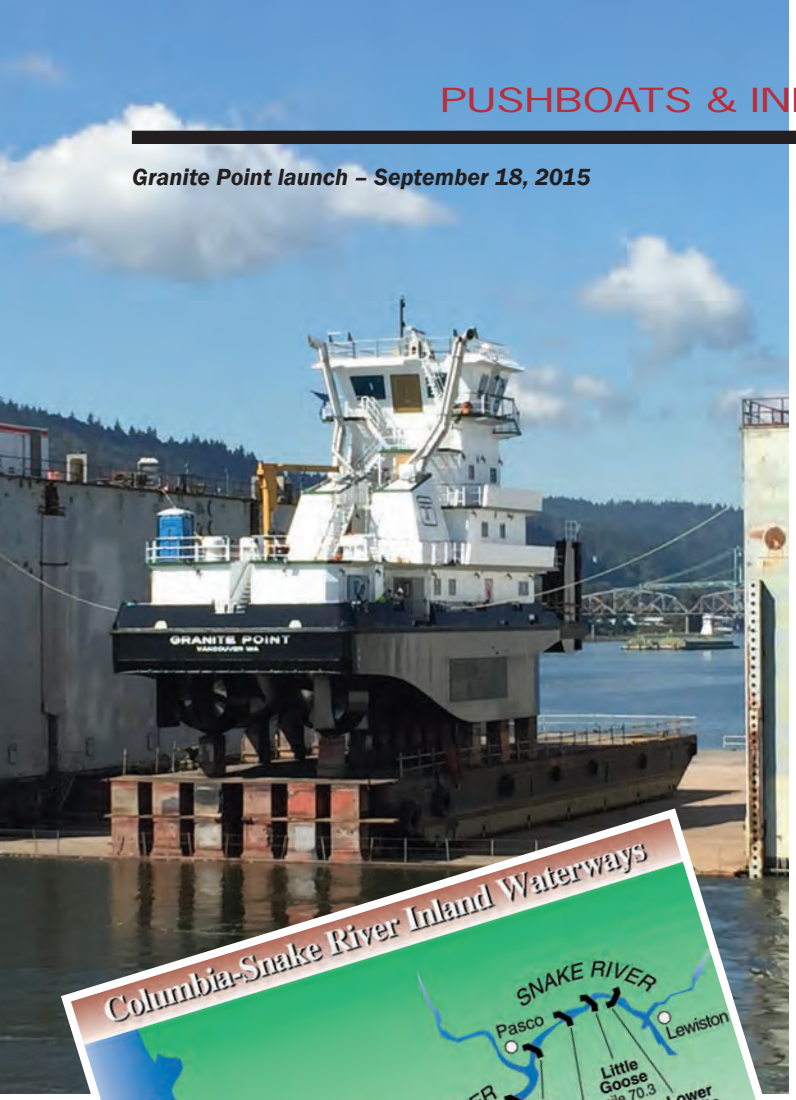
The eight dams along the CSR create eight reservoirs. The largest is 76 miles in length, which gives rise to a plethora of weather challenges. Wind speeds of 40 miles an hour and above are pretty common. "You can get up to 70 or 80 through the gorge," says Captain Brian Fletcher, Port Captain. "In that 76-mile pool, it's not unheard of to have 10-foot rollers out there. The wind is our adversary, and we manage it very well."

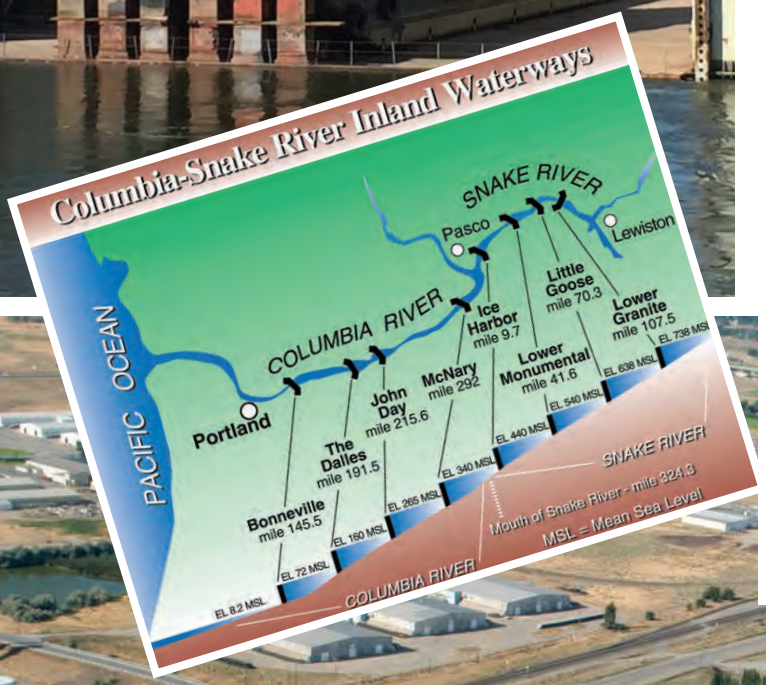
Fletcher represents several multi-generational families

Tidewater tug Challenger heading upriver with tow

Credit: Tidewater Transportation & Terminals

Granite Point launch – September 18, 2015





Tidewater's Boardman, OR Terminal

who've worked for Tidewater. His father and uncles all worked for the company at different times, going back as far as the 1950s. Many others started working out as deckhands and rose through the ranks to captain, including three generations of the Allen family. "They choose to be on the river because it's in their blood," says CEO & President Bob Curcio. "We're culturally a Pacific Northwest company. We care a lot about the employees, and it's resulted in generations working for the company and guys really enjoying what they do."

On the Water

With crew in mind, their endurance on board the company's vessels has played a big role in the design of three of the latest next-generation towboats, the first new workhorses on the CSR system in over 20 years. *Granite Point*, Tidewater's newest asset, designed by Maine-based CT Marine, started service in January. Built by Portland's Vigor Industrial, she follows *Crown Point*, which began operating on the CSR in the summer of 2015. The vessel is configured in a similar fashion to another sister vessel, *Ryan Point*, expected to be delivered in the spring of this year. Powered by Caterpillar 3516C Tier 3 engines, *Granite Point* is a double-hulled vessel that is 102 by 38 feet, with a depth at full load of 11 feet. She is equipped with a hexagonal wheelhouse with floor-to-ceiling windows on all six sides. The hexagonal design continues to the main deck, which consists of a galley, a media room, and a health and fitness facility.

"We did a noise and vibration control engineering study before we built the vessels," explains Marc Schwartz, Maintenance & Engineering Manager. "A lot of effort has been put into vibration and noise control, and I think we've been very successful with that for this local operating environment."

"Marc got together with Brian and with captains and assistant port captains and people who have operated on the river for a long time, and they built a tug that was cus-

Three images courtesy: Tidewater Transportation & Terminals

tomized to all our needs," says Curcio. "The counter to that is that this tug is not designed for use on the Mississippi. It wouldn't be effective there. It can't be used on blue water, so it has no purpose on the ocean. There is nothing that has been built similar to this on any river system in the world." In fact, Tidewater has trained captains from ocean-going and other river-going vessels with limited success because of this unique waterway and the particular way these CSR vessels behave.

The engines on *Granite Point* and her sister towboats have been placed on vibration isolating mounts, which reduces the resonant frequencies that are sent in through the hull. The exhaust systems are also completely isolated from the hull structure. In addition, there is a floating floor system, where each deck is isolated from vibration and from noise by a system of underlayment underneath the floor finish. Tidewater has found that even under the most extreme operating conditions on the vessel, the sound inside of the accommodations is no more than 60 decibels.

Looking Ahead: SubM and More

The new vessels have also been designed to be in compliance with Subchapter M, and additionally, they can turn on a dime. "When you're going with the flow of a river, it's really difficult to do tight space manuevering because you really don't want to go any faster than the river goes, but you still have to be able to turn the vessel," says Schwartz. "And you can't turn the vessel unless you have water pushing against the rudder. So we're really fortunate that we got a rudder system and a steering system that really handles the tow in all conditions. That's a big piece of the design."

Tidewater has also ensured they're using as much equipment with variable frequency drive as possible so equipment will be more reliable and last longer. The three new vessels are also equipped with Samson synthetic lines to help with crew endurance. The life expectancy of the new assets is at least 40 years, continuing a company tradition of building equipment that lasts, which is clearly evident by the fact that Tidewater still owns a tug that was built in 1939 (although it is no longer operating, it could still do so). Part of long-lasting vessel life has to do with not only the design and rigorous maintenance, but the fact that there is minimal corrosion as the

"Marc got together with Brian and with captains and assistant port captains and people who have operated on the river for a long time, and they built a tug that was customized to all our needs. The counter to that is that this tug is not designed for use on the Mississippi. It wouldn't be effective there. It can't be used on blue water, so it has no purpose on the ocean. There is nothing that has been built similar to this on any river system in the world."

– Bob Curcio, Tidewater CEO & President

CSR water is extremely cold and – like the Great Lakes, for example – doesn't have any brine in it.

The company has continually updated its fleet by re-powering the engines but also by introducing as much new and industry-regulated technology as possible. In addition, all active petroleum barges have been refitted with double hulls. "By buying three new tugboats and retiring three, we'll be able to average a fleet that is less than 21 years old, which is a big change, "says Curcio. "It's a major investment for a company and speaks to the fact that we're going to be around for a while."

CSR: Unique Operational Conditions & Challenges

Still, dealing with the locks is a daily challenge. Vessels traversing the CSR are raised close to 750 feet above sea level. In fact, the deepest is the Columbia River John Day lock, which lifts 105 feet. The regulated size of the locks is 650 feet long by 86 feet wide, and Tidewater tows average 645' by 84', in a one-to-four towboat configuration. "The waterway is also fairly shallow, only 14 feet. Our equipment is made for shallow environments and shallow operation, and that's fairly unique," explains Curcio. "There are times that the river is running very low, so we could get

groundings if we don't operate exactly in the channel area."

One of the drawbacks for operating on the CSR is when locks must be closed for maintenance by the Army Corp of Engineers. Regular maintenance generally happens for two weeks in March every year –Tidewater takes advantage of the time to carry out in-house crew training – but since the infrastructure of the locks is aging, several longer maintenance intervals have taken place to provide for replacement and maintenance to critical infrastructure components, ensuring the reliability of the river system for many years to come.

During both extended and regularly scheduled annual closures, minimal crews are needed. The rest sit idle until regular activities start up again. "It's a big disruption for us," says Curcio. "You hope people can bridge the gap they get in their pay with their passion for the business and come back and work for us again." Given the history of lock closure outages, by all accounts, most do return, as loyalty to the company keeps them coming back.

A traditional line of business for Tidewater has been container-on-barge service through the Port of Portland but ongoing disputes at the container terminal between Terminal six manager, ICTSI, and local ILWU labor resulted in the principle carriers Hapag-Lloyd and Hanjin to stop calling in April 2015. Inland farmers who relied on the Lewiston to Portland river system to move containerized commodities abroad have had to find other, more costly routes via Puget Sound.

In an effort to assist the farmers and help reduce the heavy truck congestion at the Seattle and Tacoma port container yards, Tidewater worked with the Port of Lewiston, Port of Portland, and Northwest Container Services to provide an alternative for customers until container service returns to Portland. This auxiliary route, which launched in November 2015, begins at the Port of Lewiston where containers are loaded onto Tidewater barges and towed to the company's Boardman, Oregon terminal. At Boardman, the containers are then trans-loaded to Northwest Container Services' rail service to Portland, then ultimately up to the Seattle and Tacoma terminals. "This is about a one percent share of our business but we're happy that we're contributing to getting some of the trucks off the road, reducing congestion and providing farmers with a less expensive option," says Curcio.

Since Tidewater was founded in 1932, it's pretty safe to say it will continue to endure. The company is poised for significant growth as the Columbia-Snake River regions are expected to see a huge uptick in new business during the next decade and beyond.

Different (Paint) Strokes for Different Folks

The reasons to apply coatings can vary as widely. It's not just about the 'paint' anymore.

By Joseph Keefe

When it comes to marine coatings, it turns out that there are many reasons to apply a coating to a particular surface. And these days, more often than not, it's not about creating that perfect shiny hull for the aerial promo shot. Sure – that's important. That slick hull will save you money slicing through the water without all that marine growth to slow you down. But, today's high tech coatings do so much more.

In the design shop, at the shipyard and then on the water, the reasons to apply coatings are rapidly expanding. These include, but are not limited to Safety, Corrosion Prevention, Heat Insulation, Condensation prevention, Sound (noise) Abatement, Crew Comfort, and Vibration dampening. Beyond this, the number of firms developing cutting edge products to meet those demands is also growing. This month, *MarineNews* examines two new offerings, where they hold promise, value, and why.

In a business climate that promises many challenges – financial, operational and regulatory – over the course of the coming year, this is one area that maritime stakeholders can find utility, economy and common sense operational advantages.

Sherwin-Williams' Heat-Flex 3500

Shipyards and marine operators looking to enhance worker safety and minimize corrosion under insulation (CUI) risks can turn to a new insulative acrylic coating from Sherwin-Williams Protective & Marine Coatings. Heat-Flex 3500 is a multipurpose insulative acrylic coating that's designed for both personnel protection and mitigating CUI. The coating enables dangerously hot systems like piping and ductwork to stay cool to the touch, preventing burns and protecting the safety of personnel. It can be applied directly to ambient or hot surfaces up to 350° F (177° C), offering vessels the flexibility to reduce downtime by keeping systems online during coating and recoating applications. In addition, Heat-Flex 3500 also insulates hot and cold surfaces, helping to retain heat where important and also prevent condensation on cold surfaces by maintaining surface temperatures above the dew point.

According to Sherwin-Williams, the insulative and anti-corrosive properties of Heat-Flex 3500 also enable owners to eliminate concerns related to CUI. Heat-Flex 3500 is applied over an anti-corrosive primer, such as inorganic zinc, and forms a polymer-based barrier to moisture and corrosion while also providing predictable thermal insulation under all ambient conditions. The protective coating system prevents corrosion-causing condensation on the exterior of piping, ductwork, and other surfaces wrapped in cvwonventional insulation and cladding. It performs so well at mitigating corrosion that structures coated with Heat-Flex 3500 can be removed from (some) CUI inspection protocols.

Available in white and slate gray, Heat-Flex 3500 is ideal for coating everything from pipes, valves, tanks, vessels, heaters, and boilers to compressors, pumps, containers, stacks, and ductwork that operate in temperature ranges between -80° F and +350° F.

Heat-Flex 3500 goes on fast and easy to save application time and costs. Its single-component, waterborne acrylic formulation can be applied with standard airless equipment. It's very fast dry time allows for recoating within two hours. In addition, Heat-Flex 3500 minimizes overspray risks with droplets drying to a non-adhering dust within a 20-foot fall. With the addition of Heat-Flex 3500, Sherwin-Williams now offers operators a single source for insulative coating systems, including primers and topcoats.

Heat-Flex 3500 is suited for a wide range of environments, including marine and offshore structures. In particular, the coating is especially valuable when coating piping and ductwork throughout a vessel, hot surfaces in engine rooms, engine room walls to minimize heat migration to other areas and fuel lines and water lines to prevent freezing.

"The MLC 2006 Code and ABS Habitability Guidelines are designed to provide a more comfortable atmosphere in which to live and work. Heat-Flex 3500 provides a number of benefits that directly relate to an improved ambient environment for the crew: vibration, noise and climate immediately come to mind. It is important to note that Heat-Flex 3500 was designed with a particular purpose and application in mind, but Sherwin-Williams is fortunate to have a product with design features that provide so many added benefits. In the marine market, we are only just beginning to explore the adjacent applications and services where Heat-Flex 3500 would thrive."

– Tim McDonough,
Sherwin-Williams marine market segment director

Originally intended for oil & gas, the coating translates very well to the marine commercial environment. To date, Sherwin-Williams hasn't approached any classification societies for 'type' approval, but the firm does have documented testing that it provides personnel burn protection to meet OSHA requirements, using industry accepted thermal modeling software. Tim McDonough, marine market segment director at Sherwin Williams told *MarineNews*, "At this time, we are looking at the design assessment process at the various classification societies for both the insulative and sound-control properties of Heat-Flex 3500."

Crew comfort is becoming an extremely important aspect of vessel operations, especially when it comes to the new MLC 2006 code and the ABS Hab guidelines. This extends to both heat insulation and/or sound insulation. McDonough explains, "The MLC 2006 Code and ABS Habitability Guidelines are designed to provide a more comfortable atmosphere in which to live and work. Heat-Flex

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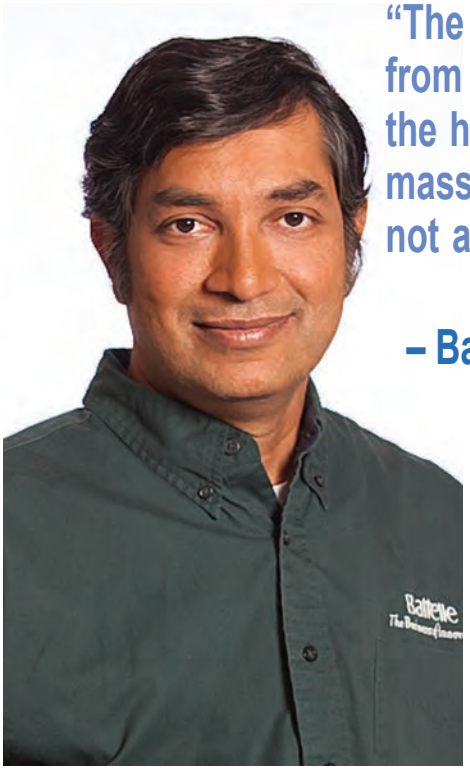
Battelle's Smart Corrosion Detector Bead

Detecting and mitigating corrosion in just one step: *if only it were that easy*. Actually, with Battelle's Smart Corrosion Detector bead technology, marine and offshore operators can protect valuable infrastructure and equipment with an innovative smart bead that both detects and mitigates corrosion as soon as it starts. Unlike other technologies, the Battelle Smart Corrosion Detector bead includes both corrosion detection and self-healing chemicals in a single bead for maximum protection. The beads are mixed into paints and coatings. When corrosion is detected, they crack open to release a chemical that heals microscopic cracks. They also fluoresce in the presence of corrosion for easy visual inspection.

The self-healing smart beads detect and reveal corrosion forming on metal before it is visible to the naked eye. When corrosion is present, the beads' surfaces undergo a chemical reaction that causes them to fluoresce (which can be detected with an ultraviolet [UV] light or Terahertz imaging), then break apart and release a healing agent. The healing agent is cured by the corrosion by-products. The fluorescence is a prompt indicator to maintainers that corrosion has initiated and provides them with the opportunity to mitigate the underlying problem early on, while the healing agent immediately repairs the corrosion damage and slows the corrosion process. The timely discovery and remediation of corrosion can result in significant time and cost savings as well as improved structural reliability.

We asked Battelle Senior Battelle Research Scientist Ram Lalgudi to explain the technology, how it works and why. "The product contains a healing agent. The ion comes from corrosion. It is a triggering mechanism for releasing the healing agent against the corrosion, said Lalgudi, continuing, "Encapsulation doesn't increase thickness. We are not adding mass to paint; the density of the paint is the same – we are not adding mass so it won't in-



"The product contains a healing agent. The ion comes from corrosion. It is a triggering mechanism for releasing the healing agent against the corrosion. We are not adding mass to paint; the density of the paint is the same – we are not adding mass so it won't increase weight, decrease the weight in thickness, or create a dragging effect."

– Battelle Senior Battelle Research Scientist Ram Lalgudi

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For a vessel coming in for a scheduled dry dock, blast and recoat job, shipyards have options as to how to apply the coating. Lalgudi says that the product would typically be mixed into the standard coating, but, he adds, "It is mixed in but you could get the same performance if you applied it directly. It's customizable. You can mix in with paint or use as a standalone, but logistically, we're minimizing labor costs and procedure by working with paint manufacturers and putting it directly into the paint."

To date, the new Battelle coating has not been used on a marine vessel or been demonstrated in the real world. The final aim is to eventually integrate the technology into a marine coating with ultimate objective of extending the life of the coating. Early, rigorous internal testing has been encouraging says Ram. "Based on our tests, it doubles the life of the coating. We have an outdoor exposure facility in Daytona

Beach, Florida and based on calculations we believe we can extend the life of the coating to twice as much," he insists, adding, "So, if you have five-year warranty on the same paint, you can potentially push that to ten years."

In the meantime, Battelle is looking to apply their coating technology in collaboration with other industry stakeholders. Cindy Conner, Battelle's senior market manager explains, "We're relying on our partners to decide and we're already working on formulations with our additives. It takes a long time because it is corrosion, so tests are taking a long time – if they didn't take a long time, that would mean the technology wasn't effective. While all that testing is going on we're also talking to some end-users in some of the protective infrastructure types."

At the end of the day, Battelle could very well position their technology and apply it as a standalone coating, but that's not really their intent. Instead, they're looking to position the technology to protect paint coatings that are applied to vulnerable surfaces. Armed with technology that promises to both detect and mitigate corrosion as soon as it starts, that's also a great place to be.

Profits, Not Costs: in Coatings

You can't sugar 'coat' the challenges ahead, but you can prepare for them. The regulatory hammer, freight rates and uncertain tonnage volumes all loom large on the proverbial horizon. Searching for savings in all of that can be difficult, especially if you are looking for that 'love' in all the wrong places. Amortizing the cost of proper coatings now may well be the ticket to profits later. That's because the safety and comfort of your crew, the lifespan of your hull coatings, condition and effectiveness of your piping systems, and a hundred other metrics, may well depend on it. Taking care of all of that now can be accomplished in one, smooth 'stroke.'

SHERWIN-WILLIAMS.

Thickness to meet personnel protection requirements (defined as no skin injury with 5 second contact)		
***Substrate Temp**	**Coats**	**Total DFT mils (microns)**
Up to 200°F (93°C)	2	30-40 (750-1000)
Up to 250°F (121°C)	2-3	40-60 (1000-1500)
Up to 300°F (149°C)	3-4	50-80 (1250-2000)
Up to 350°F (177°C)	4-5	80-100 (2000-2500)

*The above guidelines were derived through thermesthesiometer (simulated skin temperature probe) testing of lab coated carbon steel panels in accordance with ASTM C-1055/C-1057 and ISO 13732. Onsite evaluation of the applied system is recommended to insure the desired level of burn protection is being provided.

USACE M/V DAN REEVES

Credit: Richard Dollison

The M/V Dan Reeves was commissioned in January of 2016 for the U.S. Army Corps of Engineers (USACE) Little Rock District. Built by Horizon Shipbuilding, Inc., Bayou La Batre, Ala., and overseen by the USACE Marine Design Center, the vessel is also designed to comply with proposed USCG Subchapter M Requirements. Power and propulsion is provided by two Cat C32 WOSR "C" Rated main engines, giving 1,300 HP Each at 1,800 to 2,100 rpm. But, it is the two Thrustmaster Z-Drives (model TH1500MZ with a 5.74:1 Reduction Gear Ratio) that make this vessel special. That's because Thrustmaster builds a complete line of Z-Drive azimuthing thrusters from 500 HP to 4,000 HP for the inland towboat industry, specifically designed to endure the demanding conditions when operating in brown water. Beyond this, each Thrustmaster package is specifically customized for the individual hull being fitted.

Using Z-Drives on towboats results in substantially improved fuel efficiency, shorter trip times, decreased maintenance downtime and higher customer satisfaction when compared to traditional shaft and rudder installations. At the same time, Thrustmaster believes that designing hull forms to optimize flow into the Z-Drives further increases performance and provide a competitive advantage to the operator. This begins with a manufacturer who carefully coordinates with the vessel owner and naval architect during the design phase of a project to make sure every potential performance enhancement is reached. Thrustmaster has struck a perfect balance between providing the ability to customize a Z-Drive to a customer's specifications while maintaining the ability to deliver a standardized product that is competitively priced and stocked with spare parts to support the vessel.

"The New Z-Drives aboard the M/V Dan Reeves are Outstanding Performers. Fred Astaire does not have any moves that we don't have." said M/V Dan Reeves Captain Michael Bagley. "She has great maneuverability, nimble, responsive, powerful and light on her feet when moving as many as 12 loaded barges." Unique to this Z-Drive installation is a customized flaring of the Z-Drive inner well mount to perfectly match the curvature of the hull bottom. The depth of the inner well, which constitutes the distance between the horizontal input shaft and the propeller shaft, was also specially designed to fit the hull depth per specifications. The round shape of the thruster mount vs. a typical squared mount was utilized to further increase the integrity of the vessel and propulsion system. The stainless steel propeller and the nozzles were specifically developed by the USACOE hydrodynamic specialists and completely CNC machined to the exact geometry requirements of the designers. The complete driveline was built to Ice Class specifications. Despite these customizations, all other components of the thruster are standard to Thrustmaster's Z-Drive product line allowing the vessel to benefit from standard spare parts for support. According to Thrustmaster, the performance gains provided by Z-drives versus traditionally powered towboats provides a huge win for operators, equating to at least one more trip per year.

The M/V Dan Reeves at a glance …

Top images (left and right): Thrustmaster

Builder: Horizon Shipbuilding	Length Overall: 95'	Class: (ABS) A-1 Towing Vessel, USCG Sub M
Year Delivered: January 2016	Breadth: 43'	Main Engines: (2) Cat C32 WOSR "C" Rated
Generators: 2X John Deere/150 kW, 480V	Hull Depth: 10'-0"	Horsepower: 1300 HP Each
Electronics: Furuno Nav. Package	Draft (full load): 8'-6"	**Z-Drives: (2) Thrustmaster TM1500MZ**
Winches: (4) Patterson WWP 65E-7.5 14	Air Draft: 47'-10"	Propellers: Hung Shen - 4 Blade in Nozzles
Capstan: Schoellhorn- Albrecht	Fuel 22,800 Gallons	Deck Crane: RAPP HYDRA PRO HP-18/2F

ESG Delivers ARCHIE T. HIGGINS to Bisso Offshore, LLC

Eastern Shipbuilding Group has delivered the Reverse Tractor Tug ARCHIE T. HIGGINS to Bisso Offshore, LLC.

Upon arrival in Louisiana and at the mouth of the Mississippi River, the vessel went right to work escorting its first ship northbound to New Orleans. E.N. Bisso & Son and Bisso Offshore, LLC are honoring Archibald (Archie) Thomas Higgins, Jr. as the vessels namesake, who passed away earlier this year. Mr. Higgins helped lead the Company's operations from 1973 until 1995. The ARCHIE T. HIGGINS is the fourth Reverse Tractor Tug design delivered to Bisso Offshore since 2007. All are from same Z-drive tug design provided by Jensen Maritime Consultants of Seattle, WA.

The ARCHIE T. HIGGINS at a glance …

LOA: 96 feet	Main Engines: (2) Caterpillar 3516C Tier 3 EPA	Total HP: 4,260 HP @ 1,600 RPM
Beam: 34 feet	Propulsion: (2) Z-Drives US205 P18 Rolls Royce	Classification: ABS Loadline Only
Depth: 14 feet 9 inches	Hawser Winch: (1) Markey DEPCF-42 Single Drum	Flag: United States of America

Jensen Maritime to Design Escort Tugs for McAllister Towing

Jensen Maritime, Crowley Maritime Corp.'s Seattle-based naval architecture and marine engineering company, was recently selected to provide detailed design services including stability, structure and systems design for two, 100-foot long, 40-foot wide, escort tugs for McAllister Towing. The 12-knot, 6,770-horsepower tugs will be constructed at Horizon Shipbuilding in Bayou LaBatre, Ala., and are scheduled for delivery in 2017. The Brian A. McAllister and the Rosemary McAllister will be the 31st and 32nd ocean going escort/rescue tugboats in the fleet respectively, but will be the first that are Tier IV, meaning they utilize high-efficiency catalytic after-treatment technology to reduce emissions. Powered by twin Z-drive propulsion units, the tugs will have an approximate bollard pull of 90 short tons, making them suitable for offshore service, ship assist, escort, maneuvering and docking. Both tugs will be Load Lined and Classed by the American Bureau of Shipping as +A1, Towing, Escort, +AMS, and FFV-1.

Another Z-drive Towboat from Master Marine

Marquette Transportation has taken delivery of a 2,000-hp Z-drive towboat from Master Marine of Bayou La Batre, Alabama. Designed by Entech & Associates for Marquette's Gulf-Inland division, the steel-hulled St. John is powered by a pair of Thompson Power Systems Caterpillar C32 Tier 3 1,000-hp engines at 1,800 rpm connected to ZF Marine ZF AT 5111WM-FP Z-drives with 1,650 mm (65") 4-bladed propellers in nozzles. For ship's service power the towboat is outfitted with a pair of Kennedy Engine John Deere 4045AFM85 Tier 3 generator drive engines each driving an 80-kW Marathon Mariner generators. Cooling for all engines and z drives was provided by Eastpark Radiator Duraweld coolers. Doors and windows were provided by Dales Welding & Fabrication, LLC. Rubber bumper systems were provided by Schuyler Companies. The electronics was supplied by New World Electronics and Rio Marine supplied the alarms and monitoring systems.

Nationally Recognized Maritime Lawyers Join Sedgwick LLP


Danoff


Essick


Morris


Port


Tamulski

Sedgwick LLP has announced that five Francisco-based maritime attorneys have joined the firm. **Eric Danoff, Andrew Port, James Tamulski, Cheryl Morris** and **Katharine Essick** have joined Sedgwick as partners in the firm's growing maritime practice. The group joined Sedgwick from Emard Danoff Port Tamulski & Walovich LLP. The new partners have experience in representing numerous shipping interests and marine insurers.

Torqeedo Appoints Gerhard as Communications Director

As Torqeedo's communications director, **Stefan Gerhard** is responsible for Torqeedo's brand and corporate communications across all media and channels. Gerhard is an experienced communications professional with significant experience in the marine industry. Serving as editor-in-chief of Bootshandel Magazin for over 17 years, he founded and currently chairs the international Best of Boats Award.

Jim Brown Retires from International Paint

Jim Brown has announced his retirement as Market Development Manager of AkzoNobel's Marine Coating's brand, International, effective from the end of January 2016.


Gerhard


Brown


Riley


Marks

AMI Names Board of Directors

The Association of Marina Industries (AMI) elected its 2016 Officers and Directors at its annual International Marina & Boatyard Conference. **Brad Gross**, Certified Marina Manager (CMM) of Dana Point Harbor was appointed Chair; **Joe Riley**, CMM of Windmill Marina Association, Inc. was appointed Vice Chair; **Chris Petty** of Suntex Waterfront Management was appointed Treasurer; and **Mick Webber** of HydroHoist Marine Group was reappointed Secretary.

PVA Elects 2016 President, Officers

During the PVA Annual Convention, the Passenger Vessel Association (PVA) elected **Margo Marks**, President/General Manager of Beaver Island Boat Company as PVA President for 2016. Margo graduated from the Great Lakes Maritime Academy in 1983 and holds a First Class Pilot (Great Lakes) and Mates Great Lakes/Inland Water license of any gross tons and a 100 ton Masters license. She also graduated from Ferris State University where she earned her BA in Business Administration in 1984. Also elected to terms as PVA Officers for 2016 were PVA Vice-President **Jeff Whitaker**, Operations Manager for Hudson River Cruises. The new PVA Secretary-Treasurer is **Gus Gaspardo**, Vice President for Padelford Packet Boat Co.

Mathey Dearman Welcomes Michael Moore

Mathey Dearman announced the addition of **Michael Moore** to the Mike Charles and Associates, Inc. team. Mike Moore started his welding industry career in 1990 with Lincoln Electric where he worked in research and development, manufacturing, and technical sales. He also worked at ESAB in territory, regional, national sales and business development. He has a degree in Physics from The Citadel and a degree in Nondestructive Testing from Cowley College. He is working on his Masters in Welding Engineering from Ohio State University and plans to take the CWI exam in early 2016.

Robitaille to Lead new Schottel Quebec Office

Schottel has opened a new sales office in Quebec City, Quebec. **Sylvain Robitaille** has been named Regional Sales Manager, bringing 15 plus years of industry experience. He has technical degrees in electrodynamics and instrumentation and automation. Robitaille has worked extensively with worldwide shipyards, fleet operators, the Coast Guard and naval architects.

Brown Joins Global in Gulf of Mexico

Global Diving & Salvage has announced the hiring of **Mike Brown** as Vice President of Energy Services, working from Global's Houston office. Mr. Brown will focus his efforts


Moore


Robitaille


Brown


Bull


Sloane & Farrell

to increase Global's position in the domestic and international energy market. Brown began his career as a commercial diver, then superintendent, estimator/project manager, and operations manager before moving into senior management. Mike is currently serving his second three year term on the DHS National Offshore Safety Advisory Committee (NOSAC).

Nguyen-Bull of Foss Honored with 2016 Diversity Award

Foss Maritime's Vice President, General Counsel and Chief Ethics Officer, **Lam Nguyen-Bull**, has been named 2016 Diversity Champion by the Puget Sound Business Journal's 2016 Corporate Counsel Awards committee. The award recognizes Nguyen-Bull for her efforts in supporting diversity in the community and the maritime industry. Nguyen-Bull leads Foss Maritime's Legal and Risk Management Group, providing counsel on legal issues and business strategies and practices.

Sloane Joins Resolve Marine group

Resolve Marine Group announced that Senior Salvage Master **Nick Sloane** has joined the company. Sloane brings more than 34 years of experience to the organization. He was a member of the Lloyds Panel of Special Casualty Representatives and most recently served as the Senior Salvage Master of the Costa Concordia salvage operation off the Island of Giglio, Italy.


Lynch


Foltz


DonCarlos


Long


Marciano


Treuting

Foltz Steps Down at GPA, Lynch Named Executive Director

The Georgia Ports Authority's Board of Directors announced today that its Executive Director, **Curtis J. Foltz**, will step down at the end of the Fiscal Year. The Board also accepted the nominating committee's recommendation to appoint the current Chief Operating Officer, **Griff Lynch**, to succeed Foltz.

DonCarlos Re-Appointed to Port Commission

The Harris County Mayors' and Councils' Association has re-appointed **Stephen H. DonCarlos** to the Port Commission of the Port of Houston Authority (Port Authority). Port Commissioners serve two-year terms without pay. DonCarlos has served since September 2013 and has served as Mayor of Baytown since May 2006. He is an attorney with the firm of Reid, Strickland & Gillette.

Hendry Marine, Gulf Marine Hire New CEO

Hendry Marine Industries (HMI) and Gulf Marine Repair Corporation have announced the hiring of **Jim Long** as the new Chief Executive Officer. A graduate of Florida Southern College, Long comes to HMI and Gulf Marine after having served as Chief Executive Officer for several companies, including a billion-dollar environmental services company.

MarineCFO Announce Management Team Additions

VerticaLive, the parent company of MarineCFO, has announced that **Jimmy Treuting** has accepted the position of CEO. Jimmy's vision was instrumental in the successful retooling of MarineCFO into a profitable SaaS company following the acquisition of MarineCFO by VerticaLive in 2013. **Rocky Marchiano** joined the MarineCFO team last summer as a consultant on Sub Chapter M. He has now taken the position of Vice President of Business Development. Rocky brings a wealth of experience and expertise, specifically related to regulatory issues.

Port of Beaumont's Roby Retires

The Port of Beaumont announced the retirement of **John Roby**, Director of Corporate Affairs. Roby joined the port in 1979 after working in media and advertising in Southeast Texas, as Public Information Representative. Roby has been active in industry and trade organizations including the Port Authority Advisory Committee of the Texas Department of Transportation and the Public Relations Committee of the AAPA.

Lyden-Kluss, Thomas appointed IMO Maritime Ambassadors

Carleen Lyden-Kluss, CEO of Morgan Marketing & Communications and **RADM Cari B. Thomas** of the United States Coast Guard were appointed as IMO Maritime Ambassadors. The two were nominated by the U.S. Coast Guard. IMO Ambassadors are advocates for maritime and seafaring professions and conduct outreach activities which encourage young people to consider maritime careers. Thomas assumed duties as Assistant Commandant for Human Resources in June 2015. Lyden-Kluss co-founded NAMEPA, whose mission is to engage industry, regulators, environmental groups and educators to develop strategies to protect the marine environment and to educate seafarers, port communities and students to "Save our Seas."

Gould joins NAMEPA

The North American Marine Environment Protection Association (NAMEPA) announced that **Jean Gould**, most recently with ABS will join NAMEPA as the Gulf Coast Regional Director. Jean brings more than 25 years of experience in the energy and maritime industries in communications, marketing and corporate affairs.

Kemp Joins PMSA as Vice President

The Pacific Merchant Shipping Association (PMSA) announced that **Carl Kemp** has been named Vice President. Kemp brings more than 20 years of experience, most recently serving as Senior Advisor for Legislative and Public Affairs at the Federal Maritime Commission, where he reported directly to Chairman Mario Cordero. He earned a BA and MPA from California State University.

Roby


Lyden-Kluss


Gould


Kemp


Borasino


Weathers

Ellicott's Latin American Sales Manager Takes On Rohr-Idreco Product Line

Ellicott Dredges LLC & Rohr-Idreco Dredge Systems has announced that Ellicott's Latin American Sales Manager, **Andres Borasino**, will be adding the Rohr-Idreco deep digging dredge product lines to his area of responsibilities. Andres has been with Ellicott for over four years, successfully expanding the brand throughout Latin America.

IMTRA Acquires New Sales Talent

Imtra announced the addition of **Prentice Weathers** to its sales team. Focusing on business development efforts for the big boat segment, Weathers has joined Imtra in a Custom Product Sales position. Weathers joins Imtra from Morris Yachts where, as sales director, he moved from Bar Harbor, Maine to open a sales office in Newport, RI. Prior to working at Morris, Weathers was custom projects manager at Lewmar Marine for eleven years.

Seafarers' House to honor Guy Harvey

Guy Harvey has been selected as this year's recipient of the Seafarers' House International Golden Compass Award. The award is given each year to those who have achieved distinction in the maritime world and/or those who have ministered to or assisted seafarers. A student of marine biology, he has spent his life exploring the undersea world and bringing it to life on land through


Harvey


Montaruli


Graham


Merritt


Carpenter

his art, which can be seen in galleries, onboard ships, on life-size murals and on eponymous merchandise.

ABS Names New Chief Engineer

ABS has announced the appointment of **Bret Montaruli** to the role of Vice President and Chief Engineer. Montaruli will be responsible for overseeing the interpretation, application and compliance with the ABS Rules across all ABS Engineering offices. Montaruli joined ABS in 1981 and has a bachelor's degree in Ocean Engineering from SUNY Maritime College and an MBA from the Mays Business School at Texas A&M University.

BRP Marine Propulsion Appoints New VP Sales

BRP has promoted **Krista Sparkes** to Vice President, Sales North America, MPS. In her new role, Sparkes will assume leadership for all North American sales including dealer and boat manufacturer sales for Outboard Propulsion and Jet Propulsion Systems; Sales Administration; Network Development; and Parts, Accessories & Clothing. Joining BRP in 2003, Sparkes has held positions of progressive responsibility. She most recently served as Regional Sales Director for Central and Western North America.

ProSight Appoints Graham President of Marine & Energy

ProSight Specialty Insurance has appointed **Andreas Graham** as the Niche President for Marine and Energy, responsible for the continued success and expansion of the combined portfolios. He joins ProSight from ACE Group, where he led the Energy Segment for Excess Casualty for the last ten years. Graham has a strong background in Marine and Energy Insurance as well as a deep understanding of the needs of the industry.

New Maritime Program Receives U.S. Department of Grant

Foss Maritime announced a partnership to establish the curriculum for a new marine engineering apprenticeship program, and to sponsor several applicants each year. Seattle Central College, Seattle Maritime Academy, the Maritime Institute of Technology & Graduate Studies-Pacific Maritime Institute and the Workboat Academy have received a $5 million American Apprenticeship Innovation Grant from the U.S. Department of Labor to help build a new apprenticeship program. "This partnership exists to respond to the growing need for more trained marine engineers," says Scott Merritt, Senior Vice President, Harbor Services. "Working together, we aim to train hundreds, if not thousands, of new apprentices in the maritime and advanced manufacturing fields."

TRB Study: No Data to Support Work Changes for Towing Vessels

The American Waterways Operators (AWO) hailed a study conducted for the Transportation Research Board of the National Academies of Sciences, Engineering and Medicine which concludes that "[t]here is currently no scientific data to support […] a change in hours of service" for towing vessel crewmembers. "The TRB study is the latest contribution to a growing body of scientific research in multiple transportation modes that demonstrates that splitting sleep into two periods can be a safe and effective way to manage fatigue in 24/7 operating environments like the tugboat, towboat and barge industry," said Jennifer Carpenter, AWO Executive Vice President & Chief Operating Officer.

Thrustmaster Expands US Inland River Service

Thrustmaster has signed a service agreement with McGinnis Inc. – National Maintenance & Repair. This agreement extends Thrustmaster's service centers to six locations, strategically located along major US rivers with 24/7 availability. Thrustmaster manufactures a complete line of Z-Drive azimuthing thrusters from 500 HP to 4,000 HP for the inland towboat industry specifically designed to endure demanding brown water conditions. Thrustmaster of Texas Service Locations now include South Point, Ohio, Paducah, Kentucky, Hartford, Illinois, Harahan, Louisiana, Houma, Louisiana, and Houston, Texas.

Sea Hawk's Biocop TF Dual-Biocide Antifouling Coating

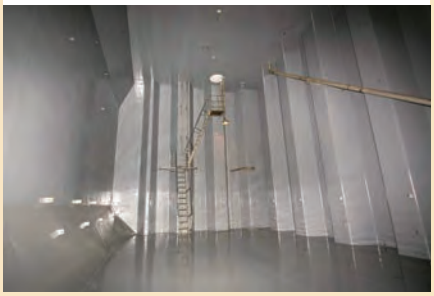
Sea Hawk Paints' dual-biocide coating, Biocop TF has been approved by the State of California and has LR approvals. Registration in California positions Biocop TF for sale throughout the Golden State, providing a premium quality coating for maximum multi-season protection against both hard and soft marine growth on vessel bottoms. Handcrafted in America, Biocop TF is equally effective in fresh, brackish and saltwater.

www.SeaHawkPaints.com

MarineLine Cargo Tank Coating System

Advanced Polymer Coatings' (APC) patented MarineLine polymer cargo tank coating system has recently been selected for eight 8,000 DWT chemical ships. These tankers were previously coated with a leading phenolic epoxy cargo tank coating, however, the client decided to remove the existing phenolic epoxy coating and recoat the cargo tanks with Advanced Polymer Coatings' MarineLine cargo tank coating system.

www.adv-polymer.com



FCI: Fresh Water Available 24/7

FCI Watermakers' fully-automatic, customizable Neptune series reverse osmosis desalinization units are built in the USA. Neptune models produce from 1,200–9,500 gallons of fresh, pure water every day. With belt-driven commercial grade pump and motor assemblies, they're designed to run non-stop, a key feature where onboard work schedules often dictate water demands. Available in framed or modular configurations, its compact size has a small footprint.

www.fciwatermakers.com

AkzoNobel, Marlins Deliver Marine Coatings Course

AkzoNobel's Marine Coatings business and Marlins have launched a global training solution to support the effective onboard application and maintenance of the International range of marine coatings. "Painting and Surfaces" combines the expertise of AkzoNobel's marine coatings business with Marlins' training development and delivery, creating an e-learning program that supports the long-term maintenance and performance of coatings.

www.international-marine.com

Emco Wheaton Marine Loading Arms

Emco Wheaton recently played a pivotal role in the transfer of the first shipment of U.S. crude oil for export in 40 years, from Corpus Christi, TX. Emco Wheaton designs and manufactures a wide range of highly engineered MLAs to load and unload almost any liquid and compressed gas product from river barges, ships and ocean going super tankers.

www.emcowheaton.com

THORDON
THORDON BEARINGS INC.

Thordon's RiverTough Bearings Stand up to AK Waters

After nine years of operation in the harsh, abrasive waters of Alaska's Yukon River, aboard Inland Barge Service's pushboat Ramona, Thordon Bearings' RiverTough water-lubricated tail-shaft bearing system has emerged completely free of wear and tear. The exceptional performance of RiverTough bearings in waters renowned for high content of gritty glacial silt came to light when the 16m workboat's cracked struts underwent repair in dry-dock.

www.thordonbearings.com

Cummins Expands Marine Tier 3 Product Line

Cummins marine US EPA Tier 3-certified generator, the 55-kW Onan MDDCM was engineered for lower emissions and best sound and vibration mitigation, while delivering reliability and durability. All Onan marine generators, including the MDDCM, feature advanced sound shields for lower sound and optimized mounting systems for reduced vibration. All are available with Cummins Onan digital displays for user-friendly diagnostics, including extensive engine and alternator information, self-diagnostic features and text display.

www.cummins.com

SkimOil's Next Generation Bilge Filter

Oilsmart filters are the same as used on the SkimOil IMO certified BRUTE marine oily water separators, and can hold three times as much oil as previous generation organoclay filters. At 1/10th the size and cost of an oily water separator (OWS), the low cost bilge filter is a compact and efficient alternative for those who don't have room or need for a standard OWS for oily bilge water.

www.thebilgefilter.com

Hamilton Jet's JETanchor Positioning System

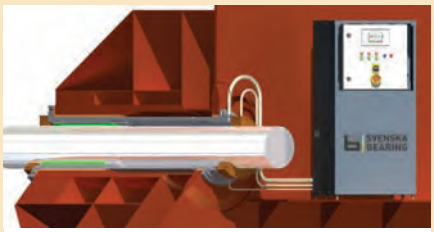
HamiltonJet's vessel positioning system, JETanchor, is aimed predominantly at Pilot boats, Fireboats, SAR, Patrol, Survey, DSV and small Offshore Crewboats, the system provides a cost effective "dynamic-positioning-type" system for smaller vessels. One stand out feature is a new anchoring system using GPS location. A virtual anchor mode, it allows the vessel to weathervane off a fixed GPS point under prevailing wind/sea conditions.

www.hamiltonjet.com

Corvus Energy Launches New Website

Corvus Energy has launched a new website featuring improved navigation, product and service information, detailed case studies and media archives. New features include Detailed Product Information, Technical Specifications on the Corvus Energy Storage System (ESS), Customer Service Offerings, Case Studies and Featured Articles which allows customers to explore in depth articles written about Corvus Energy by leading industry publications.

www.corvusenergy.com



New DNV GL Notations for Water-Lubricated Tail Shafts

Two new tail shaft monitoring class notations from DNV GL offer shipowners the possibility of unlimited intervals between tail shaft withdrawal surveys for water-lubricated systems. With these two voluntary class notations, TMON (closed loop water) and TMON (open loop water), DNV GL becomes the first classification society to use a condition-monitoring based survey process that eliminates the requirement for tail shaft withdrawal surveys at pre-determined intervals.

www.dnvgl.com

Larson Electronics' 150 KVA Power Distribution System

Larson Electronics' heavy duty 3-phase power distribution system, the MGS-3X480.100A-150K-3X208.60A-12X120, gives operators the ability to plug in three 100 amp 480 volt devices into the primary panel. It is equipped with forklift skid pockets and a lifting eyelet that allows for easy lifting. Grounded to the frame and with a grounding lug for earth grounding, this power distribution system is ideal for shipyards.

www.Larsonelectronics.com

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185 pages of analysis, data, charts and forecasts, all geared to provide the biggest, best and most comprehensive resource so that you can long-range plan to capture your share of the $100+ billion floating

INCLUDES OVER 110 CHARTS, GRAPHS AND EXHIBITS

This report presents our five year forecast of floating production system orders. First we present an overview of the industry and our assessment of the underlying market situation likely to prevail over the 2016/20 forecast period. Then we provide our forecast of orders for eight types of production systems under three market scenarios. The final four sections of the report contain details for floating production systems in the planning stage, on order, in operation and available for

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Vessel Engineer

Catalina Channel Express
Full Time
Category: Engineer / Naval Architect
Job Location: Berth 95 San Pedro, CA, 90731 United States
Contact
HR Director
Email: hrmail@catalinaexpress.com
400 Oceangate, Suite 300 `Long Beach, CA, 90802 United States

Qualifications:

• Experience in maintaining diesel engines; knowledge of hydraulic systems, electrical HVA systems a plus
• Ability to repair marine equipment on site under adverse conditions at times
• Ability to interact with others using courtesy, tact, and good judgment
• Maintain the confidentiality of all sensitive communications
• Ability to understand and execute complex oral and written instructions
• Ability to work independently with minimal or no guidance
• Ability to interact professionally with all departments
• Must have a valid drivers license

Description:

Our engineering team is a group of individuals who take pride in ensuring our vessels are not only the safest but also provide a quality experience for our passengers. We are looking for individuals to join our team of Vessel Engineers who are willing to put the dedication and attention to detail into their work.

Vessel Engineers perform routine maintenance on our fleet as directed by the Port Engineer as well as perform inspections of vessels for repair and maintenance standards and procedures working with other company engineers as needed.

Job Conditions and Environment:

This job requires the ability to travel between our ports as well as receive emergency repair calls after hours. Weekend work is required. The work may occur under adverse weather conditions. Travel may be involved on certain projects. It also requires the ability to fit into tight fitting spaces for repair work.

Quality Assurance Manager

International Ship Repair
Full Time, Technical Manager
Category: Shoreside Operations
Please send your resume to:
rlapresti@internationalship.com

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International Ship Repair & Marine Services, Inc. knows this and is renowned for high quality work and a strict adherence to project costs and schedules. A seasoned staff and 24/7 Operations have enabled us to become the premium shipyard on the Gulf of Mexico. We have an immediate need for a Quality Assurance Manager to join our 40+ year Operation in Tampa, Florida.

Responsibilities/Qualifications

• Must have a strong understanding of ISR General Procedures and Quality Assurance Manual;
• Must be able to oversee that demonstrated air, vacuum, and hydrostatic tests are done satisfactorily in the yard. Must be able to recognize non-conformance issues and provide resolutions.
• Must supervise the actions of the Quality Assurance Team to achieve conformance measures for all vessels;
• Must be able to perform visual inspections and coordinate resolutions for any discrepancies with Ship Superintendents;
• Must ensure the accuracy of Quality Assurance reports

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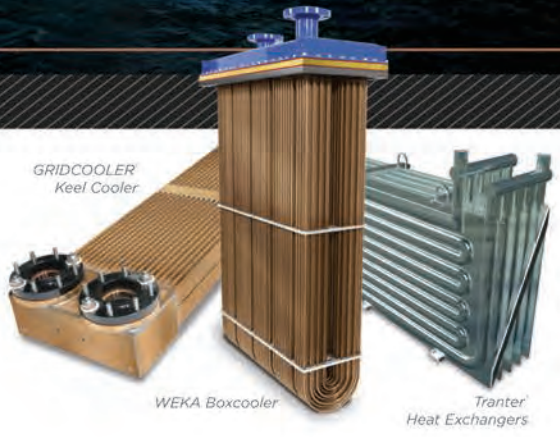

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