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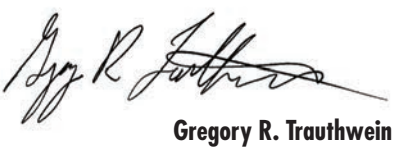
I'm not a betting man, but if I were I would be 'all in' that you, like I, are sorely tired of reading, watching or writing anything about COVID-19. Yet here we are, nearly seven months into the pandemic of 2020 and it continues to have a dramatic impact on most all of our lives and businesses.

This magazine has published continuously since 1939 through wars, economic upheaval, and social unrest, with the odd "Oil Boom" and "Oil Bust" thrown in along the way. Personally this is the 27th 'Yearbook' that I've produced, and never before have I seen one singular topic – COVID-19 – be such a pervasive driver of nearly all of the information within. I certainly can't tell you how and when this traumatic shock will be over, but I can tell you that the reality on the other side will be dramatically different. Yes, ships and boats will still traverse the world, the heavy haulers tasked to keep commerce and the world economy running. But the way in which we crew, control, outfit and maintain the fleet will change. Some trends to watch:

- **Digitalization:** The digitalization trend is hardly new, but the COVID-19 pandemic has by some estimates fast-tracked advances by 10 years or more. As people have deserted central offices and worked more than ever in remote locations, many operations that previously commanded 'the personal touch' will be relegated to remote operations.
- **Seafarers:** The plight of the treatment of seafarers has been palpable within the confines of the maritime community, but to the outside, mainstream world seafarer issues remain low on the agenda, if on the agenda at all. Ships and the crews that sail them have been true heroes in helping to keeping critical supplies flowing when not much else was. While I personally doubt that in my lifetime there will ever be a ground swell of global, political and public support for seafarers, the true powers in this industry should stand up now to help raise the bar.
- **Energy:** 'Surreal' is an understatement to describe when oil plunged below $0 in May. It obviously has rebounded, and oil and gas – despite the cascade of noise calling for an immediate switch to 'green' fuels – will dominate for many years to come. That said, the work being done to find and define 'the fuel of the future' is well underway, and the American Bureau of Shipping recently released its *"Setting the Course to Low-Carbon Shipping"*, as outlined starting on page 48.
- **Energy (Part II):** On the other side lies renewable energy. Offshore wind and its impact on maritime, ports, logistics and supply will help to define the maritime market in the U.S. and beyond for the coming generation, much as the production and evolution of offshore oil and gas did decades ago. A recent report and database from our own World Energy Reports dubbed *"Outlook for Offshore Wind Power: The Frontier of Future Energy"* will be available shortly.



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Tip #13

How's Your Training?

You Can't Know Unless You Ask!

We have all heard it a thousand times: "If you do not measure it, you cannot manage it". This is especially true with training because the inputs (the training provided) are often far removed in time and apparent direct causality from the key output (performance). Therefore, it is important that we measure everywhere we can. One universal form of measurement is the requirement for exams at the end of the course. But why stop there when there is much more to easily be learned, and where those learnings can benefit the quality of the training experiences and outcomes greatly?

It turns out that if we want valuable additional information on how well our training is working and how to improve it, all we need to do is to ask. The insights are there for the taking – we just need to know how to ask for them.

The idea of asking trainees for feedback is neither new nor unknown; every trainer is familiar with the idea of asking trainees to provide assessments at the end of a course. Sadly, however, we don't often ask trainees the right questions. And when we do, we almost never ask the right way nor employ the results to their greatest effect.

What to Ask Your Trainees

My first encounter with gathering student feedback was when I worked as a university lecturer teaching Computer Science. End of term evaluations were a departmental requirement. I soon discovered, however, that if I provided my own evaluations, I could ask more useful questions, and could do so part way through the term when the results would still be actionable for the students who submitted them.

Thus, the first and most important recommendation is about *what* to ask. The key here is to make the questions you ask actionable. For every question we present on an evaluation, we need to be sure there is an obvious course of action to take if the responses to that question indicate a problem. Most evaluations ask questions such as "Is the material presented at the correct level of difficulty", or "Was the pace of the lecture appropriate". Responses to these are not easily actionable. Instead, ask specific questions about specific parts of the course. For example, ask the trainees to identify the topic in the course they found the most confusing. Ask them to indicate which topics required more illustrative examples. Ask trainees to identify what they felt to be the most beneficial and the least beneficial aspects of the course (lectures, office hours, assignments, etc). Never ask a question unless it will produce a clearly actionable result if the responses identify a problem.

When to Ask Your Trainees

It is excellent practice to distribute evaluations at least twice in the course. Once roughly one-third of the way through, and once at the end. This provides incentive to your students to answer thoughtfully because they know that their responses might make their lives better – not just the lives of the next cohort to come through.

Additionally, this provides the opportunity to make a change in response to the first evaluation, and then ask the same cohort at the end of the course whether that change produced a positive effect. This is the core of effective continuous improvement.

How to Ask Your Trainees

Too often, evaluations are done on paper and then provided to the trainer and administration as a pile of papers. This leaves so much of the valuable data untapped. Instead, collect trainee evaluation responses electronically so that meaningful reports can be generated over time to show not only performance, but trends in performance. Even if you have no mechanism to run reports now, collecting the data electronically now will enable such analysis in the future.

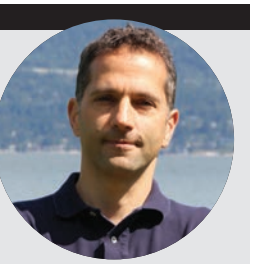
Other Forms of Feedback!

Student evaluations as described above are tremendously useful. However, there is much more we can do, easily and to great effect. Watch for this and more in the next edition of Training Tips for Ships!

Until then, sail safely and keep healthy!

The Author

Goldberg



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Salvage: SMFF Regulations

The Federal Water Pollution Control Act (FWPCA, often called the Clean Water Act), as amended by the Oil Pollution Act of 1990 (OPA 90), provides:

If a discharge, or a substantial threat of a discharge, of oil or a hazardous substance from a vessel, offshore facility, or onshore facility is of such a size or character as to be a substantial threat to the public health or welfare of the United States (including but not limited to fish, shellfish, wildlife, other natural resources, and the public and private beaches and shorelines of the United States), the President shall direct all Federal, State, and private actions to remove the discharge or to mitigate or prevent the threat of the discharge. 33 USC §1321(c)(2)(A) (emphasis added).

The official legislative history of OPA 90 is replete with evidence that Congress meant exactly that. No more would responsible parties or others direct the response measures. Rather, the responders became answerable only to the President or the Federal On-Scene Coordinator (FOSC). It is the nondelegable responsibility of the federal government to bring about the effective and immediate removal of a discharge or threat of a discharge. The duties of the responsible party are to cooperate with and assist the FOSC and to pay all damages and response costs.

This mandate was reinforced with the adoption in 1996 of the Chafee Amendment, which requires a responsible party to act under the National Contingency Plan (NCP) and its applicable response plan. The responsible party may deviate from its response plan (but not from the NCP) if and only if the President or the FOSC determines that deviation would provide for a more effective or expeditious response to the discharge or mitigation of its environmental effects.

Detailed regulations to implement the salvage and marine firefighting (SMFF) provisions of OPA 90 for tank vessels were not promulgated until 2008 and its application was not extended to non-tank vessels until 2013. This long gestation period involved much negotiation by all the stakeholders, most especially by the established salvage companies based in the United States. Those salvage companies were concerned with many aspects of the rulemaking, particularly with ensuring that companies offering themselves for this important service could actually perform and that the vast sums of money expended in developing the capacity to provide SMFF services would be recouped through the retention by a vessel owner or operator when a casualty occurred.

The SMFF regulations met both requirements. Those regulations mandated that a vessel owner or operator sign an enforceable contract for SMFF services only with a service provider that could meet the high standards provided for in the regulations. Further, they mandated that the proposed SMFF contract, including the funding agreement, be submitted for consideration by the Coast Guard before the vessel response plan (VRP) would be approved. The funding agreement provision is unique in that in no other portion of the VRP regulations is the vessel owner required to share with the Coast Guard such commercially important information. The rationale for this requirement relates back to the need for an efficient and expeditious response. Because the up-front costs of SMFF services are astronomically higher than that for other response efforts, negotiations over response pricing (always undertaken on a time and materials basis) can be complex. Since pricing is negotiated in advance, response can commence immediately. For commercial purposes, the proposed SMFF contracts, including the funding agreements, are submitted for consideration and approval by the International Group of P&I Clubs (IG) prior to submission to the Coast Guard.

To provide the SMFF response resource providers with the comfort their high costs can and will be recouped, the law and regulations establish an exceedingly high bar for deviation from the approved SMFF provisions of the VRP. It should be noted that the deviation justification requirement is only found in the SMFF regulations, not in those regulations applicable to other response service providers.

During the SMFF rulemaking process, the Coast Guard received several comments recommending that the rule focus on ensuring adequate participation in the casualty response by the financial stakeholders, which are often the insurers of the responsible parties. The Coast Guard dismissed those comments, noting that they were outside the scope of the rulemaking and would introduce a new aspect to the overarching incident command structure.

Nevertheless, in the response to the capsized car carrier GOLDEN RAY, the vessel's financial guarantor was allowed to participate in the Unified Command (UC) process. A salvage consultancy was supposedly hired by the responsible party to provide advice on the salvage operation. It was soon

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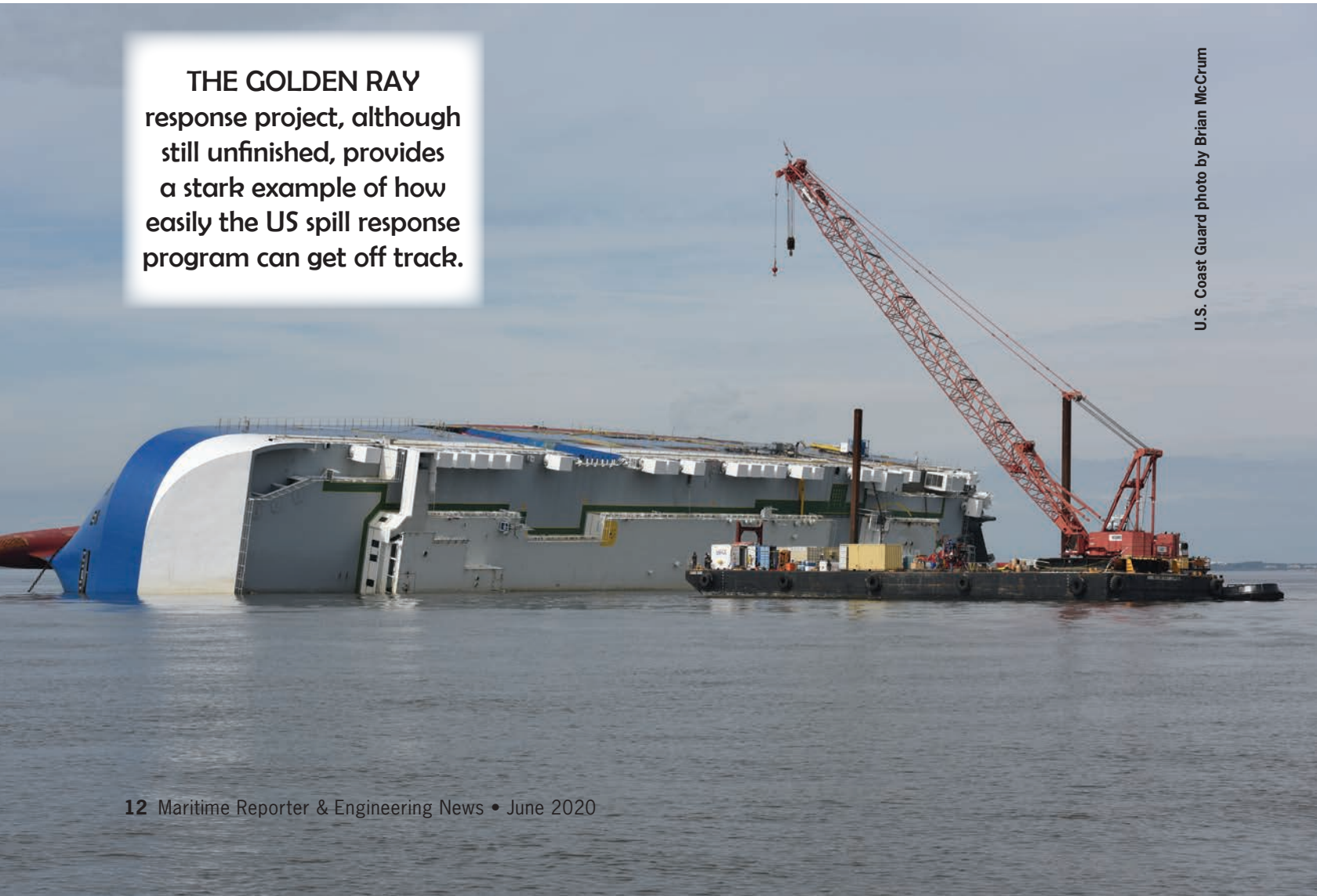
clear that the consultancy was actually working for and apparently taking direction from the financial guarantor, despite the Coast Guard policy on this issue. Utilizing a non-disclosure agreement, the consultancy established a wall between the SMFF salvage resource provider listed in the owner's pre-approved Vessel Response Plan (VRP) and the USCG Federal On-Scene Coordinator (FOSC), destroying the transparency and candid exchange of opinions that are vital to Unified Command (UC) process during a complex response effort. Such an arrangement has seldom, if ever, been utilized in an active spill response under OPA 90 and certainly not to limit the access of the listed SMFF resource provider to the FOSC.

The consultancy then was allowed to issue an Invitation to Tender (ITT) for the wreck removal while the GOLDEN RAY still had onboard a large quantity of petroleum presenting an imminent and substantial threat to the public health and welfare or the environment. An ITT is the equivalent of a government agency's Request for Proposals (RFP). This again is highly unusual during an active response where time is of the essence and where the FOSC, in accordance with the Congressional mandate of OPA 90, has the full authority and access to the necessary financial resources to order whatever response process and procedures best serve the national interests. Contrary of Coast Guard policy, the ITT mandated use of a fixed-price contract. The ITT process needlessly delayed the response effort, particularly where, as here, the listed SMFF resource provider had capability to immediately undertake whatever measures the FOSC approved.

The Coast Guard then allowed the hiring of another SMFF service provider, one who agreed to undertake the wreck removal in the manner favored by the consultant. This was done even though that methodology would allow hundreds of the automobiles on board (each with fuel and lubricants inside) to fall into the water during that wreck removal.

Once the alternate SMFF service provider was selected by the consultancy on behalf of the responsible party and the financial guarantor, and even before a contract and funding agreement were executed, the consultancy terminated the contract with the VRP-approved SMFF service provider despite not having obtained FOSC approval. Thus, there was another extended period of relative inactivity in the response process while the alternate SMFF service provider brought on scene its personnel, equipment, and sub-contractors.

The GOLDEN RAY response project, although still unfin-



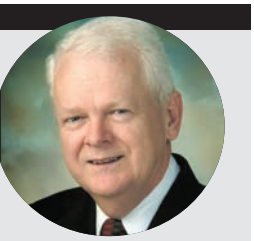
THE GOLDEN RAY response project, although still unfinished, provides a stark example of how easily the US spill response program can get off track.

U.S. Coast Guard photo by Brian McCrum

ished, provides a stark example of how easily the US spill response program can get off track. Through lack of attention, a number of important policies were skirted. First, the financial guarantor, by means of the consultancy, was allowed to get its nose under the tent. The interests of the financial guarantor are quite different than those of the Coast Guard. Second, the consultancy was allowed to build a wall between the FOSC and the SMFF service provider by means of the non-disclosure agreement. Third, the consultancy was allowed to initiate an ITT process, significantly delaying the response effort, the essence of which is to be expeditious. Fourth, the ITT was allowed to include a fixed-price provision. And fifth, the consultancy was allowed to terminate the contract of the SMFF salvage resource provider listed in the owner's pre-approved Vessel Response Plan (VRP) without FOSC approval.

It is imperative to the efficacy of the US spill response program, clearly the most effective and comprehensive in the world, that the integrity of OPA 90 and its implementing regulations be maintained and reinforced, as necessary. In particular, allowing deviation from an approved response plan for a lesser rationale than required by statute and regulation negates any confidence that a SMFF service provider has in recouping its investment, as well as the service provider's ability to obtain financing for necessary improvements. The edifice upon which OPA 90 and its regulations are based would be eradicated and this nation would return to the bad old days when vessel owners would hire the low bidder with little regard for capability. In addition, the SMFF service providers would slowly atrophy, losing their highly skilled personnel and becoming unable to maintain and replace their expensive equipment. Therefore, the Coast Guard must take the steps necessary to address shortcomings identified in the GOLDEN RAY response.

The Author



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Responder Immunity:
Protecting the Salvor in "Bet the Company" Responses

By Alfred J. Kuffler

The specter of liability beyond the limits of applicable insurance for the salvor's liability to both its contractual partner and third parties continues to haunt the American Salvage Association's members. Hence, the efforts since 2011 to obtain broad based immunity from claims beyond the patch work of statute, judge made law and contractual risk shifting terms. The exposure on certain projects to the prospect of "you bet the company claims" has caused prospective bidders with the requisite skills, technical expertise, and physical resources to decline opportunities to participate in major but high-risk projects. Responder immunity would negate this disincentive.

Summary

The Deepwater Horizon explosion followed by the extended and risky effort to staunch the flow of oil from the well brought home to the domestic salvage industry the financial risks falling to responders in such a massive casualty. Most important was the realization that the financial exposure which the Deepwater Horizon explosion produced quickly outran the protection afforded by all available insurances.

Following the Deepwater Horizon, the ASA thus led an ultimately unsuccessful effort to obtain immunity through an act of Congress The ASA is now examining the prospect of gaining by contract at least some of the benefits that the proposed legislation would have conferred. by using tried and true risk shifting devices such as cross indemnities, and waivers of claims. If the industry finds the concept should also apply to otherwise insured matters, then waivers of subrogation, and additional insured provisions will also come into play.

History

The loss of the Deepwater Horizon in April 2010 and the consequent massive third-party liabilities – real and potential – far beyond the limits of any available insurance- brought to the fore the financial risks responders faced.

As a result,at least two major U.S. companies declined to undertake efforts to plug the well out of concern for the exposure they would take on if efforts failed. In addition, it is the ASA's understanding that its members have and are continuing to decline work for similar reasons.

If the industry is to be encouraged to take on work presenting great risk, means must be found to assuage the entrepreneurial risk the work entails.

Protection of Salvors Under U.S. Law

Current U.S. law affords some protection to salvors, but that protection is spotty at best.

OPA 90, some case law, and the traditional ship owners' right to limit liability in non OPA situations provide some intermittent protection to salvors.

OPA immunity is granted to "any person" who incurs a liability for "removal costs'" and "damages" [as defined in OPA-90] resulting from "actions taken or omitted to be taken in the course of rendering care, assistance or advice." (33 USC §1321 (c (4))

With respect to the foregoing language, three caveats are in order:

First, "person" is defined as "include[ing] an individual, firm, corporation, association, and partnership." 33 USC § 1321(a)(7). Salvors certainly seem to fill this definition of "person".

Secondly, OPA 90 only provides a limited immunity for "persons." The limitations include (i) the operative event is the response to a spill subject to OPA 90; (ii) excludes claims for personal injury and death; (iii) is inapplicable if the responder has been grossly negligent or guilty of willful misconduct; (iv) the immunity does not apply to responses other than "oil spills

Finally, the immunity is limited to the defined "removal costs" and "damages.." as defined and , does not include items such as,vessel damage, loss of income to the vessel and salvors.

With respect to developing case law, responders who follow government directives in carrying out their work are also immune to third party claims. See In Re Deepwater Horizon, 2016 WL 614690.

Traditional case law generally, but not universally hold a salvor liable only for "gross negligence.

Salvors working on non OPA incidents may be able to invoke the 1851 limitation of liability statute, 46 USC §§ 30501-30512. and may be able to limit liability based on the value of the vessel after the casualty (except in the case of personal injury and death claims But limitation is disfavored by U.S. courts, so this protection, even if theoretically available, is ephemeral.

The above summary demonstrates that salvors face liability for gross negligence, will have great difficulty limiting liability under the 1851 statute and cannot limit under OPA-90 or, as a practical matter the 1851 limitation statute, for personal

injuries.

Current U.S. law does not adequately protect the salvor when insurance is unavailable.

Attempted Legislative Solution

While the effort to obtain expanded immunity began in 2011, 2016 saw the ASA lead an ultimately unsuccessful effort to persuade Congress to augment responder protection.

Concluding that at this time Congress would be not entertain a second attempt at a statutory remedy, no further legislative effort has been initiated.

Protection by Contract Since legislative relief is not available, attention has now turned to contract-based solution.

The use of cross indemnities and waivers of claims, and if the contract also applies to insured claims, insurers' waivers of subrogation and acceptance of additional insured clauses will provide the required protection. The clauses represent not a radical departure from established allocation of risk principles, but rather application of traditional tools protecting against financial catastrophe. Both the insurance and salvage industries have long employed these very contract and insurance devices in widely used forms such as the BIMCO Towhire and Wreckhire. By way of conclusion, the legislative history of OPA-90's immunity provision best captures the chilling effect of substantial financial exposures stating:

…Without such a provision, the substantial financial risks and liability exposures associated with spill responses could deter vessel operators, cleanup contractors, and cleanup cooperatives from prompt aggressive action." H.R. Rep. No. 101-653 at 45.

History has already proved the wisdom of Congress' recognition that financial risk can determine the willingness of responders to undertake a specific effort. This disincentive to action must be blunted.

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Ferry Operators Start to See The Light at the End of the Tunnel

By Mike Corrigan

Last year the ferry industry was riding the crest of a wave. In an end-of-year review, I went so far as to express my belief that the industry had rarely if ever been in such good health. Throughout the developed world, most operators were reporting year-on-year traffic growth and many had set new records for passenger and vehicle volumes. Meanwhile rising demand was being met by a flurry of newbuild orders everywhere from North America to Asia, Australia and Europe.

But that was then…before everything turned upside down in the past few months as the COVID-19 pandemic swept through all sectors of society with devastating impact on human and economic well-being.

Until then, the worldwide ferry industry was carrying more than two billion passengers per year – much the same as the global airline total – not to mention 250 million personal vehicles and 40 million trucks and trailers. When governments around the world banned all but essential travel as part of their 'lockdown' pandemic response, most remaining ferry traffic was confined to maintaining lifeline deliveries of food and other essential supplies. This continued despite companies knowing they were losing money at an escalating and unsustainable rate because passenger carryings – a crucial revenue source - were virtually non-existent.

The resulting decline in traffic has been put at between 75-100%, with enormous strain on liquidity. State aid to sustain vital services has been forthcoming from certain governments, although this prompted reservations from some operators, who argued that such emergency measures could lead to unfair competition at the expense of more robust rivals.

That said, the economic impact of the virus undoubtedly infected even the largest operators. Thousands of seafarers and shore-based staff were laid off, numerous ships were laid up and various services were either suspended or run with reduced fleets and timetables. In many cases, these solutions could well be permanent rather than temporary.

The sharp decrease in seafarer numbers was among the main findings of a survey conducted in April by the European Community Shipowners' Associations, which also revealed that ferries were one of the worst-hit shipping sectors, along with cruiseships, car carriers and offshore vessels.

Measures to help liquidity were found to be largely lacking or, where they did exist, impracticable due to costly administrative burdens. Even those companies that were confident of a return to pre-crisis levels of operation said that planned investments would be cancelled, put on hold or reduced – and that included initiatives to reduce air emissions.

But there was also the much more encouraging response that some recovery was expected in the rest of the year. It will surely be a relative upturn, but that is where Interferry and its members - more than 260 in 40 countries - are now firmly focused following recent confirmation that travel restrictions would be gradually relaxed in advance of this summer's travel and tourism season. This is absolutely critical given that ro-pax operators are massively dependent on earnings from the three-month peak period window in order to support their less profitable passenger and freight carryings in the other nine months of the year.

In fact we had already anticipated the easing of the lockdown by issuing 'best practice' guidelines for the safe resumption of passenger ferry services as and when allowed. Designed to ensure social distancing and enhance sanitisation, the guidelines were based on feedback from a survey of members and cover shoreside and shipboard measures to protect passengers, staff and crew - ranging from booking, check-in and boarding procedures to onboard limitations in passenger numbers and facilities. The guidance was circulated to members and discussed

with various governmental bodies, notably the European Commission (EC), the executive arm of the European Union, which oversees the world's largest ferry market by number of operators. Our 'safe travel' suggestions were widely reflected in the EC's own recommendations announced in mid-May, and we hope this will give other national administrations the confidence that ferry operators are fully prepared for a phased, safe resumption of passenger services.

In short, I am cautiously optimistic there will be some sort of tourist season. It will most probably be on a 'staycation' regionalized basis, but potentially it marks an important turning of the page as we take the first steps towards a long-awaited normality. I can see ferries becoming the favored mode of leisure travel in the current climate in view of their ability to ensure social distancing. And that consideration may also be to our advantage longer-term, because customer concerns over being closely confined in other modes are unlikely to be forgotten any time soon.

Looking further ahead, there may well be a new norm in life at large as governments eventually solve the unenviable challenge of balancing lives and livelihoods, health and wealth. The ferry industry will be no exception in having to cope with change, which could even mean consolidation in terms of companies, routes and fleets. However, we have overcome challenges throughout our history. The COVID-19 pandemic is like nothing else we have faced, but the same spirit and professionalism that saw us beat off the likes of fixed links and budget airlines will ensure that ferries remain a viable and irreplaceable force in the future.

The Author

Corrigan

Mike Corrigan is CEO of Interferry, the global voice for the ferry industry with regulatory agencies and in matters of safety and operational best practices.

U.S. Flag Shipping on The Great Lakes

By Thomas Rayburn & Eric Peace

For U.S.-flag shipping on the Great Lakes, 2019 was a good year. Total cargos were 90 million net tons, up 7.5 percent over 2018 and 4.6 percent over the 5-year average. 49.7 million net tons of iron ore were shipped, up 8.5 percent over 2018 and 11.7 percent over the five year. Limestone was up 9.7 percent over 2018 and 10.2 percent over the 5-year average. In 2010 and 2011, coal and limestone were each about 20 million net tons. Since then, coal has shown a steady decline as coal-fired power generating plants have shuttered amid a decrease in overall demand for power and a broad switch to natural gas-powered generating plants and renewables such as wind and solar. In 2019, 24 million net tons of limestone were shipped, compared to just 11.3 million net tons of coal.

2020 looks to be very different from 2019. In the wake of the COVID-19 pandemic, blast furnaces have been idled and heavy manufacturing throughout the Great Lakes and those facilities throughout the country reliant on steel from the integrated mills temporarily shuttered. Some vessels on both sides of the Great Lakes, Canadian and U.S.-flags, stayed in layup following the traditional opening of the shipping season on March 25 when the locks at Sault Ste. Marie, Michigan open allowing cargos, particularly iron ore and grain, to be moved from ports on Lake Superior to destinations on the lower four lakes, St. Lawrence Seaway, and internationally. Since then, some vessels that did sail returned to layup status as cargos have thinned out.

To facilitate the new, but hopefully short term, "normal" Lake Carriers' Association worked with their member companies to develop COVID-19 shipboard and shoreside prevention, preparedness, and response plans. These plans address returning crew members, crew change, shipboard practices, onboard vessel sterilization, quarantining suspected crew members, whole vessels, and arranging for shoreside berthing, medical care, and transportation including getting crew members home. Lake Carriers' worked in close partnership with the U.S. Coast Guard, Centers for Disease Control and Prevention, the eight Great Lakes states, as well as the ports and harbors operators and authorities to make this happen.

Amid all this, the U.S.-flag Great Lakes fleet's legislative and advocacy priorities remain system resiliency and fair regulation to level the economic playing field. Of paramount importance is ballast water and how it is proposed to be regulated on the Great Lakes. Canada, a signatory to the International Maritime Organization's Ballast Water Management Convention, has proposed in their ballast water regulations to not only regulate the discharge of ballast water to meet international standards but also the uptake of ballast water and its discharge in waters of the United States, effectively creating an economic disparity favoring Canadian vessels carrying U.S. cargos to Canadian ports. Lake Carriers' filed a petition with the U.S. Federal Maritime Commission alleging discrimination against the U.S.-flag fleet. The FMC unanimously voted to accept the petition and initiate an investigation into the allegations under Section 19(1)(b) of the 1920 Merchant Marine Act. For years both governments and advocates for fair regulation of ballast water have championed a "compatible" and "harmonized" approach. Canada's regulation has thrown that to the wind. At the time of this writing, the U.S. Environmental Protection Agency's draft regulations on ballast water management have yet to be published.

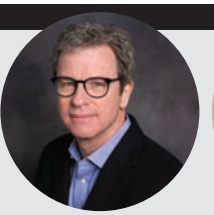
An aging U.S. and Canadian Coast Guard fleet of icebreakers is hampering shipping during the ice season before and after the closing and opening of the Soo Locks at Sault Ste. Marie, Michigan, when cargo delivery is particularly critical. This is when ice blankets many of the lakes, choking pinch points like the St. Marys River, Green Bay, St. Clair and Detroit rivers, and ports and harbors throughout the system. This past season, mild by any year-to-year comparison, still saw delays in sailing and vessels beset. Congress authorized a new heavy icebreaker for the Great Lakes, a sister to the MACKINAW. They've appropriated funds for the U.S. Coast Guard (USCG) to begin the design and construction process but so far USCG has held Congress at bay with little to no tangible activity that will result in the new icebreaker.

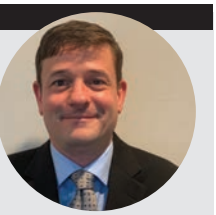
But the good news continues on the new large lock at Sault Ste. Marie, Michigan; a twin to the 51-year-old Poe Lock. First authorized in 1986 and reauthorized by Congress in 2007 at full federal expense, funding finally started flowing two years ago, thanks in large part to $50 million in seed money from the State of Michigan to jumpstart the project. This spring construction work began as deepening of the upstream approach to the new lock got under way. "Efficient funding" was provided this year and so the design and phased construction can continue, maximizing the U.S. Army Corps of Engineers capabilities. With

The Authors

Rayburn & Peace

Thomas Rayburn (left) is Director of Environmental and Regulatory Affairs and Eric Peace (right) is Director of Operations and Communications at Lake Carriers' Association.





continued efficient funding the new lock could be ready to open in seven or so years. Next year's budget request from the President is substantial, $123.2 million, but falls short of FY 21 efficient funding by $50 million. Either Congress will have to fill the gap, the Corps will have to move discretionary workplan funds to the project as they did this year, or a combination of both to keep construction on schedule.

Work continues on two new U.S.-flag Great Lakes vessels, known as "lakers." The first to sail, later this summer, will be VanEnkevort Tug and Barge's MICHIGAN TRADER, a 740-foot self-unloading articulated tug/barge unit. The other vessel is a 639-foot self-propelled, self-unloading vessel for the Interlake Steamship Company scheduled for completion in 2022. Both vessels are being built in Sturgeon Bay, Wisconsin by Fincantieri Bay Shipbuilding. Meanwhile, owners and operators of the U.S.-flag Great Lakes fleet spent $97 million on regular maintenance and upgrades at shipyards throughout the Great Lakes during the 2020 winter layup.

Economic predictions for a recovery are broad and even divergent. How and when U.S. manufacturing rebounds and commercial maritime on the Great Lakes responds will be unfolding over in the coming months and sailing seasons but as always, the U.S.-flag Great Lakes fleet is nimble and ready to move cargo.

Advocating for Inland Waterway Funding

By Deb Calhoun

Waterways Council, Inc. (WCI) is the national public policy organization that advocates for a modern, efficient inland waterways system. Abiding by our mission has meant success over our 17-year history. In 2020, WCI's top priority is to conform the cost-share for Inland Waterways Trust Fund (IWTF)-financed construction projects to require 25% of the project cost be derived from the IWTF and the remaining 75% from General Revenues. The policy vehicle for this adjustment is the Water Resources Development Act (WRDA), which the Senate this year is calling the America's Water Infrastructure Act (AWIA) of 2020. This cost-share adjustment tracks the same formula used for the construction of the majority of the nation's coastal ports (with depths between 20-50 feet) that was changed in WRDA 2016 legislation.

In fact, on May 7, the Senate Environment & Public Works (EPW) Committee marked up and passed by a 21-0 roll call the AWIA (WRDA). The EPW Committee's bill, reported to the Senate, included WCI's priority to adjust the cost-share for construction and major rehabilitation of inland waterways projects. The Senate EPW Committee's provision to adjust the cost-share from 50% from Inland Waterways Trust Fund (IWTF)/50% General Revenues to 35% IWTF/65% General Revenues (in Section 1069 of the bill) is a significant step toward ensuring inland waterways construction and major rehabilitation projects advance more efficiently.

In the House, at press time, the Transportation & Infrastructure (T&I) Committee received Members' WRDA priorities on May 1 and is starting the process of drafting its bill. House markup of the bill is expected sometime in June or July. WCI continues to urge that the House include the 75%/25% cost-share adjustment. An April "Dear Colleague" letter led by Rep. Conor Lamb (D-PA) and Rep. Brian Babin (R-TX) sent to the House T&I Committee garnered 78 signatures in support of this cost-share provision. Several other Members of the House have indicated their individual requests to T&I included this cost-share provision.

Beyond WCI's focus on the cost-share adjustment in WRDA, annual appropriations remain a top priority. In 2020, we are focused on Fiscal Year (FY) 2021 appropriations with a goal to provide for the construction of inland waterways modernization projects at the maximum funding amount supportable by expected revenues into the IWTF. WCI also urges an increase in overall Corps of Engineers' Civil Works Program Operations & Maintenance (O&M) funding (FY20 funding for O&M was $3.79 billion).

In February, the U.S. Army Corps of Engineers released its FY20 work plan, which allocates funds provided in the FY20 Energy & Water Development Appropriations bill toward its civil works mission.

Included in the FY20 work plan was $4.5 million for the Navigation and Ecosystem Sustainability Program (NESP) that spans the Upper Mississippi River and the Illinois Waterway System across Illinois, Iowa, Minnesota, Missouri and Wisconsin. This funding is for the continuation of the preconstruction engineering and design (PED) phase of the program that both modernizes locks and addresses ecosystem and sustainability ($3 million in PED funds were approved for navigation and $1.5 million for the environmental restoration component of NESP). This is the first allocation of PED funds for NESP since 2012.

FY20 funding from the Construction account ($336.76 million) -- representing more than efficient construction funding – was allocated for the following priority navigation projects:

- Olmsted: $63 million to complete the project
- Lower Mon 2, 3, 4 Project: $111 million to complete the project
- Chickamauga: $101.7 million
- Kentucky Lock: $61.06 million

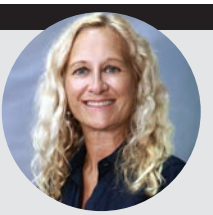
Also of note, $85.35 million was allocated to initiate construction of the deepening of the Mississippi River Ship Channel, Gulf to Baton Rouge (Louisiana) to 50 feet.

And besides NESP, the Investigations account will also fund these projects of particular importance to WCI:

- $6.05 million to continue PED for the Three Rivers Project (Arkansas)
- $7.7 million to continue PED for the Upper Ohio River Navigation Study (Ohio/Pennsylvania)

WCI continues to oppose additional tolling, lockage fees or adverse charges for the users of the inland waterways system imposed by Congress or the Administration. As a reminder, in 2014 inland waterways commercial users, led by WCI, successfully advocated to raise its diesel fuel tax from 20-cents-per gallon to 29-cents-per-gallon, a 45% increase, as a way to

The Author



Calhoun

Deb Calhoun is the Interim President/CEO, Waterways Council, Inc.

increase investment in the IWTF for priority navigation projects. Currently, inland waterways operators pay the highest fuel tax of any surface mode of transportation.

There continues to be talk within Congress and the Administration about an infrastructure package for the nation, although one floated early in the Trump Administration proved unsuccessful with the remaining challenge of how to pay for enhancing the nation's infrastructure? WCI remains supportive of additional funding for the infrastructure of the inland navigation system within a potential comprehensive infrastructure bill. In the event that an infrastructure package begins to take shape, WCI will urge that the inland waterways and its lock and dam infrastructure be included.

In 2020, WCI remains focused on the health and safety of its members during COVID-19. At press time, the nation's lock and dams remain operational and commerce continues to move on the inland system, in spite of the virus's havoc throughout the country.

Mother Nature is always a factor that must be considered and high water remains a challenge on the inland waterways system, but the Corps of Engineers is doing a masterful job of deploying dredges to hot spots to ensure channels remain open and navigable.

Ahead this year, the inland waterways industry and its shippers prepare for consolidated maintenance closures of the Illinois Waterway.

On April 20, the Corps' Rock Island District received the remainder of the funding necessary to execute the project and at press time, the project remains on track with the original schedule for five-lock closures beginning in early July through September. Neither the Corps nor its contractors anticipate delays due to the COVID-19 pandemic, but they remain vigilant to any potential changes.

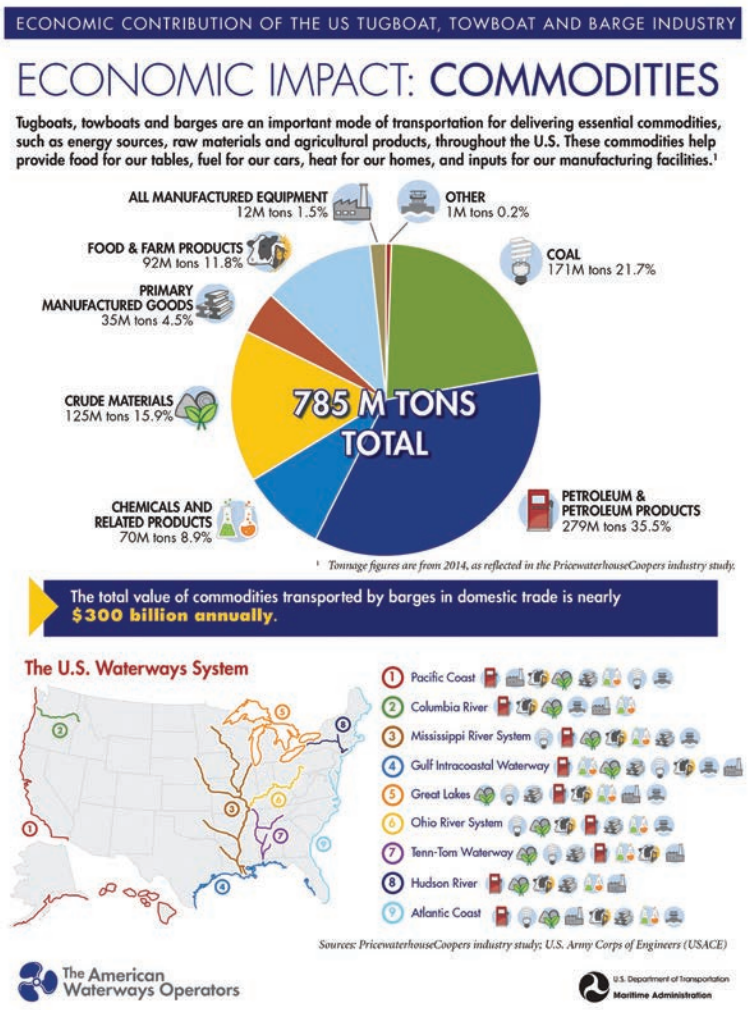
Waterways transportation of key commodities underpins a robust American economy as our nation recovers from the impacts of COVID-19. These cargoes are moved on the inland waterways in the safest, most energy efficient, traffic congestion relieving, environmentally sound way.

While the future currently may seem somewhat uncertain, WCI will continue to advocate for increased reliability in inland waterways infrastructure that provides our nation a clear channel toward resilience and prosperity.

Business Continuity, Not Business as Usual

By Jennifer Carpenter

In today's environment, the overarching challenge for the American tugboat, towboat and barge industry is to continue transporting the vital commodities that help keep our nation's economy moving during a highly uncertain time, while taking all necessary measures to ensure the health and safety of our workforce as the COVID-19 pandemic continues to evolve – in other words, to ensure business continuity, while recognizing we are not, nor can we be, going about business as usual. This industry, long defined by its adaptability and resiliency, is fully embracing this challenge as it navigates the present and looks toward the future.



The state of the industry in this moment can best be captured through the three lenses of health and safety, continuity of operations and the overall economic landscape.

In the earliest days of the pandemic, companies across the country immediately recognized that the key to keeping vessels and commerce moving was keeping crews healthy. Companies have worked aggressively to put in place preventive measures to minimize contact between crew members and non-crew and mitigate transmission risk onboard. These protocols are being refined continuously as pandemic developments require, and as companies actively communicate with and learn from one another. While these efforts have been largely successful in keeping coronavirus from significantly penetrating our mariner workforce, continued vigilance is imperative.

Even as the industry focuses on keeping crews healthy, it continues to perform the critical functions on which our nation has always depended and needs even more so now. Crews continue to deliver energy, agricultural and industrial cargoes that are indispensable drivers of the American economy, and they are also providing direct pandemic relief by transporting commodities that support production of personal protective equipment and by conducting ship-assists to help Navy hospital ships dock safely.

That the nation's tugboat, towboat and barge companies are navigating today's challenges is testament not only to the skill and dedication of the men and women of this industry, but also to their resilience. The industry's extensive experience with contingency planning, safety management systems and incident command structures has served it well in managing the health, safety and operational challenges posed by the pandemic.

But, it is far from smooth sailing on the economic front. While the tugboat, towboat and barge industry did not experience the abrupt destruction of demand that, for example, the passenger vessel sector experienced, we are seeing significant ripple effects as many customer industries (oil and gas, steel, construction, etc.) have been hit hard by the pandemic and the accompanying economic downturn. At the same time, the industry has incurred unbudgeted costs to imple-

ment new procedures necessitated by COVID-19.

While COVID-19 features prominently in our industry's present, both opportunities and challenges lie ahead in its future.

All indications are that the pandemic will remain with us for some time, so the industry will need to continue evolving to meet the challenges of a "chronic" COVID-19 environment. Business must go on – safely. And pandemic or not, severe weather like hurricanes and flooding are annual challenges that companies have learned to prepare for and contend with. Fortunately, the lessons learned and communications channels opened with government and other stakeholders during severe weather events as well as the pandemic have great potential to be mutually reinforcing, helping us get better at preparing for and managing crisis situations.

As ever, the vitality of the tugboat, towboat and barge industry depends not only on prioritizing health and safety, and on successful navigation of the economic environment, but also on sound public policies that will position the industry to continue making vital contributions to American prosperity and security.

The Jones Act, which celebrates its 100th anniversary this year, but whose antecedents date back to the earliest days of our country, has served our nation's economic, homeland and national security well. It is more relevant than ever today, as both the pandemic and the prevailing geopolitical situation underscore what a bad idea it would be to relinquish control of our domestic maritime supply chain to foreign companies (perhaps state owned) and foreign mariners.

Our industry's experience during COVID-19 has also underscored the importance of a uniform national system of laws and regulations governing interstate maritime transportation. As state and local stay-at-home orders began to proliferate this spring, we could have experienced catastrophic disruption in the maritime supply chain. We did not, largely because the federal government took timely action to codify the status of maritime transportation businesses and workers as "essential critical infrastructure" that needed to continue unfettered operations. The lessons of this experience are clear: just as a patchwork of stay-at-home orders is incompatible with the effective functioning of the maritime supply chain, so too is a patchwork of state and local laws and regulations established for other purposes. Uniform, nationally consistent regulations are essential.

Investing in our ports and waterways infrastructure is vital to our industry, and will also help our nation's economy get back on its feet. This means passing a Water Resources and Development Act; increasing investment in locks, dams, harbor maintenance and dredging; and building the next generation of Coast Guard buoy tenders and ensuring the funding to keep them operating. As demand for waterborne commerce increases as we recover from the economic shocks of the pandemic, we need to ensure that our waterways are open for business and in condition to accommodate this demand.

On the regulatory front, we will continue to work closely with the U.S. Coast Guard to implement the Subchapter M towing vessel inspection regulations effectively and on schedule while adapting inspection techniques as appropriate to minimize health and safety risks due to the pandemic.

The United States counts on the tugboat, towboat and barge industry to help drive the economy and keep our waterways safe and secure. We will proudly continue to answer that call, through all of our nation's challenges.

The Author

Carpenter

Jennifer Carpenter is President & CEO of The American Waterways Operators, a trade association representing the American tugboat, towboat and barge industry.

"In peace and war" ... Even Against a Virus

By Rear Adm. Mark H. Buzby

The U.S. maritime industry takes great pride in our motto: "In Peace and War." It sums what we're all about. From colonial times, through the Revolution, the Civil War, two World Wars, several regional conflicts, and many natural and humanitarian disasters, we got the cargo delivered because our economic security and our national security depend on it. Today, we confront a new kind of enemy: an invisible, debilitating, and too often deadly disease. Yet, just as the courageous merchant mariners of World War II developed strategies that reduced risk — such as convoys and radio silence — to guard against U-boats, our industry and today's volunteer mariners are finding ways to stay safe while keep our supply chain going.

At the Maritime Administration (MARAD), we've been doing our part, too. We're engaged with all our stakeholders to identify challenges and solutions while we face a crisis like no other in recent history. We ensured that mariners, port operators and longshoremen, and shipyard workers were designated by the Department of Homeland Security as Critical Infrastructure Workers, so they could keep critical supply lines moving.

Our engagement led to the development and sharing of best practices for safe crew rotations, streamlined passport renewals so mariners can keep sailing overseas, and procedures that are helping maintain the readiness of our government-owned surge sealift fleet, the Ready Reserve Force (RRF).

We also worked closely with the U.S. Merchant Marine Academy (USMMA) and the state maritime academies so cadets could continue their courses online, take their U.S. Coast Guard exams, and take the final steps toward careers at sea. Federal funding is helping all the academies safely prepare the next generation of mariners to support the Nation.

All the while, we've made sure that MARAD is fully crewed and that the daily work that the industry relies on, including U.S. Maritime Alerts and Advisories on global maritime security threats, continues to keep those at sea and ashore safe from possible dangers.

We're keeping our eyes on the horizon, too—even while battling COVID-19—to stay on course with our mission here at MARAD: to grow U.S.-flag shipping, modernize our ports, support our essential shipyard and repair facilities, make better use of our inland waterways, and to do all we can to help America's maritime industry continue to fuel America's economy.

Just before COVID-19 reached our shores, we had the pleasure of announcing that our vessel construction manager TOTE Services had selected Philly Shipyard, Inc. of Philadelphia, Pennsylvania to build the National Security Multi-Mission Vessel (NSMV) replacement for our aging school ship fleet.

For the first time ever, our state academies will have a world-class, purpose-built, American-made training vessel featuring numerous instructional spaces, a full training bridge, and space for up to 600 cadets to train at sea. The NSMV will also support federal government efforts in response to national and international disasters, as it includes medical capabilities, command and control spaces, and berthing for up to 1,000 first responders and recovery workers when pierside. We required maximum use of qualified American-sourced equipment and 100 percent utilization of U.S.-flag shipping for any equipment coming from overseas.

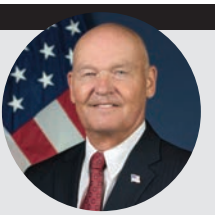
Again this year, we invested in our domestic maritime industry through the America's Marine Highways Program (AMHP). Our country has 12,000 miles of navigable inland waterways. Congestion on our roads, bridges, railways, and in ports costs the United States as much as $166 billion; trucks account for $20 billion of this cost. By moving cargoes from our roads to our rivers and other waterways where it makes sense, we can reduce congestion, its related costs and pollution, while giving America's maritime industry a shot in the arm. To date, DOT has awarded more than $33 million in competitive Marine Highway Grants to do just that and we expect to award another $9.5 million soon.

We also launched a major new investment in the industry earlier this year: our $280 million Port Infrastructure Development Program (PIDP). Our ports are national and regional jobs engines. These grants will fuel efforts to improve facility and freight infrastructure to ensure our Nation's freight transportation needs, present and future, are met.

Just last month, through our Small Shipyard Grant Program, we also awarded 24 grants totaling nearly $20 million to help small shipyards modernize, making them more efficient in constructing commercial vessels. American shipyards support nearly 400,000 jobs and contribute more than $37 billion to our economy.

As we move forward in continuing to deal with COVID-19, many aspects of our lives might be forever changed, but I believe that we will come through this experience stronger as a county, as a government agency, and as an industry. However,

The Author



Buzby

Rear Adm. Mark H. Buzby was sworn in as MarAd's Maritime Administrator in 2017.

the foundations of U.S. maritime policy— the Jones Act, Cargo Preference, and the Maritime Security Program - will endure.

Cargo is always king. That's why, in collaboration with Defense Acquisition University (DAU), we recently launched accredited, web-based training courses on cargo preference laws and regulations to boost compliance and drive more non-military federal cargo to U.S.-flag vessels. This will continue to help U.S.-flag operators remain competitive and put American workers first.

The Maritime Security Program remains essential. In return for an annual federal payment of $5 million per ship/per year, the MSP provides our Nation with assured access to a fleet of 60 modern, militarily useful U.S. ships, active in global trade and available "on call" to meet contingency needs. This vital program has an annual budget of $300 million – quite a bargain when you consider that replicating the MSP fleet and intermodal resources and networks with taxpayer funds would cost an estimated $60 billion plus.

Finally, the Jones Act—our domestic cabotage law—which reserves cargo moving between American ports for American ships, crewed my American mariners, and built in American shipyards is central to sustaining U.S. shipping, our shipbuilding capacity, and the employment of American civilian mariners. Jones Act shipping is a U.S. job machine, resulting in $54 billion in U.S. economic output and supporting nearly 650,000 American jobs.

Just as for every American, this has been a challenging time for our agency and our industry. But the work of supporting the U.S. maritime industry goes on across America. Just as World War II mariners learned how to more safely navigate dangerous waters, we've learned to adapt, to collaborate, and to find new ways to support and protect what we hold dear: that as maritime nation, our Nation's economy depends on trade by sea.

I take great pride in the fact that, during my watch the MARAD, Congress and President Trump came together to honor World War II civilian merchant mariners with the Congressional Gold Medal. It was a long overdue recognition of their service and sacrifice. We can look to the spirit of those mariners for courage and strength to carry us through difficult times. As always, their example of service — "In Peace and War" — will guide us through the tempest.

Photo: Huntington Ingalls Industries-Newport News Shipbuilding

NSRP & United States Shipbuildng

The National Shipbuilding Research Program (NSRP) is a unique program focused on an important mission: reducing the total ownership cost and improving the capabilities of both United States Government and U.S. flag commercial ships. NSRP achieves this mission by providing a collaborative framework to manage, focus, develop, and share research and development and leverage best practices in shipbuilding and ship repair.

Total ownership cost includes all elements of the ship lifecycle including the costs of design, construction, maintenance and repair, technology refresh/insertion, operation and sustainment, and disposal.

The NSRP's impact is primarily on U. S. Navy ships, both manned and unmanned, but the program is also intended to benefit the U.S. Coast Guard, National Oceanic and Atmospheric Administration, Maritime Administration, Military Sealift Command, Army Corps of Engineers, as well as the U.S. commercial shipbuilding industry. NSRP achieves this impact through collaboration among a very diverse set of shipyards, in a neutral setting that facilitates best practice sharing and advancement of the state of shipbuilding and ship repair. This unique collaboration is possible under an "Other Transaction Authority (OTA)". After nearly 50 years of collaboration, the now-11 member shipyards and other stakeholders continue their efforts to improve the shipbuilding and repair industries' ability to reduce total fleet ownership costs.

HISTORY

What became NSRP originated as a result of the 1970 amendments to the Merchant Marine Act of 1936, which states, "The Secretary [of Transportation] shall collaborate with vessel owners and shipbuilders in developing plans for the economical construction of vessels and their propelling machinery, of most modern economical types, giving thorough consideration to all well-recognized means of propulsion and taking into account the benefits from standardized production where practicable and desirable."

The U.S. Maritime Administration used the panel framework of the Society of Naval Architects and Marine Engineers (SNAME), and specifically the newly-formed Ship Production Committee as the structure for the program. This framework remains largely intact today.

ORGANIZATION

Over the last five decades, the principal government sponsor for NSRP has changed several times from MARAD to various U. S. Navy sponsors. Since 1998, NSRP's "home" in government has been the Naval Sea Systems Command (NAVSEA), where the program's government funding, administration and management functions are performed. NAVSEA has a dedicated NSRP Program Manager (SEA 06N) under NAVSEA 06, the Warfighter Capabilities and Enterprise Readiness Directorate. The program office coordinates the Navy effort in partnership with the industry's NSRP Executive Control Board (ECB).

In 1998, the NSRP Executive Control Board collaboration of the original nine shipyards was formally established and

Left: LCS 23 Move-out
Photo: Fincantieri Marinette Marine

Below Left: Clean Jacksonville
Photo: Conrad Shipyard

Below: USS Columbia Class missile tube "Quad pack".
Photo: General Dynamics Electric Boat

"The National Shipbuilding Research Program provides a unique and valuable forum for Navy and industry to collaborate, resolve broad challenges and reduce total ownership cost for Navy ships, submarines and unmanned vessels. NSRP will remain an important component as we grow the fleet."

Vice Admiral Thomas J. Moore,
Commander, Naval Sea Systems Command

the ECB and NAVSEA signed a "Joint Funding Agreement" to manage this unique relationship. The Joint Funding Agreement is an OTA, which is a streamlined contracting vehicle, which brings innovative research findings and state-of-art prototypes from industry to the federal government.

Another unique aspect of NSRP is that the program is industry-led. The ECB consists of a voting member, at the senior executive level, from each of the 11 member shipyards. The industry ECB decides — with input from Navy sponsors — on the particular research projects and the overall administration of the program. A target of 50 percent of the funding for research & development and technology transfer activities is funded by industry "cost share," in accordance with OTA requirements under 10 USC 2371.

The Executive Control Board utilizes a technology collaboration management company as Program Administrator, to manage the program's day-to-day programmatic, technical, contractual, and administrative responsibilities on behalf of the Board.

NSRP's 11 member shipyards partner with other industry organizations to develop processes and technologies for the life cycle of the vessel. These participating organizations include the vendor base, nonprofits, and members of academia, along with the government, for shipbuilding and repair issues. In the last year alone, over 200 different organizations participated in NSRP panel meetings and activities.

COOPERATION

The NSRP involves the major U.S. shipbuilding and ship repair companies, both public and private, as well as design agents, universities, and government agencies with an interest in ship construction, overhaul, and repair. These competing shipyards work together on pre-competitive and enabling technologies of interest to the shipbuilding and ship repair industry as a whole within the legal constraints of anti-trust regulations. Over time, it has been demonstrated that the tension between these opposing conditions (cooperation and competition) contributes to rapid implementation of project results, given open communication among the competing parties to ensure the transfer of the necessary technical information and the know-how to facilitate implementation.

THE FOUR FOCUS AREAS:

NSRP has identified four overarching, integrally-connected Major Initiatives that tie the program's mission to proposed industry research and are derived from the basic organizational structure of a shipyard. Each Major Initiative group has identified technology development and improvement areas (sub-initiatives).

- **Ship Design and Materials Technologies**

Naval Architecture, Ship Specifications, Preliminary Design, Material Development.

- **Ship Production Technologies**

Fabrication, Assembly, Outfitting, Production Facilities, Production Planning.

- **Business Processes and Information Technologies**

Business Support (data exchange, shipyard integration), Digital Shipbuilding.

- **Infrastructure and Support**

Health and Safety, Environmental Issues, Workforce Issues (recruitment, training, workers' compensation), Overhead costs.

NINE PANELS

NSRP member shipyards and other interested industry firms work together through nine panels that are categorized based on subject matter expertise; each panel aligns with one of the Major Initiatives, as shown below. The panels, which meet individually or jointly 2-3 time a year, provide an open forum for all industry stakeholders to share issues, best practices and potential solutions. Panel meetings review and discuss ongoing (or future) projects, and will usually include a tour of the operations facility of either a member organization or a related industry.

Firms and individuals do not need to be

Left: USS Shoup (DDG 86) in drydock.
Photo: BAE Systems Ship Repair

Below Left: Launch of Q-LNG 4000.
Photo: VT Halter

Below: DDG 1000.
Photo: General Dynamics Bath Iron Works

"As Chair of the NSRP Executive Control Board, I have the privilege to lead and observe industry R&D collaboration among 11 of the most significant shipyards in the US. The depth and breadth of collaborative R&D dialogue and projects within this forum, in support of Navy, Coast Guard, and commercial shipbuilding customers, does not occur anywhere else."

Don Hamadyk, Director, Innovation & Engineering Solutions, HII – Newport News Shipbuilding; Chair, NSRP Executive Control Board, Chair, SNAME Ship Production Committee

employed by NSRP member shipyards to participate in a panel or to meet the panel's individual membership requirements. There is no membership fee for participation in any NSRP function. Panel meetings are the key entrance points for organizations interested in the program.

The collaboration doesn't end when the project is complete: project leads deliver a final report and, for most projects, NSRP posts it to their web site, so it is available publicly across the shipbuilding and repair industry. These reports expand the community of potential users. Individual NSRP member shipyards, other shipyards, or other industry stakeholders take the results of the individual NSRP projects and make their own business case determinations on implementation, based on their unique circumstances. Over 60 percent of recent projects have been implemented in at least one NSRP member shipyard, and half of these are implemented in multiple yards.

ACCOMPLISHMENTS

NSRP members collaborate on research and development for everything from design and digital shipbuilding, to production processes like welding, surface preparation and coating, and electrical and mission systems, to environmental health and safety projects and workforce development projects. Successfully-implemented technologies and processes over the last 20 plus years include innovative technologies like laser welding and cutting, a common parts catalog, a ship design tool suite used by NSRP member (and many other) shipyards and design agents, laser scanning, photogrammetry, and 3D modeling software with current augmented reality, virtual reality, and artificial intelligence applications, computer-aided robotic welding and additive manufacturing. Both public and private sector customers benefit from these new technologies through increased productivity and reduced costs.

RESEARCH

NSRP typically conducts two research and development project solicitations annually. The major Research Announcement or RA projects typically run for a period of up to two years with an individual project's total funding ranging from $1.0M-4.0M, jointly funded by the Navy and industry cost share. Panel projects are typically up to one year in duration with a maximum program funding of $150K per project. Panel projects are selected by the ECB, with Navy input, from a pool of candidates proposed by each panel. Over the last 22 years, NSRP project teams executed 365 projects, totaling almost $500M in combined government and industry funding.

CONCLUSION

NSRP brings competitors together to address common U. S. shipbuilding and repair industry issues with innovative and collaborative research and technology. For almost 50 years, NSRP mem-

RESEARCH ANNOUNCEMENT 21

The current Research Announcement (RA 21) solicits summary proposals that respond to priorities in the Program's multi-year Strategic Investment Plan, the annual Technology Investment Plan, and areas of particular interest identified in the Research Announcement. All three documents are publicly available on the program's website, **www.nsrp.org**. RA 21 solicits proposals for research, development and implementation for the U.S. shipbuilding and ship repair enterprise that will affect total ship ownership costs:

- Insertion of relevant technologies that reduce cost of design, acquisition, testing or delivered ship operations and sustainment (maintenance/repair/conversion)
- Development of improved processes that reduce cost of design, acquisition, testing or delivered ship operations and sustainment (maintenance/repair/conversion)

Ten-page summary proposals are due by noon Eastern Time on July 7, 2020, using submission procedures detailed in the Research Announcement and supporting documents. Project selections are anticipated for September 2020.

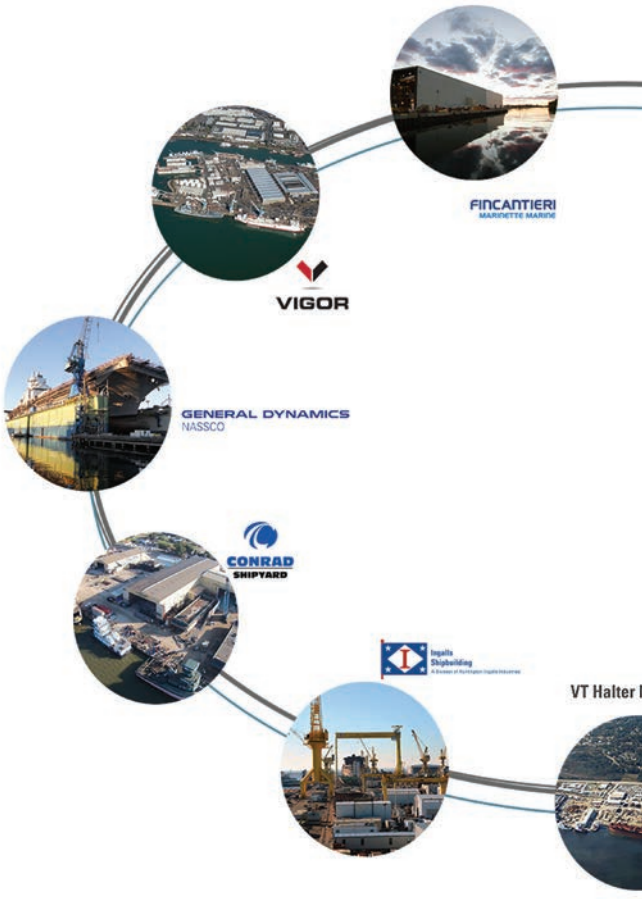
USS Coronado in Drydock.
Photo: Austal USA

bers and participating organizations have worked together to deliver new technologies with cost and schedule efficiencies to the maritime industry. Looking forward the next 50 years to its centennial, NSRP will remain focused on its mission, and continue the collaboration efforts that have supported the introduction of technologies and processes that lower the total ownership costs.

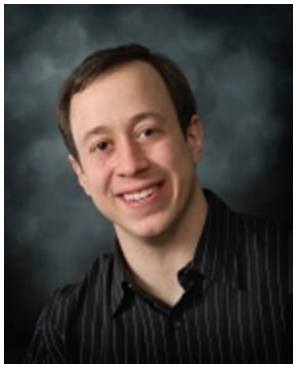
Learn more about NSRP and upcoming events at its website www.nsrp.org, or on the LinkedIn page https://www.linkedin.com/company/nsrp-national-shipbuilding-research-program/. Be sure to "Save the Date" for the 2021 biennial All Panel Meeting, 23-25 March in Charleston, SC, which is open to the public.

Richard McCreary, VP, Business Development, Vigor
"Vigor has enjoyed participating in NSRP for a number of years and has benefited from many improvements derived from past NSRP projects that we have both participated in and have drawn from others. NSRP is a unique, sanctioned collaboration of the major US shipbuilders and is an effective vehicle both to reduce costs and improve schedule in shipbuilding and ship repair."

Tim Glinatsis, VP of Engineering & CIO, General Dynamics NASSCO
"NSRP is likely the only venue where shipbuilders, customers (e.g., US Navy), vendors and academic institutions can pool resources for the benefit of the greater shipbuilding industry. We've found it to be an excellent way to advance the readiness of new technologies in all facets of ship design and construction."



John Michael J. Iraci, General Dynamics Electric Boat
"The NSRP program has consistently been a key partner in the manufacture of US Navy submarines. For example, NSRP helped developed the software tool SPARS (Shipbuilding Partners and Suppliers), a process-enhancing tool used daily by manufacturers to procure vital materials for submarine construction across multiple yards."



Mike Duthu, VP, Business Development, Ingalls Shipbuilding
"Since 1998, Ingalls Shipbuilding has been an active NSRP member shipyard. NSRP provides an opportunity for collaboration across diverse cultures and practices of shipyards and industry partners unmatched by any other program. The NSRP projects have yielded many improvements resulting in increased affordability for the US Navy and technology advances for the shipbuilding industry. NSRP is really the catalyst for enabling technology development. As the Industry looks to the future, NSRP will continue to enable achievements through collaboration, process improvement, and technology acceleration."

René Leonard, VP, Engineering and Product Development, Conrad Shipyard
"The contributions of NSRP to the art and science of shipbuilding have been significant, resulting in lower costs, improved safety, and increased efficiencies throughout the shipbuilding industry. The collaboration of some of the industry's most experienced and respected shipbuilders from across the nation provides a unique opportunity to identify and implement improvements throughout all aspects of the shipbuilding process. These improvements have not only benefited the individual NSRP participants, but often have benefited the shipbuilding industry in general."

Christopher M. Waaler, VP, Engineering, General Dynamics Bath Iron Works
"General Dynamics Bath Iron Works' cooperative participation in the NSRP program is driven by a respect for the complexity of designing and building ships and the recognition that each shipyard benefits from working collectively. Big shipyards can learn from smaller yards and vice versa. NSRP projects provide a lower risk opportunity to initiate new technologies with new shipbuilding concepts and tools that we may not have been aware of to improve our shipbuilding efficiency."

Alex Romanczuk, Engineering Director, BAE Systems Ship Repair
"NSRP brings value to BAE Systems shipyards in a variety of ways: introduction of breakthrough technologies, implementation of manufacturing best practices and processes, and innovation of welding technology and coating and preservation methods and techniques. NSRP brings together the entire U.S. shipbuilding and repair industries through government and industry collaboration in an open forum for dialogue and knowledge cooperation."

Tom Perrine, VP of Engineering, Austal USA
"Our participation in NSRP projects has led to the incorporation of various processes and technologies into today's work at our shipyard. Several projects have resulted in improvements to our ShipConstructor 3D product model by augmenting our use of the application in the design of the LCS and EPF programs, to include the implementation of ShipConstructor's Electrical module to support design work. In addition, we also implemented Cloudis' cable management application, CMPIC. These two projects were an outgrowth from working on several NSRP projects with SSI USA, where collaboration led to internal investigation of new technologies. NSRP projects, like Dynamic Change Awareness, also provide collaborative opportunities that help yards discover where process changes can lead to improvements. Other recent projects for Austal USA include: ShipConstructor Module Lift and Turn, Advance Mobile Universal Electrical Testing (AMUET) Platform, Laser Scanning. NSRP provides a forum in which collaboration across a broad spectrum of shipbuilders can occur. It is a clearing house for finding tomorrow's solutions for today's problems."

Buck Younger, CTO, VT Halter Marine, Inc.
"The NSRP is vital to our industry and the funding provided serves in our national interest. NSRP is the only organization that brings together 11 shipyards to collaborate in these investments for new technology development. With the diverse platforms we build and deliver, Halter Marine has a need for technical expertise and best practices across the full spectrum of our customer base for programs such as the U.S. Coast Guard's Polar Security Cutter to the commercial vessel Q-LNG 4000, the nation's first offshore LNG articulated tug and barge."

Market: *Tankers*

Olivia Watkins, Head Cargo Analyst, Vessels Value

Total number of tanker orders are down by 26% for 2020 YTD compared to the same period in 2019. By comparing to 2018 YTD, this year there have been half the number of orders placed. This comes as no surprise as Europe and the US entered the lockdown phase of the pandemic earlier this year, only a month or so after the Chinese industry shut down. However, towards the end of May 2020 orders were placed for both VLCC's and Suezmaxes by the Greeks, Norwegians and Angolans accounting for c.$780 mil.

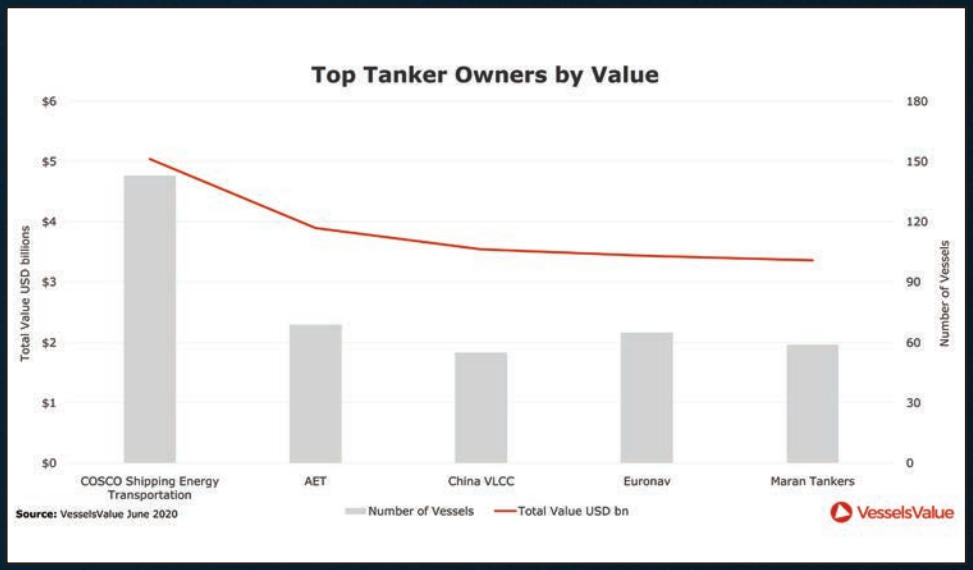
The S&P market has also taken a hit so far this year with sales down 25% compared to 2019 YTD. Although COVID-19 has dampened the number of vessels being transacted, we have seen positively volatile Tanker rates. VLCCs saw highs of USD 260,000 a day in March and but lows of $10,000 a day back in February.

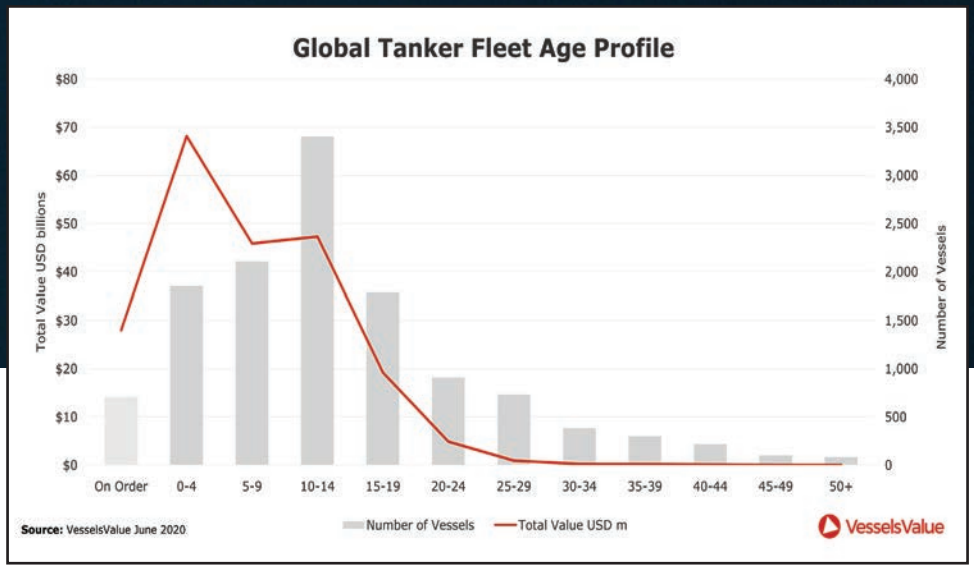
Figures are now circulating around the $30,000 a day mark and seem to have plateaued. The earnings boom occurred after OPEC failed to agree output limits which resulted in a price war. This increased the demand for large tankers due to increased traded volumes and storage and caused positive values for most Tanker types, for a short period of time.

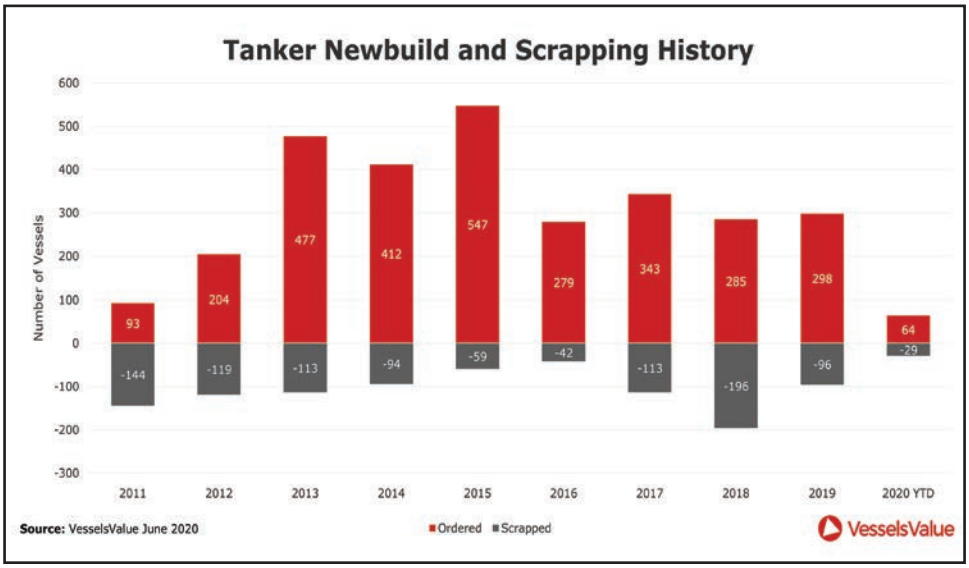
Although the number of sales were down 2020 YTD, the total spent in the second-hand market was up 3% on last year. This can be explained by the high prices being paid on vessels in the crude market where new owners were willing to pay premiums for prompt delivery into the hot market.

Tanker demolition rates have taken a tumble since the beginning of the year with the Indian Sub-Continent closing during the midst of lockdown, this led to few demolition deals being completed.

The year started with steel plate prices at $425/LDT which have since declined to $315/LDT.







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2020 yearbook

Market: *Bulkers*

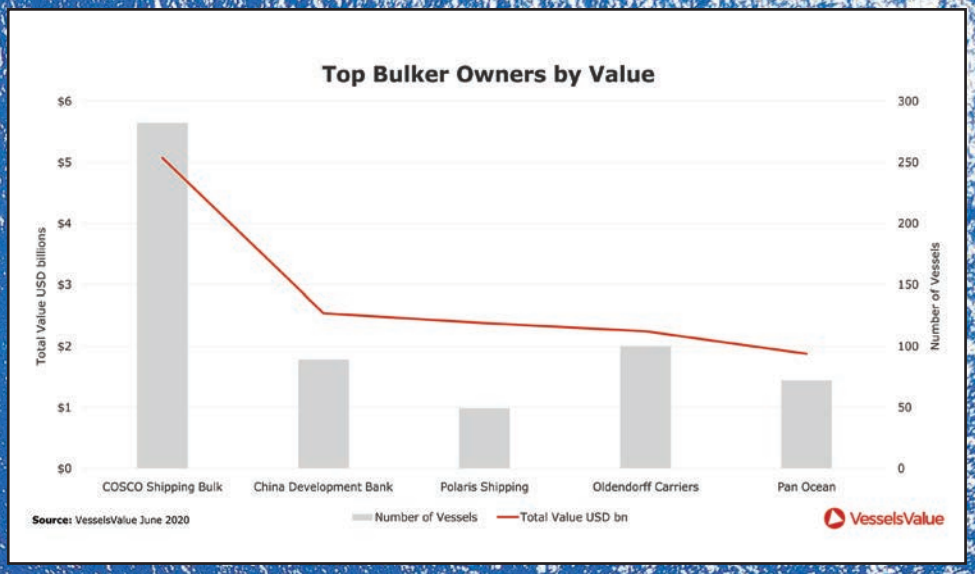
Olivia Watkins, Head Cargo Analyst, Vessels Value

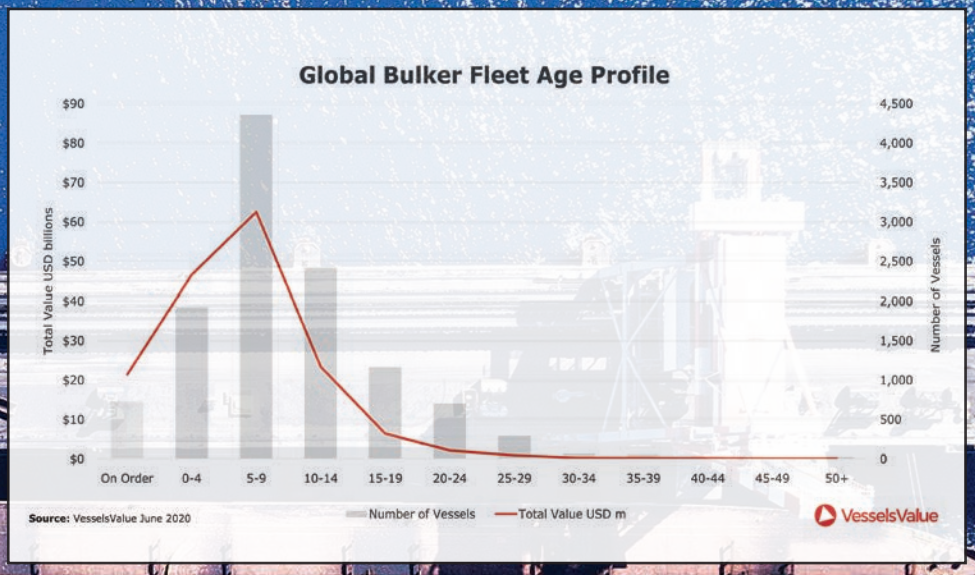
The number of Bulker orders were down 30% for 2020 YTD compared to the same period last year. From the 1st of January 2020 when the Chinese market and shipyards closed due to the pandemic, until today, we have only seen $1,037 mil spend in the Bulker NB market, down 35% for the same period in 2019. The Chinese government have now started up the economy again and most of the orders placed are by companies like China Development bank and Bank of Communications all being built at Chinese yards.

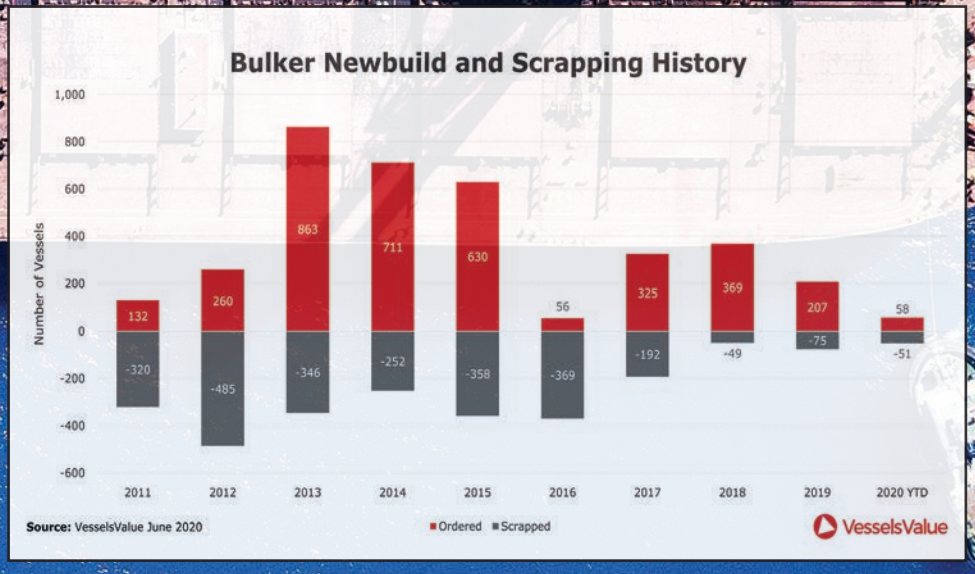
COVID-19 has hit the Bulker market hard and values have taken a substantial tumble since the beginning of the year. This is mainly due to the softening in earnings we have seen since the beginning of the year. Earlier in February/March, we saw the Capesize and Panamax market falling dramatically, this has now caught up to the smaller sizes with the biggest fall in values seen in the older Supramax and Handysize vessels. From the beginning of the year until now, Capesize rates fell by c.80% and smaller Bulker sizes only by 60 -70%.

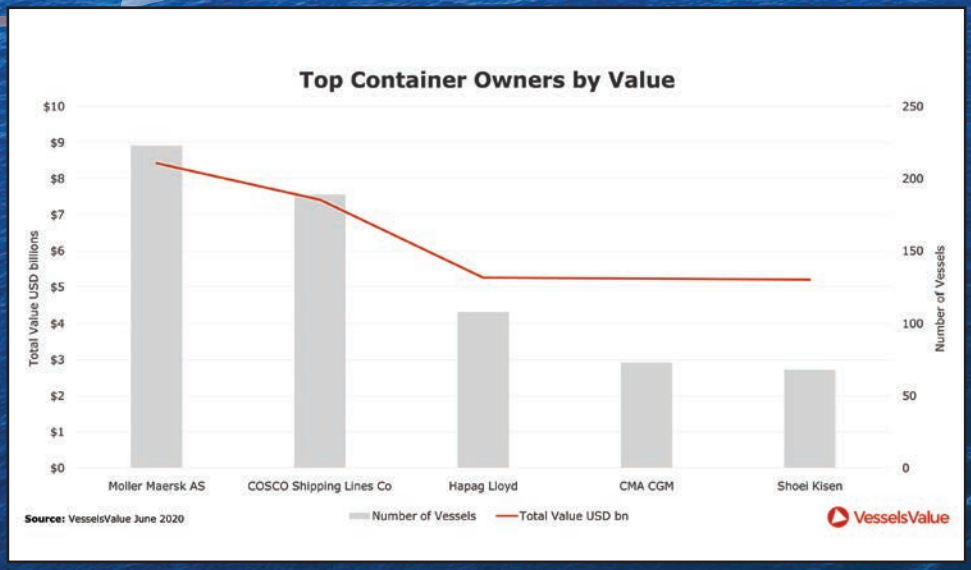
The number of deals transacted also fell by 40% compared to YTD 2019 with only four deals confirmed in the month of April 2020. Having said this, the number of deals in May 2020 showed signs the market is beginning to pick back up, with a high proportion of Greek companies taking advantage of low ship prices and buying when the markets down.

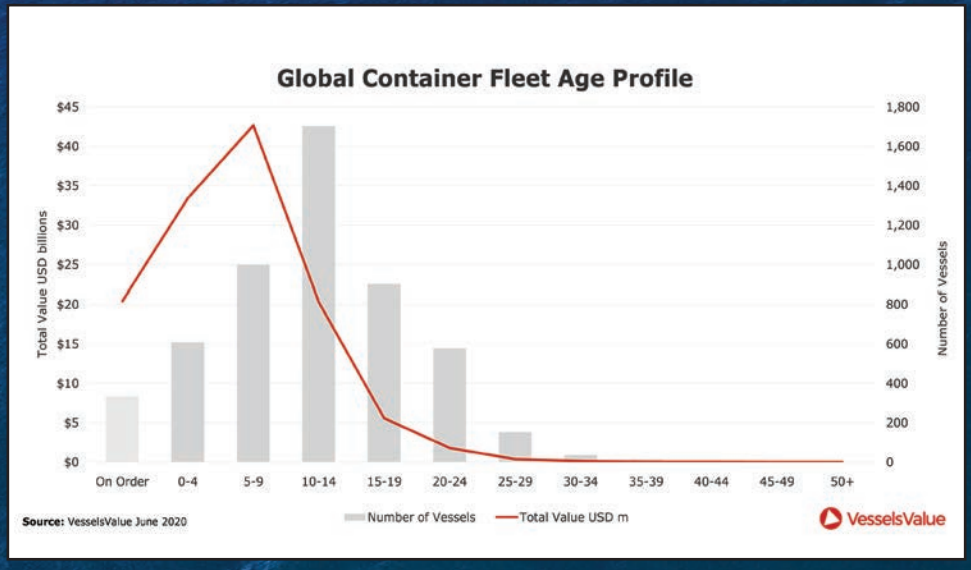
Although the Sub Continent steel plate price fell from $410/LDT to $295/LDT between the months of January and May, we have seen an increase on demolition deals done by c.40% YTD compared to YTD 2019 due to the poor market.

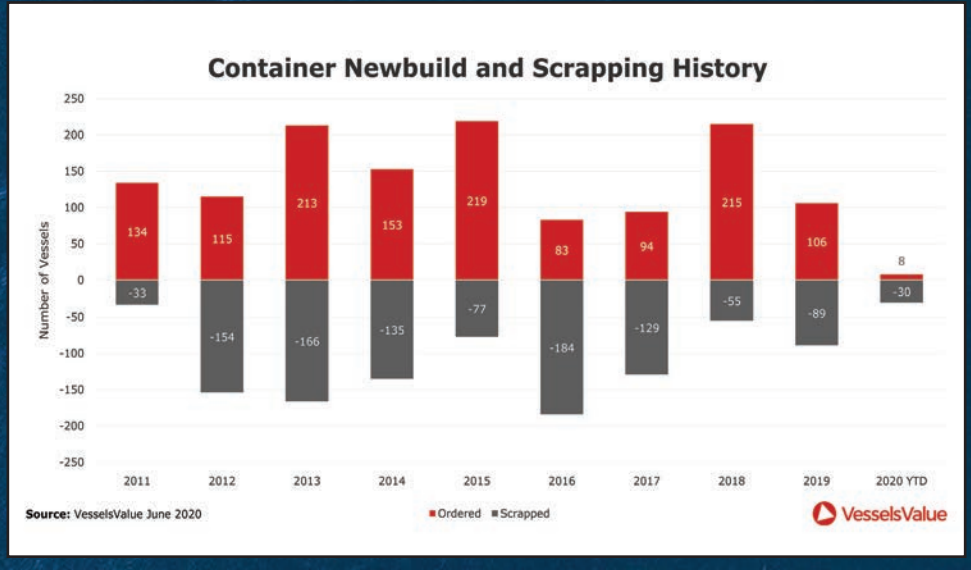







Top Container Owners by Value
$10
$9
$8
$7
$6
$5
$4
$3
$2
$1
$0
Total Value USD billions
250
200
150
100
50
0
Number of Vessels
Moller Maersk AS
COSCO Shipping Lines Co
Hapag Lloyd
CMA CGM
Shoei Kisen
Source: VesselsValue June 2020
Number of Vessels
Total Value USD bn
VesselsValue


Global Container Fleet Age Profile
$45
$40
$35
$30
$25
$20
$15
$10
$5
$0
Total Value USD billions
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
Number of Vessels
On Order
0-4
5-9
10-14
15-19
20-24
25-29
30-34
35-39
40-44
45-49
50+
Source: VesselsValue June 2020
Number of Vessels
Total Value USD m
VesselsValue


Container Newbuild and Scrapping History
250
200
150
100
50
0
-50
-100
-150
-200
-250
Number of Vessels
134
-33
115
-154
213
-166
153
-135
219
-77
83
-184
94
-129
215
-55
106
-89
8
-30
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020 YTD
Source: VesselsValue June 2020
Ordered
Scrapped
VesselsValue

Market: *Containerships*

Olivia Watkins, Head Cargo Analyst, Vessels Value

The only orders to be placed since the beginning of the year are from OOCL and Great Horse China for a combination of 7 ULCV's ranging in size. This is a drop of 86% compared to this time last year and can only be due to the Covid-19 outbreak.

As the global lockdown intensified through March, rates and values across all sizes fell. We have seen the larger 8,500 TEU tonnage earnings fall by c.40% since the start of the year which has bought values down a considerable amount. Container traffic out of the East picked up from the end of March as the situation in Asia, particularly China, started improving. However, the escalation of disruption in Europe and the US and the related fall in consumer activity caused Containership journeys in the west to fall off at the end of March. Considering the extent of disruption to earnings and ton mile demand, we only saw sales fall by c.20% compared to YTD 2019 with the majority taking place at the beginning of the year.

The scrapping market has remained relatively stagnant and has been impartial to the closing of the sub-continents. Although steel plate prices feel by over 20% in the space of 3 months, we have started seeing the Container markets in the sub-continent open up again.

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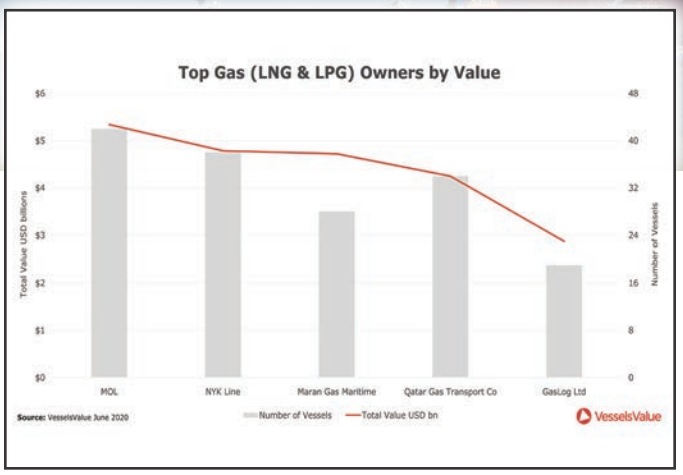

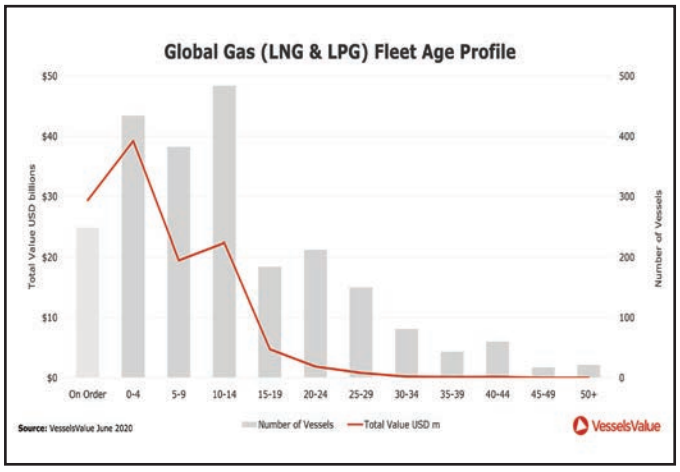

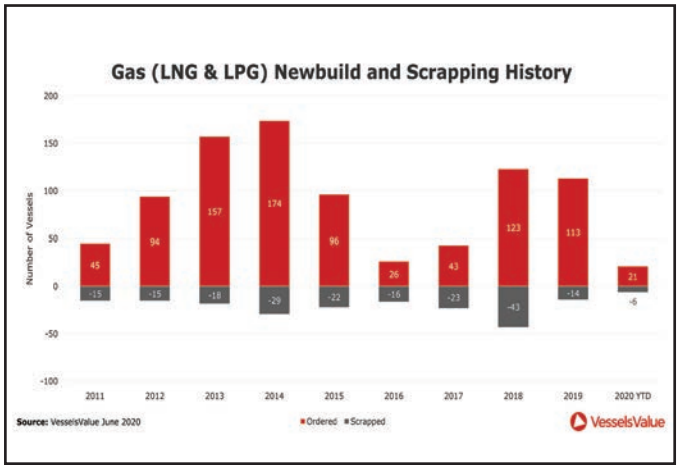

Market: *Gas Carriers*

Olivia Watkins, Head Cargo Analyst, Vessels Value

LNG shipping hasn't been able to avoid the negative impact of Covid-19 as Gas demand fell during the first quarter of 2020. The residential sector recorded the largest drop in consumption this year compared to 2019 which wasn't helped by the mild winter seen in the US. The shut-downs of major economies and more specifically shut-ins of cargoes due to the historically low gas prices means we have basically witnessed demand destruction. LNG rates have fallen since the beginning of the year with the 1 year time charter dropping by 80%. Figures back in January were circulating around the $80,000/day mark whereas today we are only seeing earnings of $16,000/day.

Larger LPG vessels have also suffered since the beginning of the year with a fall in values. Rates for large LPG carriers fell by 35%. Crude prices fell throughout March, making LPG less competitive for petrochemical producers and reducing overall demand for LPG. However, we are seeing a higher demand for propane from Chinese plants, where things are beginning to get back to normal and restrictions after COVID-19 lockdown are gradually being lifted.

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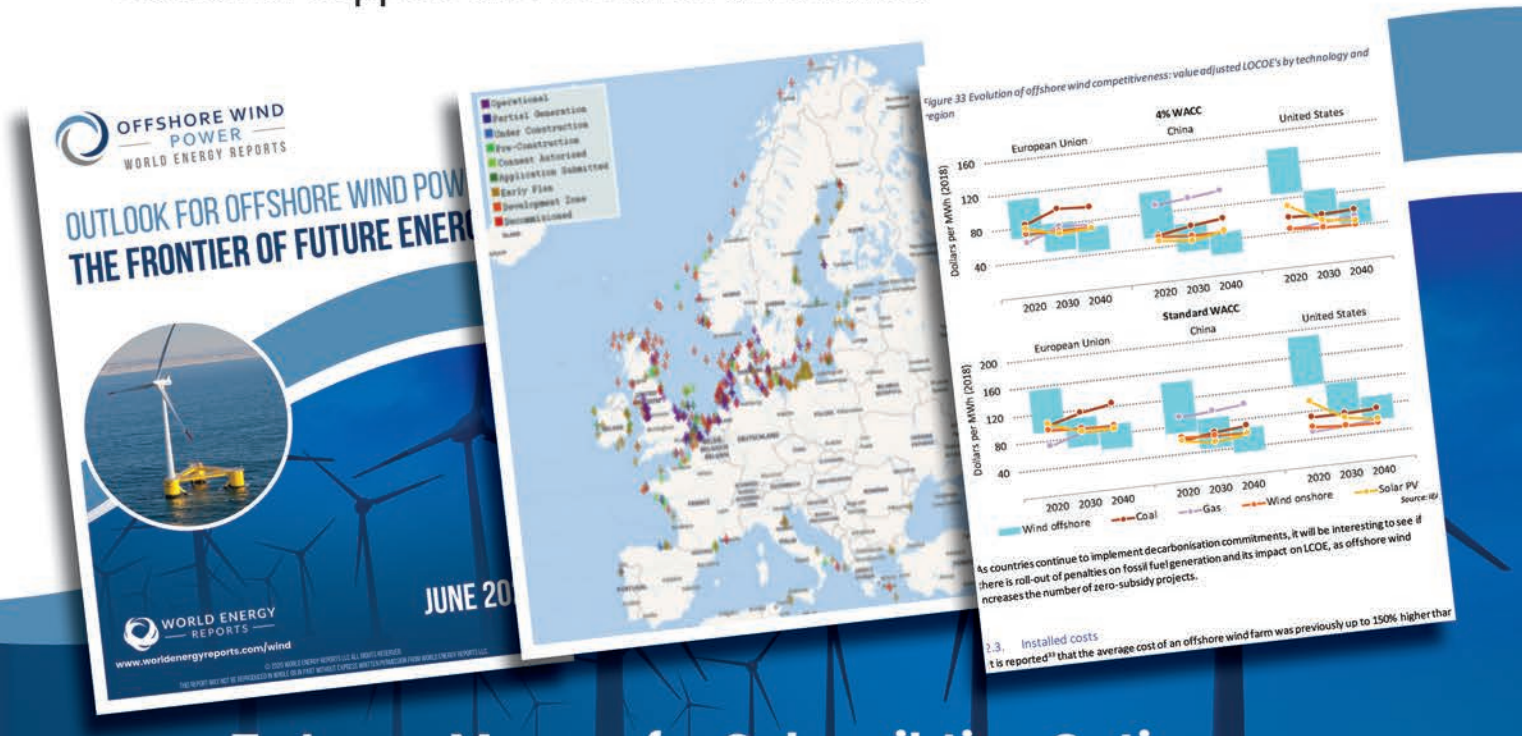

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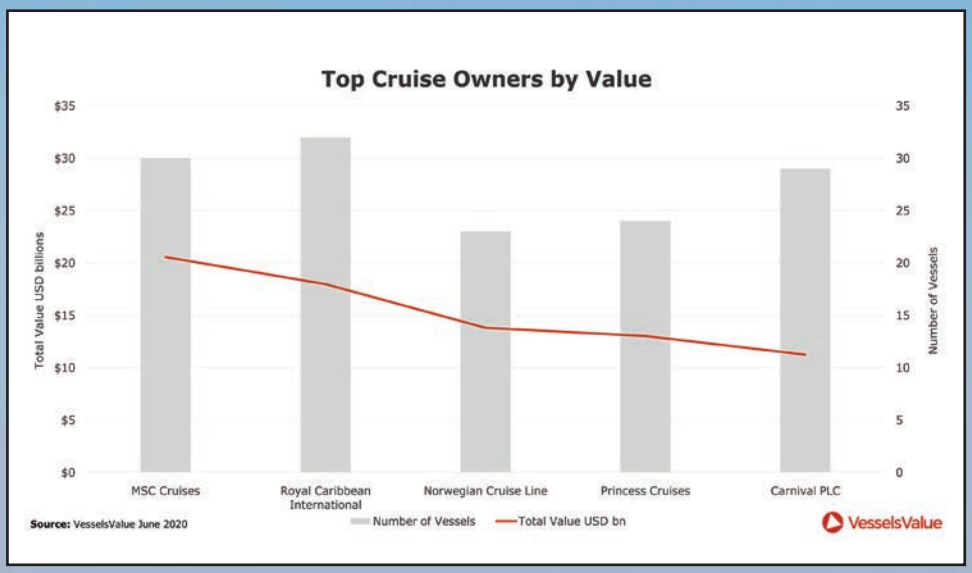
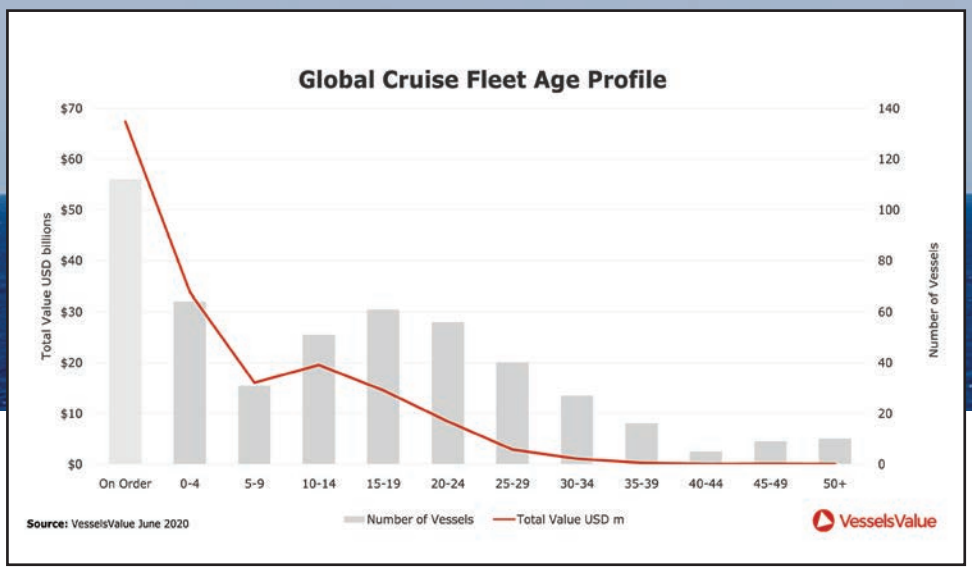
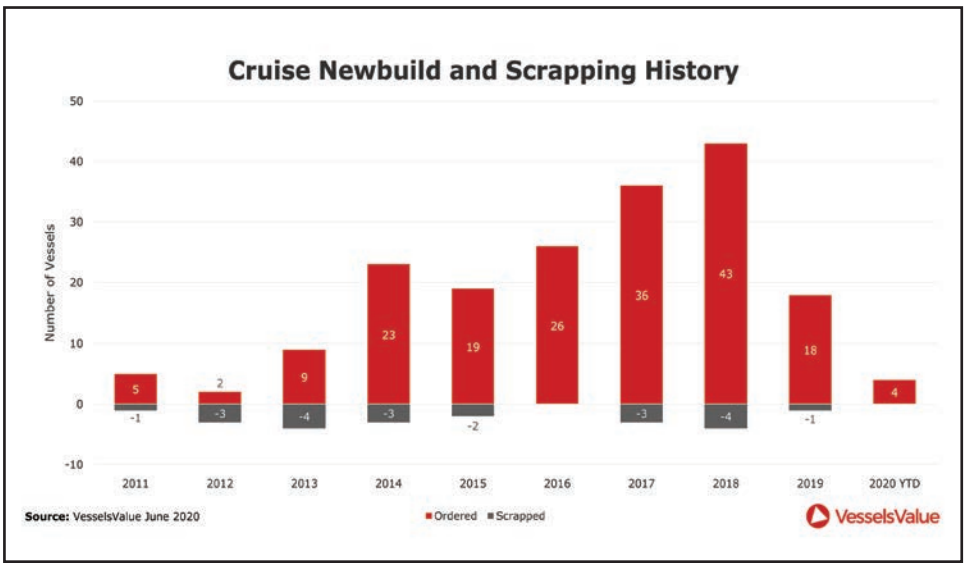

Top Cruise Owners by Value
Total Value USD billions
$35
$30
$25
$20
$15
$10
$5
$0
Number of Vessels
35
30
25
20
15
10
5
0
MSC Cruises
Royal Caribbean International
Norwegian Cruise Line
Princess Cruises
Carnival PLC
Source: VesselsValue June 2020
Number of Vessels
Total Value USD bn
VesselsValue


Global Cruise Fleet Age Profile
Total Value USD billions
$70
$60
$50
$40
$30
$20
$10
$0
Number of Vessels
140
120
100
80
60
40
20
0
On Order
0-4
5-9
10-14
15-19
20-24
25-29
30-34
35-39
40-44
45-49
50+
Source: VesselsValue June 2020
Number of Vessels
Total Value USD m
VesselsValue


Cruise Newbuild and Scrapping History
Number of Vessels
50
40
30
20
10
0
-10
5
-1
2
-3
9
-4
23
-3
19
-2
26
36
-3
43
-4
18
-1
4
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020 YTD
Source: VesselsValue June 2020
Ordered
Scrapped
VesselsValue

Market: *Cruise*

Guy Cooper, Vessels Value

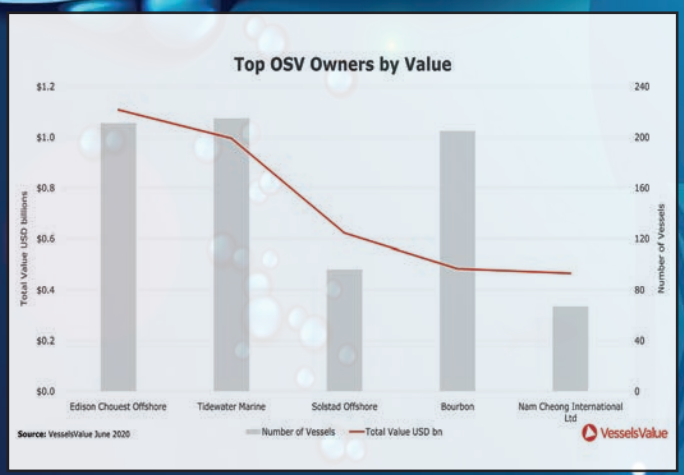
Heading into 2020 the Cruise Industry was booming. Number of passengers who went on Cruises in 2019 was at an all time high. A trend mirrored by the exponential fleet growth since the 1950s. However, COVID-19 caused an industry wide shut down. Since the start of the year, activity has fallen nearly 50%. This is a dramatic decrease and is unprecedent in the cruise industry, especially when compared to last year which during the same period, activity never dropped more than 10%. These current lows are expected to continue, until normal operations slowly resume.

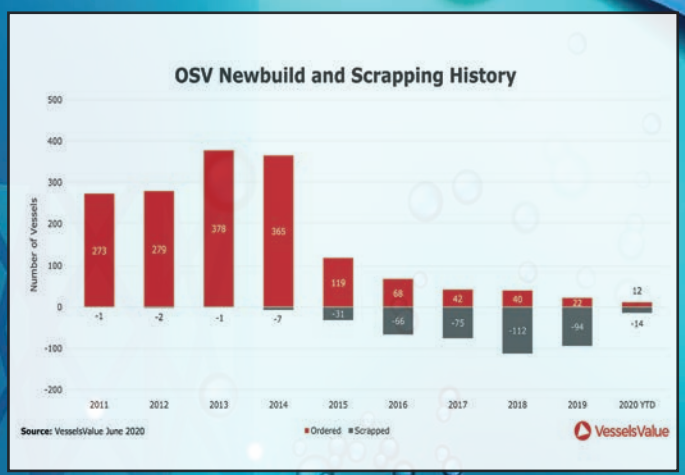
Like activity, cruise values have also taken a tumble since the start of the year.

Some of these billion dollar assets have become financial liabilities with several high priced vessels are laid up and out of action. The global cruise fleet has decreased in value by $6.36 billion. The 2010 built Mega Cruise ships are the hardest hit area, falling in value by over 8% compared to the start of the year.

A total of 103 cruise ships are set for delivery over the next eight years. 77 of these will be going live by 2024, meaning the global fleet is set to increase by over 20% in the next three years. Adding a further $42.3 billion in value to the waters.

The start of 2020 has seen the lowest numbers of cruise ship orders placed since 2012. This year Mystic Cruises placed one order for 4x small cruise expedition ships. However, the current pause and delays on cruise ship orders can be seen as a positive. With a large number of cruise ships on order leading into the year, the caution here is to ensure the market is not oversupplied by newbuilds without the required increase in demand and confidence of passengers to Ccruise again.


Top OSV Owners by Value
$1.2
$1.0
$0.8
$0.6
$0.4
$0.2
$0.0
Total Value USD billions
240
200
160
120
80
40
0
Number of Vessels
Edison Chouest Offshore
Tidewater Marine
Solstad Offshore
Bourbon
Nam Cheong International Ltd
Source: VesselsValue June 2020
Number of Vessels
Total Value USD bn
VesselsValue


OSV Newbuild and Scrapping History
500
400
300
200
100
0
-100
-200
Number of Vessels
273
279
378
365
119
68
42
40
12
-1
-2
-1
-7
-31
-66
-75
-112
-94
-14
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020 YTD
Source: VesselsValue June 2020
Ordered
Scrapped
VesselsValue

Market: *Offshore*

Robert Day, Head of Offshore, VesselsValue

Echoing the same sentiment as last year, Offshore newbuild numbers remain non-existent. Over supply still haunts the sector and full recovery to a market that can sustain newbuild activity is a long way away. Most banks are also reluctant to provide finance to the offshore sector, especially newbuilds, due to the losses incurred during the current downturn and the poor future market outlook for the sector.

It has been another strong year for sale and purchase activity within the offshore sector (see graph below). The industry saw the influx of non-offshore players taking advantage of depressed asset prices and picking up cheap tonnage, good quality tonnage for use outside of the oil and gas industry. Example PSV Highland Navigator (4,500 DWT, blt 2002, Vard Soviknes was sold to Baltmed Reefer Services for usd 2.2 mil. VV Value usd 2.1 mil. Vessel to be converted for charitable beach cleaning operations in Greece. Tidewater also continued its fleet overhaul and sold several vintage, out of class and/ or laid up units.

Tidewater PSV sales

- Highland Monarch 3,100 DWT, blt 2003 Vard Brattvag sold Raj Shipping agencies for $800k. VV value $1.95 mil.
- Highland Fortress 3,200 DWT, blt 2001, Vard Soviknes sold to IT International Telecon Canada for $0.5 mil. VV value $1.45 mil.
- North Stream 4,600 DWT, blt 1998, Vard Soviknes sold to Hoyland Offshore for $1.1 mil, for conversion to ERRV. VV value $1.3 mil.

Tidewater AHTS sales

- Errington Tide 5,000 BHP, blt 2009, ASL Marine sold to Ships and Boats Oil Services (Egypt) for $1.3 mil. VV value $1.4 mil.
- Stricklin Tide 5,000 BHP, blt 2009, ASL Marine sold to Petromarine Offshore Projects (Egypt) for $1.3 mil. VV value $1.2 mil.

Scrapping

Scrapping numbers slightly less but still strong when compared to historical figures. Notable scrapping deal of 2020 was Tidewater finally disposing of the ex Gulfmark long term layup units in Sunderland UK. Price 'as is' $125/LDT to Turkish demolition buyer.

Tidewater Sunderland Demolition sales

- PSV Highland Eagle, Bugler, Rover 3,200 DWT, blt 2003/2002/1998, Vard Brattvaag
- PSV Highland Challenger 3,100 DWT, blt 1997, Vard Soviknes
- AHTS Highland Courage, Endurance and Valour 16,300 BHP, 2002/2003, Vard Soviknes

The Rig Market

Covid 19 has affected the rig sector heavily, the aggressive reduction in oil price and oil demand has forced most oil majors to decrease CAPEX with a significant emphasis on reducing exploration and production investment. This has inevitably filtered through to the MODU sector and several MODU owners have experienced early contract terminations, full cancellations or rigs idled. Applying huge pressure on the already fragile sector.

Within the sale and purchase market, the most notable transaction was Magni Partners agreeing with Sete Brasil and Petrobras to purchase the two incomplete semi submersibles and two incomplete drillships (outlined below) for $296 mil with a ten-year charter agreement with Petrobras, at a rate of $299,000 a day. VV value 02/01/2020 $ 896 mil. VV Value today (28/05/2020) $703.1 mil.

- Semi-submersible, Urca and Frade, 10,000 ft, blt 2020, Brasfels
- Drillship, Guarapari and Arpoador, 10,000 ft, blt 2020, EJA

However, the deal has been delayed due to the Covid 19 pandemic and an extension granted till July 2020. Market rumours suggest the deal could fail or the purchase price renegotiated lower by Magni Partners.

The most lucrative deal of the year was the purchase of the Vitoria 10,000, blt 2010, Samsung, originally bought in October 2019 by demolition cash buyer Best Oasis for $15.05 mil. It was then resold five months later by best Oasis to Allseas group for $24.5 mil. A c. usd 10 mil profit! The rig will be converted to a deepsea mining vessel.

U.S. Offshore Wind in a P

By Thomas H. Belknap, Jr. & Lauren B. Wilgus, Blank Rome LLP

Just when it was looking like the offshore wind industry was finally about to take off in the United States, the COVID-19 pandemic has introduced one more significant layer of uncertainty upon an already very complicated playing field. There are currently 15 active offshore wind projects in the planning stages which, if completed, could add approximately 25 gigawatts of electricity to the power grid.

The State of Play

Things were hard enough already. Cape Wind, the United States' first – and very ambitious – 130 turbine offshore wind project, died under its own weight after years-long delays caused its energy providers to end power supply contracts for the project in 2015. Indeed, just one project – the five-turbine (30 megawatt) Deepwater Wind farm off Block Island – is up and running so far. But, there are a slew of other projects in the pipeline. The two-turbine (12 megawatt) Coastal Virginia Offshore Wind facility – a "test" construction in advance of the planned 2,640-megawatt Dominion Energy Wind Farm – has already started construction and reportedly remains largely on schedule. Several other large projects are in the pipeline to start construction within the next two to three years. The 800-megawatt Vineyard Wind 1 project in Massachusetts was initially scheduled to commence last year until federal regulators determined they needed more time to analyze environmental impacts before they would issue the necessary permit. Recently, the Department of Energy's Bureau of Ocean Management has indicated it will issue its findings by December 2020, setting that project back at least a couple of years from their initial projections. Since the new analysis will require a consideration of the potential "cumulative" environmental impact if other offshore windfarms are built, this delay is likely to cascade to other projects.

Revolution Wind, a 704-megawatt project off the coast of Connecticut and Rhode Island targeted for completion by 2023, has announced delays of their own, also due to permitting issues and effects of the COVID-19 pandemic. Other large projects are facing similar delays.

Among other problems, the delays have jeopardized the projects' access to federal tax credit and investment tax credits. Originally expiring in 2019, the credits were extended for one year to include facilities that begin construction within 2020. The credits can be claimed where a project is placed into service within four years of starting construction – a timetable that may be increasingly challenging due to COVID-19-related delays. Recently, the Treasury Department has signaled to Congress that they will be looking at possible modifications to this rule.

So what does all this mean for the maritime sector? Offshore wind has been tantalizing the industry for years now, and it's no wonder why. The American Wind Energy Association predicts that the offshore wind projects could create up to 83,000 jobs and $25 billion in annual economic output by 2030. Already, the AWEA reports, companies have announced well over a billion dollars in port-related infrastructure, transmission infrastructure, manufacturing facilities and supply chain development.

Meanwhile, in other parts of the world, offshore wind development and infrastructure is already well developed, particularly in places like northern Europe where the first offshore wind farm was erected in 1991. Unsurprisingly, many companies from those markets are looking closely at the United States as a major new opportunity, and not just for the installations, but also for design, fabrication, consulting, service and maintenance, and every other aspect of this specialized work. And they are right to do so, for there remains a shortage of expertise in the United States when it comes to offshore wind projects, and experienced companies will have much to offer in this new market.

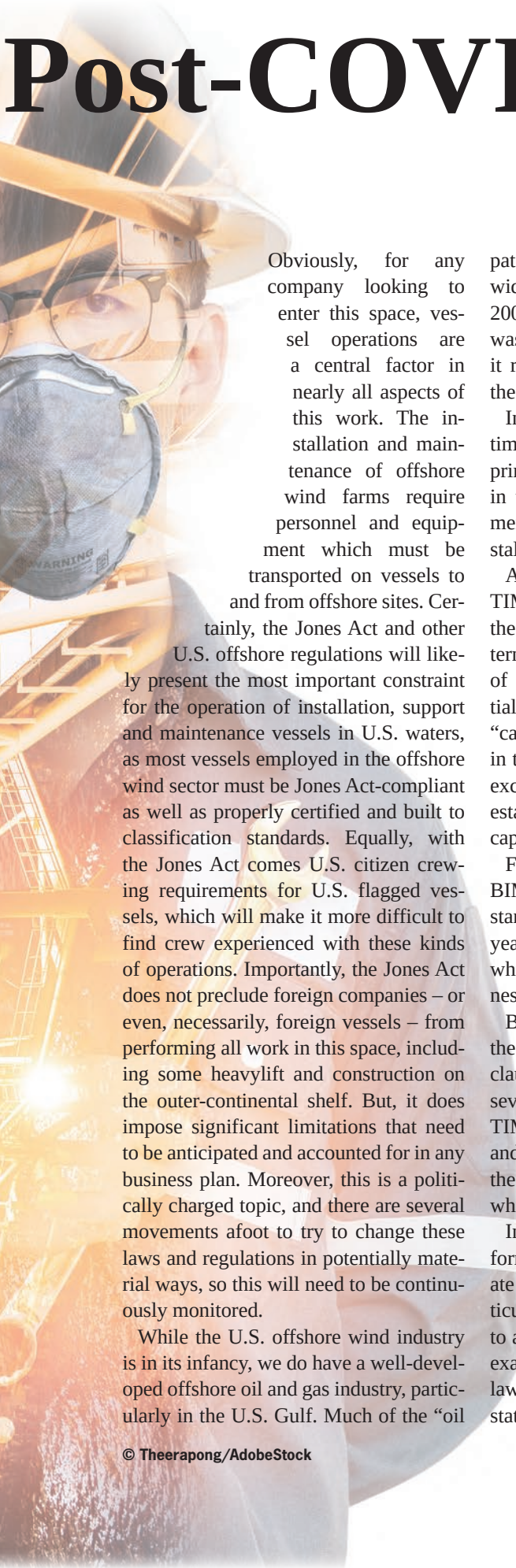
Entering the Market

Of course, the United States – and the various states in which these projects are located – are quite different in many respects, and local knowledge is a must for any company who aims to enter a local market. Foreign companies looking to take advantage of these new attractive opportunities should consider several factors before doing so.

Many foreign companies have started to develop a U.S. presence or open a local office. Beyond the strategic considerations of where to open relative to where the work and the clients are located, such a decision of course also requires proper due diligence to ensure compliance with U.S. real estate, tax, employment, regulatory, immigration and environmental laws.

Foreign wind energy companies also must ensure compliance with U.S. statutes and regulations, including U.S. anti-corruption laws, such as the Foreign Corrupt Practices Act, U.S. trade and investment sanctions, and anti-money laundering law, among others.

Post-COVID-19 World



Obviously, for any company looking to enter this space, vessel operations are a central factor in nearly all aspects of this work. The installation and maintenance of offshore wind farms require personnel and equipment which must be transported on vessels to and from offshore sites. Certainly, the Jones Act and other U.S. offshore regulations will likely present the most important constraint for the operation of installation, support and maintenance vessels in U.S. waters, as most vessels employed in the offshore wind sector must be Jones Act-compliant as well as properly certified and built to classification standards. Equally, with the Jones Act comes U.S. citizen crewing requirements for U.S. flagged vessels, which will make it more difficult to find crew experienced with these kinds of operations. Importantly, the Jones Act does not preclude foreign companies – or even, necessarily, foreign vessels – from performing all work in this space, including some heavylift and construction on the outer-continental shelf. But, it does impose significant limitations that need to be anticipated and accounted for in any business plan. Moreover, this is a politically charged topic, and there are several movements afoot to try to change these laws and regulations in potentially material ways, so this will need to be continuously monitored.

While the U.S. offshore wind industry is in its infancy, we do have a well-developed offshore oil and gas industry, particularly in the U.S. Gulf. Much of the "oil patch" vessel work has been fixed on the widely used time charter SUPPLYTIME 2005 form. However, because that form was intended for the oil and gas industry, it required extensive amendments to fit the needs of the offshore-wind sector.

In 2013, BIMCO released a specialized time charter party called WINDTIME, primarily designed to cover vessels used in the transfer of personnel and equipment to and from offshore wind farm installations.

Among other changes to the SUPPLYTIME 2005 form, WINDTIME clarified the details and mechanics of the standard termination clause, contained an update of the knock-for-knock and consequential losses clauses, eliminates confusing "cargo" clauses that rarely are applicable in the supply vessel context, clarifies the exclusion of consequential damages, and establishes a mechanism for a monetary cap on liability.

Following the success of WINDTIME, BIMCO made several revisions to the standard SUPPLYTIME form and a few years ago released SUPPLYTIME 2017, which updated and addressed key weaknesses in the 2005 form.

Because WINDTIME is modelled on the SUPPLYTIME form, many of the clauses are nearly identical. However, several important provisions in SUPPLYTIME and WINDTIME are not aligned, and caution should be taken to ensure that the form being used meets the needs for which it is being applied.

In addition to selecting the correct form, the parties should ensure appropriate amendments are made to cover particular risks and issues that may arise and to align it to the needs of the parties. For example, because U.S. federal maritime law differs from state law – and because state law can vary in important respects from state to state – selecting the applicable law to govern the contract is critical, as the parties may have different and perhaps more favorable rights under federal maritime law than they would have under state law. This is particularly important when considering the scope and enforceability of contractual provisions – such as knock-for-knock clauses, by which each party assumes the risk of loss or injury of its own property and employees, which varies from state to state. For instance, whereas the U.S. federal maritime law generally recognizes and enforces knock-for-knock indemnity clauses, New York state law contains a provision in its General Obligations Law that invalidates knock-for-knock provisions in certain kinds of construction contracts.

Dispute resolution is another important consideration that is often overlooked. Historically, many maritime disputes are submitted to arbitration before the Society of Maritime Arbitrators, Inc. in New York or before the Houston Maritime Arbitration Association in Texas. The arbitrators in these organizations are extremely knowledgeable maritime commercial people who are well equipped to handle disputes both large and small in this area, and they can be expected to expand their capabilities in the offshore wind sector as the industry expands and matures.

Conclusion

Despite the many challenges, the U.S. offshore wind industry is on the precipice of great development and expansion. As with any new and emerging industry, there will be winners and losers in the market. Those who succeed will be those who are best equipped with experience and knowledge so that they can anticipate the many twists and turns still to come.

Setting the Course to Low

By Georgios Plevrakis, Director of Global Sustainability, ABS

The pace at which the maritime industry transitions to low- and zero-carbon fuels will have the single biggest impact on its global carbon footprint, more than predictable shifts in commodity demand, advances in ship technology and operating practices, or new designs.

That is a key finding of a comprehensive new report, Setting the Course to Low-Carbon Shipping, from the American Bureau of Shipping

The report looks at the decarbonization of shipping via two distinct scenarios: a 'standard' scenario, which uses publicly available forecasts for energy demand and global trade to anticipate fleet growth; and an 'accelerated climate action' (ACA) scenario, which examines the potential impact on those forecasts from an escalation in global efforts to combat climate change.

Both scenarios use their analyses to anticipate vessel demand in five key sectors and across 10- and 30-year horizons, as well as examining the influence that fleet fluctuations will have on the ability of shipping to meet the IMO's emission-reduction targets for 2030 and 2050.

The international trade of five key ship types are examined in the report: dry bulk carriers; oil & chemical carriers; containerships; and gas carriers. Those ship types comprise the majority of the deep-sea fleet and are expected to account for 68% of global emissions from shipping this year.

In the standard scenario, energy consumption and trade forecasts were mapped against projections for the adoption of low- and zero-carbon fuels to suggest that, by 2050, shipping will remain dependent on fossil fuels for about 40% of its fuel requirements.

If that proves true, further analysis suggested the industry was likely to meet the IMO's mandate to reduce its carbon intensity (CO2 emissions per 'transport work') by 70% by 2050, but will fall short of its most ambitious target, an outright 50% reduction in greenhouse gasses by that time.

In short, following the present course of the standard scenario will not be enough; more paths to decarbonization need to be pursued, or the present ones need to be accelerated. There is a gap between the industry's present course, and its stated ambition.

To bridge that gap, regulatory and policy frameworks will need to be revised, either to encourage a global faster transition to more renewable forms of energy, or to escalate shipping's technical development of low- and zero-carbon fuels, electrified power generation systems and /or onboard systems to capture carbon.

For shipping, it will not come without cost. Any transition to low- and zero-carbon fuels can be expected to increase the cost of vessels and their operation in the medium term, until the technologies associated with fuel production, distribution, bunkering and combustion become more cost effective.

Another area that will impact the decarbonization of shipping is the rate of electrification of the power generation and propulsion systems. Relatively new systems such as hybrid diesel-electric or fuel cells have the potential to offer significant emissions benefits.

Their market penetration is increasing, mostly on local routes and within environmental control areas; however, their adoption in larger vessels will require more technological innovation, operational certainty and the cost reductions derived from economies of scale.

The report identifies three basic fuel pathways towards the decarbonization of the fleet: light gas; heavy gas & alcohol; and bio- or synthetic fuels.

All three pathways start with fuels that are currently used in power-generation and propulsion systems – such as liquefied natural gas (LNG), methanol and biodiesel – and have the proven potential to reduce CO2 and other regulated emissions.

Longer-term fuels, such as hydrogen, may not be currently available. But they are all under consideration and it is expected that they will enter the market at varying rate. Low- and zero-carbon fuels that have low volumetric energy content – ammonia or hydrogen – may require holistic designs of vessels to be used as primary fuels.

The report presents a variety of forecasts, fuels and technological options to provide the type of insights that can help ship owners to make informed decisions. ABS remains fuel and technology agnostic and acknowledges that any selection has to be addressed from a safety and practicality perspective.

Furthermore, market conditions are expected to influence the fuel selection for each vessel.

As a example, since the report's publication, the COVID-19 pandemic has derailed the global economy and sent oil prices to levels that could reduce incentives to invest in developing low-carbon technologies. Nevertheless, any 30-year forecast accounts for temporary shocks.

In the interim, acquisition-minded ship owners with an eye on the 2050 emissions targets are faced with complex decisions with many fuel choices to consider and uncertain timelines for their availability at commercial scale.

To some degree their vessels' trade profiles will help to narrow the options of suitable fuels, at least in the short-to-medium term.

Both short- and deep-sea vessels can

w-Carbon Shipping

be used for international trade and carry similar types of goods. However, the markets are distinctly different in terms of ability to adopt new technology, available resources and the complexity of their regulatory frameworks.

Short-sea vessels tend to operate in environmentally sensitive areas, such as U.S. coastal waters, the Baltic Sea, inland rivers or lakes located close to urban areas, where emissions are strictly regulated.

Their trade and regulatory landscape can make them ideal candidates for early adoption of new fuels and the technologies that promote environmental sustainability, including LNG, methanol and ammonia, as well as hybrid-electric power generation and propulsion systems.

While fuels such as methanol and ammonia have a strong potential to lower carbon output, their low energy content – which limits the amount of energy they can store in the standard tanks of today's ships – presents a challenge. Similar challenges arise from the use of batteries in hybrid-electric propulsion systems that require frequent recharging when being periodically operated in full electric modes.

Simply put, short-sea shipping is better suited for the use of fuels and systems that require frequent bunkering and/or charging. Many also operate in single regulatory jurisdictions, which can be attractive proving grounds for the early adopters of emerging technologies.

The adoption of low- and zero-carbon fuels for deep-sea vessels is more challenging. Using fuels with low-energy content would require a significant redesign of vessels, primarily because their fuel tanks would need to be expanded to store enough energy for the longer hauls.

Also, from a commercial perspective, the larger ships tend to be designed to carry a single type of cargo, which are more vulnerable to market fluctuations. This uncertainty makes their owners more cautious about adopting new technologies until they are operationally and economically proven.

As the new fuels and technologies become viable, the operational profile of each vessel will have a great influence on their adoption as owners pursue their most efficient pathway to a zero-carbon future.

E-Navigation is the *Future of Shipping*

Trading worldwide without electronic tools is no longer an option, young navigators and crew are switched on to digital technology and they want to have this new technology at their fingertips rather than the messy, slow and labour and paper-intensive methods of the past. Tor Svanes, the founder and CEO of NAVTOR, believes that electronic chart and display information systems (ECDIS) is now a must have navigational tool in the modern era.

ECDIS has become the modus operandi on all ships, even those working on vessels that are not so modern.

"Navigating the future of shipping is crucial and young navigators no longer want to use paper charts, they are time consuming and far less accurate than their electronic counterparts," explained Svanes.

According to Svanes modern ECDIS systems overlaid with passage planning, regulatory information and weather reports, among other things is far easier operationally for crew. Svanes accepts that in the beginning there were teething problems, but he adds, "There is very little negativity about ECDIS these days, it has more integration with other systems and other equipment while updating charts with other data is a simple download."

That means that systems are always up to date and with modern systems the standardization of the display is simple, believes Svanes. What is more with new displays all reports can be available in one window.

The biggest change for ECDIS will come in 2024

However, the biggest change for ECDIS will come in 2024 with the changes to chart formats. "Practically it won't be that much of change," Svanes partially corrects himself, "But the systems upgrades may mean that some operators will require new systems," he admits.

There won't be any "backwards regulation" says Svanes but operators will need a system that complies with the new standard. And that will offer charts with more data and more detail, finer scale and more accurate, clearer displays.

What is more is that new chart displays will have the capability of displaying new regulations or regional regulations on screen allowing crew to plan a voy-

"Navigating the future in shipping necessarily requires the industry to navigate away from its old operational measures and into a digital realm that is developing fast, and is fast developing the maritime sector"

Tor Svanes, founder & CEO, NAVTOR

age with accuracy and knowledge of the weather conditions and the different regulatory regimes it will be sailing into.

A significant example is the latest offering from the International Maritime Organization (IMO) which introduced the IMO 2020 sulfur cap on January 1, 2020. Following the sulphur regulation there will be a regulation on the carriage of HFO, ballast regulations will be in place and a raft of decarbonization measures expected in the near future.

Other more regional regulations, such as the discussions over a new Mediterranean emissions control area (ECA), which have started the process for an all Mediterranean agreement to match those in the Baltic and the US, and it is these regional rules that make the regulatory map complex for vessel operators.

In addition to the international and regional rules there are an increasing number of port rules, these regulations are very localized and can vary widely, meaning masters have a tough time knowing which regulations apply at the various destinations to which they are travelling, with a number of ports called on any particular voyage.

It is important for masters to be aware of local regulations. For example Port Everglades in the US prohibits the discharge of ballast water, including the discharge of treated ballast water within the port. Whereas in Abu Dhabi, in the United Arab Emirates, above the water line hull cleaning and painting is prohibited as is boiler and economizer blow down, grey water discharge and underwater hull cleaning.

Failure to meet these complex regulations can be costly with severe fines, particularly in the EU and US waters, the need for clarity is real. NAVTOR's Memorandum of Understanding (MoU) that it signed with Total Marine Solutions (TMS) offers owners and operators the kind of clarity that is needed to avoid falling foul of regulatory authorities.

Complex regulations often require advanced and costly mitigation technologies such as ballast water treatment systems or scrubbers, or even just low sulfur fuel where crew will need to test blends, make sure that tanks are cleaned and that the switch to a more expensive fuel is safe.

As the regulations change masters need to know which rules apply in each region and what mitigating actions need to be implemented to make certain that the vessel that they are operating remains compliant in all jurisdictions.

TMS launched its Ocean Guardian software in 2017 and it is designed to offer advice to crew and simplify the regulatory requirements as the ship heads into new regional jurisdictions, pertaining to port restrictions as well as mandatory rules on emissions and ballast water, so that the crew are prepared for what lies ahead.

Alexandra Anagnostis-Irons, President of TMS, said, "This kind of collaboration – with expert partners leveraging each other's skills and technology – is the way forward for an increasingly demanding maritime industry."

In offering an e-navigation system with regulatory updates NAVTOR MD Tor Svanes believes that the most pressing issue for the service provider here is to make certain that all the information is correct and is up to date.

Gaute Fossmark, the environmental officer at NAVTOR, believes that this is a crucial issue for the combined systems. "Using data supplied by TMS the updating of changes to regulations is fully automatic, so that the customer does not need to worry about updates to the software, they see no updates," he said.

TMS's technical department makes certain that all data is harvested and updates its systems on a bi-weekly basis, while NAVTOR updates its electronic navigation chart (ENC) every week.

Fossmark believes that the regulatory regime is becoming increasingly complex with new rules applied at ports, "regional and port regulations are the hardest to get hold of," according to Fossmark, with special rules applied by some ports for items such as waste management.

These changes offer substantial cultural and work-related changes for crew, but the biggest change so far has been the switch to ECDIS from paper charts. The next move will be an upgrade to the systems expected in 2024 which will see higher definition charts and better software.

"Navigating the future in shipping necessarily requires the industry to navigate away from its old operational measures and into a digital realm that is developing fast, and is fast developing the maritime sector," concluded Svanes.

WTW Launches New Cyber Insurance for Ship Owners

By Ben Abraham, Head of Marine, Willis Towers Watson

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Willis Towers Watson, a global advisory, broking and solutions company, unveiled a new type of cyber insurance product for shipowners that redesigns standard cyber policies to better navigate the risks for ship operators in the digital era.

The solution, CyNav, addresses cyber threats in the broadest sense, including losses that occur from cyber-related business interruptions, even when the cyber events originate with third party IT service providers.

CyNav's primary focus is to support the continuity of maritime businesses and help shipowners to resume normal operations as soon as possible following a cyber incident.

The product reaches the industry just as the disruptive potential of malware cyber-attacks on the shipping industry recaptures the headlines.

Barely a week goes by without new cyber events affecting the maritime sector. Many are minor and unreported, but the major cases have caused consequential commercial losses in the hundreds of millions of dollars. CyNav offers a genuinely pioneering marine-specific cyber solution.

In an environment of increasing ingenuity from cyber criminals and growing levels of cyber security governance in the maritime industry, CyNav anticipates the protection that shipowners need to mitigate their cyber risk.

With the industry's course set towards 'smart' shipping, all links in the global maritime supply chain – ashore and at sea – are becoming more connected. Greater exposure to cyber risk is an inevitable side effect.

Previous events have proven that an attack does not have to be targeted at a specific company to disrupt its business. Organizations can be the unintended victims of cyber events, so risk-transfer solutions need to recognize that a company simply can end up as collateral damage.

The CyNav solution, which allows shipowners to reinforce protection against the specific threats unique to their businesses, is designed by cyber and maritime experts. As such, it addresses the coverage gaps found between standard hull and machinery (H&M) and cyber policies, while ensuring that owners only pay for the protection they need.

It is an important advance in corporate risk-transfer options for an industry where most H&M policies have cyber exclusions and many cyber policies do not cover financial losses when normal business operations are interrupted as a consequence of property damage caused by a cyber-attack.

Under CyNav, compensation for cyber-related business interruptions can include loss of gross profit and increased working costs, including payments on account to help with cash flow (a first in cyber).

This level of coverage is not typically offered in marine policies; recent disclosures by listed companies in the maritime sector have shown that these costs can reach hundreds of millions of dollars.

The cover offered by CyNav is built around the changes in the maritime regulatory framework, including the International Maritime Organization's (IMO) forthcoming cyber-security guidelines. From January 1 2021, the IMO will make it mandatory for companies to document compliance with a raft of new measures within their vessel's safety-management systems.

Among those measures are risk assessments, standard cyber-security operating procedures and the education and training of crew and land-¬based employees. A failure to comply would expose a company to potential vessel detainment.

CyNav offers shipowners the option to protect their business against the cost of certain non-compliance with new regulations – both those that govern cyber security and data protection – including revenue that may be lost if a ship is detained.

Extending CyNav's cover to cyber-security legislation provides protection beyond current typical insurance market standards.

Ultimately, CyNav supports business continuity and helps companies to resume normal operations quickly after a cyber event. It is intelligent cyber coverage created specifically for the modern shipping industry and it includes cover from malicious, non-malicious and technical failures.

Ransomware: The IT Danger on the Horizon

By Brendan Saunders, Technical Director & Maritime Lead, NCC Group

Two decades into the 21st century, we're seeing a growing and pernicious threat to global information security: ransomware. Even non-technical folk have loosely heard of it, but the broader implications haven't yet penetrated the public consciousness. In different industries, that general lack of awareness could be a big problem—and the maritime sector is a good example.

Ransomware hits at the confluence of two critical trends in modern technology: the ever-increasing integration of IT systems into daily life, and the interconnectedness of those IT systems. In its 2019 report "Evasive Threats, Pervasive Effects," Trend Micro recorded a 77% uptick in ransomware attacks between the second half of 2018 and the first half of 2019, and it's clear that this threat will only get worse.

So how does this affect the maritime industry? And how should a global business network struggling with technology integration across the board deal with this aggressive mode of attack?

Over the last 10 years, the integration of operational technology (OT) and information technology (IT) systems in the maritime environment has accelerated dramatically. Onboard ships, modern network technologies allow for greater control and monitoring of engineering and mechanical systems, leading to increased reliability and efficiency for vessel operators. For ports and other infrastructure hubs, many key industrial systems now have physical connectivity with the outside world through integration with internal IT-based control systems. Autonomous cranes and driverless flatbed vehicles are now crucial elements in the world's largest ports.

Yet the threats that get the greatest attention are not always those that pose the most imminent threat. Attacks that

© arrow/AdobeStock

could cause safety-critical failures are theoretically possible—in fact, NCC Group has modelled such attacks with customers. However, the cascade of physical and technical failures required for this contingency remain highly unlikely. This kind of damage requires malware that is system-specific and broad enough to override manual safety checks. The only two confirmed instances of such attacks in the wild are Stuxnet and 'Crash Override,' both highly targeted, and nation-state-level attacks.

The real risk is disruption: The attacks on the Port of San Diego, COSCO and Maersk underline how heavy reliance on IT systems coupled with huge outage costs make this a serious concern for the industry. Different maritime facilities were put on high alert after news broke of a ransomware attack during the Christmas break. A virus labelled 'Ryuk' apparently penetrated the MTSA facility through an email phishing attack, then potentially allowed access to important network files and disrupted the port's facility operations for over 30 hours.

Ports across the country and the world are learning from this new breed of attacks, where the targets can be random rather than intentional. For most of the world's port operators, protection from cyberattacks, and ransomware in particular, is a top concern at the board level, and many are collaborating on defense strategies. The first pan-U.S. Maritime Cybersecurity Conference, focusing on port and vessel security, took place in Walnut Creek last December, and brought together experts from across the industry spectrum to enhance knowledge of these threats.

Here's the takeaway at this point: Ransomware attacks are inevitable, and port or vessel operators need to plan accordingly. Building defenses is important, but it's also vital to have a robust and rehearsed response and recovery plan that can help to alleviate the damage.

For ransomware prevention, efforts must always begin with people. Ransomware typically relies on user mistakes to gain access; business users must be trained to identify malicious emails or spoofed websites and therefore prevent ransomware from taking control of the network. Robust mail-filtering systems add another line of defense. Helping users and administrators identify signs of compromise in their systems, and advising them on the best responses is also key to avoiding the widescale spread of ransomware across networks.

Strong network segmentation with robust incident response processes offer the best protection against catastrophic outages, and make restoration from well-managed backup processes more effective. Again, the maritime sector faces the same threats as most other sectors. The reliance on IT systems for critical operations, and the integration of IT systems into the operational technology stack, has massively increased in a very short space of time: Even 10 years ago, most ships had no internet access. Today, many are effectively floating branch offices, and they need to ramp up the level of protection just as fast.

Tech Files

Product & System Innovations

A $30B Problem: Bio-fouling & Hull Efficiency

(L to R): Photos of static testing of the SEA-SPEED V 10 X ULTRA based on two diametrically different fouling environments. The first is a 90-day static panel cleaned with a sponge, mid-Atlantic coast of France. The second and third are 6-month static immersion in Coral Sea waters of Cairns (NW Queensland) Australia. You have a pre-wipe and finger post-wipe photo. This one is particularly interesting as there is virtually nothing on it in a very aggressive fouling environment.

According to the Clean Shipping Coalition, fouled hulls cost the shipping industry upwards of $30 billion per year in aggregate, the bio-fouling of hulls and its impact on fuel efficiency and emissions promises to be a point of tremendous research and investment, as the marine industry collectively struggles to simultaneously keep in check it's bottom line and regulatory compliance.

The maritime industry has traditionally employed reactive hull cleaning to maintain clean hulls and control invasive species distribution. Due to the new IMO bio-fouling management protocols and global focus on the ecosystems the industry is transitioning to a more preemptive approach to control the fouling development. Hull Cleaning companies are developing new techniques and solutions to remove fouling and mitigate the invasive species distribution. These new solutions also must extract the toxic hull paint and biocides from the water stream before it is re-introduced into the oceans. These new systems add additional costs to the process. Keeping ship hulls clean, no matter the method, has traditionally proved troublesome based on the variation of ship hulls and trading routes. New emerging technologies such as hull air lubrication and ultrasonic devices are coming into play in some sectors.

Seacoat has been in the forefront in developing sustainable solutions that addresses the problem from the shipowners perspective, while meeting and in some cases exceeding requirements from ports and regulators. Seacoat's newest hull coating release, SEA-SPEED V 10 X ULTRA, is designed to help curb marine organism fouling on the front end, helping to make hull cleaning operations easier and less expensive, with no negative environmental impact.

www.seacoat.com

SONARAY LED

SONARAY LED Lighting manufactures and markets precise, durable, high-output LED lighting fixtures for the marine markets. It has been providing LED fixtures to the marine industry for seven years and counts among its clients the U.S. Navy. SONARAY offers anti-corrosive, high-output marine lighting with a range of flood light wattages from 30-watts to 1000. The brand also offers a variety of color temperatures

including 2200K, exceptional for cutting through fog, along with a variety of beam angles, including very narrow beam lighting.

www.sonarayled.com

Macris Industries

The Macris Industries Slim Industrial Line (SIL) is an ultra thin, impact resistant and waterproof linear LED panel designed to replace existing bulky drip proof fixtures in industrial and commercial settings. Ideal for spaces where traditional 2 or 4 foot fluorescent or LED-retrofit lamps were previously used. The SIL is available in 8 inch increments from 16 to 48 in., and is only 0.500" thick, meaning saved headroom. Available in direct wire high voltage (110VAC, 220VAC, 277VAC) and low voltage (12, 24VDC).

www.macrisindustries.com

ShipMoney's Digital Payment Solution

As the health and welfare of seafarers continues to be a point of focus globally, Maritime Payment Solutions, LLC (d/b/a ShipMoney), introduced ShipMoney Virtual Cards and the Transfer Marketplace, a pair of services designed to expedite payments to crew members and their families while providing a broad range of remittance options. ShipMoney's Virtual Card solution uses Visa's virtual card technology, which enables crew members to immediately access their wages from anywhere in the world while onboard or at home, directly from the ShipMoney App.

"Our Virtual Card solution and Transfer Marketplace provide efficient and cost-effective ways for companies to pay their crew in real-time, enabling them to disburse wages at more frequent intervals," said Stuart Ostrow, President of ShipMoney. "Money is rapidly placed in the hands of crew and their families at a time when they urgently need it."

ShipMoney Virtual Cards provide the same feature functionality as a physical Visa card, allowing seafarers to send money, initiate mobile top-ups and card-to-card transfers, as well as shop online and use their ShipMoney Virtual Cards with mobile wallets. Crew members also have the option of obtaining a physical card and companion cards.

A second feature is the Transfer Marketplace, a proprietary online platform that enables seafarers to directly access multiple remittance partners before sending money, comparing fees, costs, and delivery times, and highlighting the least expensive option.

www.shipmoney.com

Phoenix

When the USNS Comfort required an immediate upgrade to LED lighting, the Navy looked to Phoenix Lighting. In just days, Phoenix Lighting customized, built and delivered ModCom 2 LED floodlights for the USNS Comfort.

www.phoenixlighting.com

Hella

Sea Hawk-R high-performance LED floodlights from Hella feature injection molded housings made of thermally-conductive and corrosion-resistant polymer. A Grilamid lens provides strength, plus UV and impact resistance.

www.hellamarine.com

Steve Parks: 1975-2020

Steve Parks, a long-tenured and well-known maritime media marketing persona, passed away suddenly of a heart attack on June 7, 2020.

He was 45.

Steve began his career in maritime publishing in 1998 selling the *Shipping World & Shipbuilding.* He was hired by John Labdon Associates as senior media consultant and was group sales manager for *Marine Propulsion* from 2003-2007.

In 2014, Steve started his own marketing firm Wake Media to deliver business-to-business media and communications services to clients in the maritime and offshore sectors.

"Anyone who knew Steve will know how important Wake Media was to him and as a team we want to ensure that we maintain and continue his business and legacy," Wake Media said in a statement announcing his passing.

"He truly was one of a kind, with a passion for life and everything maritime."

Outside of maritime Steve's passions were football, friends and family, particularly his three teenage sons.

Crew Training is Critical in BWMS Commission Testing

By Steve Candito, CEO, Ecochlor

Shipowner's views about the importance of crew training in the use of their new ballast water management systems (BWMS) vary enormously; during some Ecochlor installations we have given training to as little as one seafarer (the Chief Engineer) to as much as the entire crew. I recommend that all crew members who may be involved in the operation of the system attend the training provided by the BWMS manufacturer. At a minimum, the Chief Engineer, First Officer, and Second Engineer should all be able to run the system and assist any other crew members in its operation.

Depending on the owner's choice of BWMS manufacturer, there may be a range of training options (beyond commissioning requirements) that are available for the crews, including hands-on training centers, online tutorials and even portable simulator units.

BWMS that are more complex will obviously require more crew training. This need is especially acute when performance is conditional on understanding the system's limitations in variable water conditions such as salinity, temperature, and turbidity.

For Ecochlor, crew training continues post-commissioning with regular periodic shipboard training after system handover so that new crew members learn the system and existing crew members' knowledge is refreshed. This follow-on training helps to ensure continued safe and reliable operation of the BWMS for years to come. In our experience, the more comprehensive and regular the training that we can offer, the better the operational outcomes: Not only during the installation, but in the long-term operation of the system.

Some shipowners have taken full advantage of our International Training Center prior to their BWMS installation, which has a complete system set up for classroom and hands-on training. This training commitment by the owner clearly represents an ideal situation for everyone; the crew is better able to assist with the installation and they are more likely to troubleshoot any issues once at sea. Additionally, we have clients that purchase our Ecochlor system simulators so that they have in-house capability to continue crew training at their own facilities.

Biological Efficacy Commission Testing

In the last few years, shipowners have been faced with considerable pressure to prepare their vessels to meet increasingly stringent environmental regulations. The IMO requirement for the biological efficacy commission testing of ballast water management systems (BWM.2/Circ.70) is nearing its mandatory start date in October 2021. With this in mind, Flag Administrations are being encouraged to start implementation of this testing as soon as possible. Once a Member State adopts biological testing as part of the commission process, the crew will be responsible for running a full ballast operation after the manufacturer finishes the BWMS functional test and prior to receiving the system certification.

The biological efficacy test procedure is not dissimilar to the sort of on-board testing that all BWMS have undertaken during their IMO/USCG certification processes. The owner must select an independent contractor to carry out the biological efficacy part of the commission test. In most cases, according to the guidelines set in place by Flag, the manufacturer may be allowed to be present, but is not permitted to either operate the system or to assist the crew; the crew is required to run the system from uptake to discharge. This requirement further emphasizes the importance of crew training. If crews are not fully familiar with the system and as a consequence fail to run the system properly, it could result in a very expensive test failure. With biological testing costing between $8,000 - $10,000, crew training becomes even more critical. It must be completed properly and it certainly cannot be compressed into the last few days of the dry docking.

A typical biological test can add as much as five days to the shipyard period, including any hold time required by the BWMS before discharge. Shipowners need to be aware that they will have to allow for more time in the shipyard for this process, unless they want to take on the less appealing and more expensive alternative of requiring the test team to sail with the vessel. Coordinating this team's travel arrangements between ports, and possibly countries (for example, VISAs and customs clearances), and continuing to pay the them during the voyage would be a logistically complicated and costly choice. Mandatory system commission/efficacy testing is coming soon. It carries a cost, both financially and in the time required for its completion. To ensure success a properly planned and executed BWMS installation is needed coupled with comprehensive crew training to facilitate correct system use from the very first time the system is turned on. Shipowners who do not plan their installations effectively, allowing for enough time to adequately train their crews, risk significant time and cost penalties.

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