MARITIME LOGISTICS PROFESSIONAL

March/April | Volume 7, Issue 2
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Disruption

of the Supply Chain with Technology

PORT REPORT
Long Beach sees two kinds of green

TERMINAL OPERATIONS
TOS reaches beyond the berth

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MACDONNELL

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"This industry is full of middle men. Disruption will come from changing the process and changing the business model. It is not the technology, it is the model, and it is the process that changes."

Frank Coles,
CEO, Transas

See *Disruption "Powered by Transas"* **on page 52**

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ON THE COVER

On the Cover

The impressive 13,100 TEU capacity COSCO Excellence departs the berth in the Port of Long Beach, California. Still bigger, deeper ships are coming. When they arrive, Long Beach will be ready. Our coverage begins on page 21.

Image: The Port of Long Beach

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The Port of Long Beach:

Image: Port of Long Beach, CA

By Joseph Keefe

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Editor's Note

High Tech Disruption

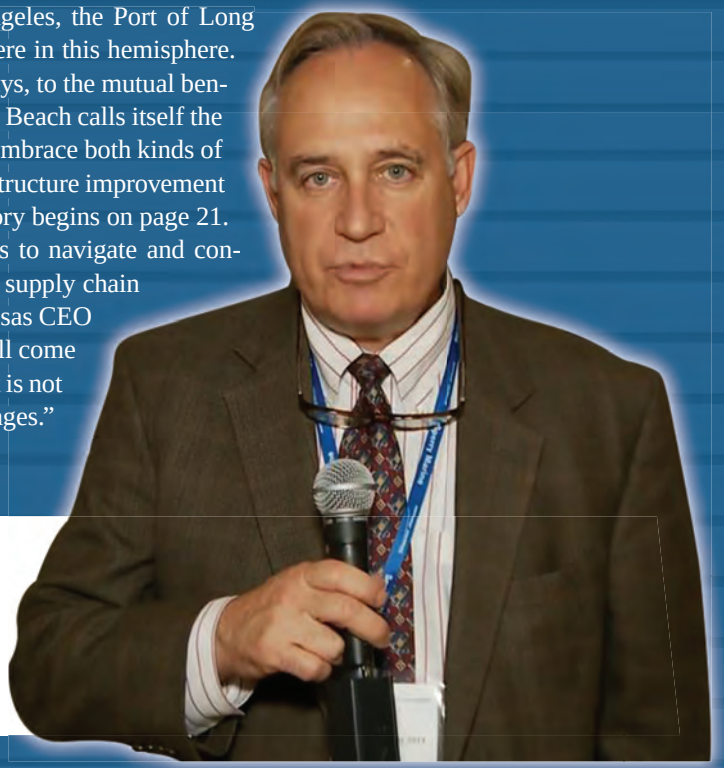
For all the uncertainty that today characterizes the broad world of ocean shipping and the logistics engine that makes it run, there is but one thing that everyone can count on. The seismic shift in the liner alliances can't escape it; ports and terminal operators, scrambling to find reliable and robust partners desperately need it; and the regulatory machine that governs it all will demand it. We're talking about technology, and the way forward for ocean shippers, terminal operators and carriers alike. Eventually, it may well be the one variable that changes, enhances and at the same time, fattens the bottom line for everyone.

It is also true that history shows us that there are relatively few in business will do anything just because 'it is the right thing to do.' The push to 'go green' comes to mind immediately. The waterfront has, over time, made remarkable strides in cleaning up its environmental footprint. That didn't happen, in most cases, without massive governmental mandates that underscored what needed to be done. Moreover, I was taught a long time ago that if you wanted to sell someone on something, then that argument had to broken down to its lowest common denominator: money.

That's the challenge facing today's technology providers who, individually and collectively, are trying to improve efficiencies; in the water, at the terminal, and everywhere in between within the intermodal supply chain. Terminal Operating Systems (TOS) are a good place to start. For example, a close look at market-leading Navis provides an intimate glimpse into what's happening in the world of software on the waterfront. But, the future isn't just about making cargo movements more efficient; it is closely aligned with interconnecting the liner companies with the terminals and the shippers, as well.

Also in this edition, ***MLPro*** examines what makes one of the busiest ports in North America what it is today. Together with the Port of Los Angeles, the Port of Long Beach, CA packs a one-two punch that's hard to beat anywhere in this hemisphere. The two compete for business but also collaborate in many ways, to the mutual benefit of this massive gateway. It also wasn't lost on us that Long Beach calls itself the 'Green Port,' with very good reason. It turns out that you can embrace both kinds of green and still stay on top. At the same time, a $4 billion infrastructure improvement program is quickly positioning the port for the future. That story begins on page 21.

Along the way to intermodal utopia, there are many issues to navigate and concerns to assuage. To be sure, the issue of proprietary data and supply chain transparency will always top that list. Within this edition, Transas CEO Frank Coles perhaps puts it best when he says, "Disruption will come from changing the process and changing the business model. It is not the technology, it is the model, and it is the process that changes." Without a doubt, and like it or not, that disruption is coming.



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FULL AHEAD:

NEW GENERATION OF CARRIER ALLIANCES AND SLOT/VESSEL SHARING ARRANGEMENTS; SM'S (BULLET) LINE; FWE FOR HANJIN.

BY WILLIAM P. DOYLE

On April 1, 2017, the new generation of carrier alliances became reality. In the run up to April 1st there was a flurry of activity with ocean carriers entering into arrangements with other carriers in competing alliances and with other carriers not signatory to any of the alliances.

The New Generation of Alliances

The *2M Alliance* is an existing alliance made up of Maersk Line and Mediterranean Shipping Company (MSC). Maersk is scheduled to take over Hamburg Süd by the end of 2017; Hamburg Süd will be folded into 2M through Maersk.

The *OCEAN Alliance* is made up of CMA CGM, and its recently acquired American President Line (APL), Orient Overseas Container Line (OOCL), Evergreen and COSCO Shipping Lines Co., which consists of the now merged China Ocean Shipping Company (COSCO) and China Shipping Container Line (CSCL).

THE Alliance is comprised of the big three Japanese carriers, Mitsui O.S.K. Lines, Nippon Yusen Kabushiki Kaisha (NYK Line) and Kawasaki Kisen Kaisha ("K" Line), Hapag-Lloyd, United Arab Shipping Company (UASC) and Yang Ming Transport. The three Japanese carriers planned on combining their container operations into one company by April 1, 2018. In addition, Hapag-Lloyd and UASC are scheduled to merge by May 31, 2017.

Flurry of Activity: inside and outside of Alliances

The ocean carrier alliances are not necessarily as rigid as one would think. Indeed, ocean carriers often enter into vessel and slot sharing agreements with members of other alliances or with carriers that are not party to any alliances. A review of the recent activity affecting the U.S trades is highlighted below:

• ***Maersk/MSC/HMM Strategic Cooperation Agreement:***

In the last week of March, the FMC unanimously cleared the strategic cooperation agreement between Maersk, MSC and Hyundai Merchant Marine (HMM). This arrangement will be known as the "Maersk/MSC/HMM Strategic Cooperation

Image: Port of New Orleans

Agreement." With respect to the United States, HMM may exchange or purchase slots on the East-West 2M Loops. Maersk and MSC are entitled to take slots on Far East-U.S. West Coast loops. HMM will not be party to any of the three alliances coming on line April 1st. The "2M" Alliance itself is not party to this strategic cooperation agreement. For clarification, the term "2M" generally applies to the FMC filed agreement known as the "Maersk/MSC Vessel Sharing Agreement." Indeed, in the Maersk/MSC/HMM strategic cooperation agreement there is no reference to "2M" anywhere in the agreement.

- ***COSCO, CMA CGM, PIL, Wan Hai Transpacific Slot Exchange***

OCEAN Alliance members COSCO and CMA CGM will kick-off a slot exchange arrangement on the South China – U.S. West Coast transpacific services. This service will be secured through slot exchanges with Taiwanese company Wan Hai Lines and Singapore based Pacific International Lines (PIL). Wan Hai and PIL are not members of any ocean carrier alliances.

- ***CMA CGM, APL, Evergreen, OOCL, NYK - Japan to U.S. Slot Exchange***

The OCEAN Alliance and THE Alliance members find synergies. The OCEAN Alliance members CMA CGM (APL), Evergreen and OOCL are forming arrangements with THE Alliance members. OCEAN members CMA CGM (APL) and Evergreen will offer Japan – U.S. West Coast service on OOCL vessels and on vessels operated by THE Alliance member NYK. This will be an interesting service to watch as it appears to be the first type of service comprising many of the members from both THE and OCEAN.

- ***CMA CGM to go with THE Alliance Members in N. Europe – West Coast U.S. Trade***

OCEAN Alliance member CMA CGM has been busy making deals with carriers regardless of alliance affiliation. OCEAN's CMA CGM has entered into an arrangement with all five members of THE Alliance. Thus, CMA CGM will purchase space on THE ships operated by Hapag-Lloyd, K Line, MOL, NYK and Yang Ming in the Northern Europe – U.S. West Coast trade. This service will leave Europe, call in Savannah and then utilize the Panama Canal on its way to ports on the U.S. West Coast.

- ***CMA CGM, Hapag-Lloyd Mediterranean to U.S. Gulf Coast Service***

OCEAN Alliance member CMA CGM and THE Alliance member Hapag-Lloyd will operate a Med Gulf Express service. This offering appears to be an arrangement where CMA CGM would offer its service to the trade through a slot agreement with Hapag Lloyd.

- ***OOCL Beefing-up Fleet Ahead of OCEAN Alliance Launch***

Hong Kong's OOCL was very active in the chartering market getting ready to have ships in place for the April 1st launch of the OCEAN Alliance. Over the past couple of months OOCL has charted six 10,000-plus TEU vessels from Greece-based Costamare Shipping Company and Danaos Shipping and Hong Kong based Seaspan Corporation. In addition, OOCL has chartered two 8,000-plus TEU vessels from its OCEAN partner CMA CGM. OOCL expects to take delivery of six 21,000-plus TEU vessels during the second half of 2017. The aforementioned charters appear to be a transitional strategy providing tonnage until its new container ships are delivered.

SM Line Enters the Market

Rising from the ashes of Hanjin Line, SM Line will launch its China Pacific Express service in mid-April. SM will go it alone without any alliance affiliation utilizing a bullet line service to Long Beach. SM Line will operate five 6,655 TEU vessels from Asia directly to Long Beach, California's SSA Terminal at Pier A. SM Line acquired the five ships from creditors of the failed Hanjin Line. SM Line is an affiliate of SM Group, a South Korean based manufacturing, construction and services conglomerate. SM Group is also the parent company of Korea Line.

Hanjin Line – Finished with Engines – FWE!

Hanjin is finished, a sad story for the world's 7th largest container carrier. The last ship in the Hanjin fleet was sold in a sheriff's sale on March 1, 2017. The entire fleet of 97 container ships operated by Hanjin have been sold or returned to their owners as of March 1, 2017. Many of the ships are inactive. However, a review of who will deploy some of the ex-Hanjin ships includes:

SM Line—8 ships	OOCL—3 ships	Yang Ming—1 ship
Maersk—3 ships	Hapag-Lloyd—2 ships	Zim—1 ship
MSC—3 ships	MOL—2 ships	Simatech—1 ship

On April 1, 2017, the new generation of ocean carrier alliances kicked off. Stay tuned for what comes next!

The Author

William P. Doyle
is a Commissioner with the U.S. Federal Maritime Commission. The FMC, among other things, regulates liner companies, ocean transportation intermediaries and marine terminal operators. The thoughts and comments he expresses here are his own and should not be construed to represent the position of the Commission or his fellow Commissioners.

The Changing Face of Shipping Logistics

By Greg Trauthwein

Ryan Petersen is the founder and CEO of Flexport. He is also the founder and ex-CEO of ImportGenius.com, the largest provider of business intelligence to the import-export industry. Armed with an MBA from Columbia and a B.A. in Economics from UC Berkeley, he is also a licensed customs broker and freight forwarder, with his built company squarely around an online dashboard backed by leading venture capital firms like Founders Fund, Google Ventures, and Bloomberg BETA.

In April, Petersen told ***MLPro***, "Before Flexport, I co-founded ImportGenius, a leading provider of business intelligence for the import-export industry. Flexport is a tech-enabled freight forwarder and customs broker, meaning that we help to coordinate the logistics of importing and exporting goods around the world." And, says Petersen, the 'tech-enabled' aspect is what differentiates Flexport from the rest of the pack. "In addition to our human logistics experts, we use modern technology to provide our clients with real-time data on the locations of their goods and unparalleled visibility into their supply chains."

But, what does all that mean? In 2005, Petersen spent time living in China, for the purpose of working closely with manufacturers and freight forwarding partners, essentially toiling in the supply chain trenches. It was here where he formulated his own ideas on what the supply chain could be. "While I was there, I was frustrated with the inefficient and outdated processes of shipping goods internationally. Nothing was ever indexed properly and there was no software layer to help you find and sort your goods."

Disruptive Technologies

According to Petersen, and although global trade is one of the biggest and oldest industries in the world, it still operates like it's 1970. He explained, "The logistics and trade industries have been content with their stagnation, so in 2013, I

"In addition to our human logistics experts, we use modern technology to provide our clients with real-time data on the locations of their goods and unparalleled visibility into their supply chains."
– Ryan Petersen, CEO of Flexport

Photo credit: AdobeStock © arsel

Ryan Petersen and his Flexport team are seeking the help re-write the global logistics playbook.

founded Flexport to give companies real-time data on the locations of their goods and visibility into their supply chains. By applying a modern software layer to augment the freight forwarding service our logistics experts provide, we're helping our customers to ship more efficiently and allowing logistics managers to have full visibility and control into their shipments every step of the way."

Flexport was built from the ground up on a technology stack. Petersen says that the company is already far ahead of traditional freight forwarders simply because of our its use of sophisticated software and automation. He doesn't see that market position changing, any time soon. "Because our team is constantly working on improving our software and adding new features, I don't anticipate we'll have too much trouble staying current. Our strategy is probably best described as the opposite of traditional freight forwarders' strategies. We are open to new technologies and to disruption, and we're excited about bringing in modern techniques to help the industry adapt for this decade."

Like all global forwarders, Flexport works with local service providers in every market to manage shipments end-to-end. But, insists Petersen, it goes deeper than that. "As a full-service freight forwarder and customs broker, our logistics and trade experts work to understand the customer's needs and connect them with the right carriers. We use our own software to capture many of the underlying processes in a transaction—such as inputting SKUs and processing customs information—which results in digitizing data and automating certain processes from end-to-end. This allows our team to be more efficient and spend more time working on solving problems that require a human touch."

For example, customers use online dashboards as a one-stop searchable source of truth for information about their supply chains. Users can compare quotes for any given price and service level, and book their shipment directly in the web app. From there, they can track and trace shipments in real time while Flexport's logistics team updates and resolves problems. Petersen adds, "What we're providing is the software that connects everything and coordinates everybody. And in addition, we're also the human intelligence layer providing the services that make it work smoothly."

With much of the trade industry still stuck on paper, Petersen's Flexport has transferred a good amount of information into its online portal, but it will be a while before the entire industry goes online. That's because traditional freight forwarders and carriers are still somewhat reluctant to deviate from the way they've always done things. Says Petersen, "Companies like Flexport that aim to disrupt an industry and gain market share first have to convince the industry that there is a need for the disruption. In the trade industry, I think it's exceedingly clear that the outdated processes being used are no match for what our platform can do. Our software helps customers collect data. Using this data, we can discover the most efficient ways to ship and the best manufacturers to partner with."

The 'complexity of international trade' involves compliance with myriad trade laws. Petersen is only too aware of this reality. "As a fully licensed customs broker, we keep track of every important trade law that affects our customers. We have a team of experienced, licensed customs brokers that offer customs services for our clients, meaning compliance, forms, and fees. A good example of how our software and human team work

together to deal with the complexity of trade is our work on the Denied Parties List application. If a company wants to import or export something, they cannot be on this list. It's maintained by the U.S. government and every customs broker and freight forwarder has to check that their customers are not on it."

But, it's not that simple. Petersen explains, "Many brokers or companies only check the list once for a company's name, but if you want to be compliant, you want to check for every shipment. We check every hour because we have software automatically running it through, looking for anything that matches our fuzzy algorithm. Our software outputs a probability of a match and at that point, we have a human looking and making sure that the software is right."

People and Software: Managing International Trade – together

Flexport would not be where it is today without the combination of software and people. Petersen firmly believes that although software can do many things well, humans are better at making important, nuanced decisions. "We're combining the two and enhancing human intelligence with software. We have really smart engineers tackling the creation of software tools for freight forwarding, while our operations managers research quotes and rates. They work in tandem so that our engineers are solving the real problems our operations teams encounter."

According to Petersen, Flexport is and remains very much a full freight forwarder; moving freight all day long for people. But, and at the same time, the customer experience is enhanced and Flexport's transaction costs are lowered because of software. The Flexport app and platform are cloud based, meaning companies can access their dashboard at any time while they're on the go.

Value Added

The complexity of international trade compliance means that every single shipment will always need to have an expert involved. In addition to providing customers with visibility and control over their product and competitive rates, logistics experts who intimately know how the trade industry works and what the best practices are, will always be a hallmark of the 'turnkey' service.

Petersen and Flexport, therefore, take a consultative approach with clients, continuously looking for opportunities to optimize supply chains. That's just smart business, says Petersen, adding, "We operate more quickly and more reliably than traditional freight forwarders because of the technology that augments our team's expertise. As a result, our clients are able to make data-driven decisions from transportation spend to inventory planning. It's this combination of human and machine intelligence that sets us apart." Shipping logistics may never be the same. If so, that's probably a good thing.

Photo credit: Adobestock © namning

DIGGING DEEP FOR GOOD NEWS


Credit: Van Oord

DREDGING FIRMS LOOK AHEAD TO MORE BUSINESS, HERE AND ACROSS THE BIG POND. ALONG THE WAY, MOTHER NATURE AND GOOD BUSINESS PLANNING WILL BOTH HELP.

BY BARRY PARKER

In the waning days of 2016, the outlook brightened dramatically for the big U.S. dredging contractors. Just before Congress dispersed for the Holidays, then-President Obama signed a pivotal piece of legislation – the Water Infrastructure Improvements for the Nation (WIIN) Act, S612. Key aspects of the bill:

- ***Authorized needed investment in America's ports, channels, locks, dams, and other infrastructure that supports the maritime and waterways transportation system and provides flood protection.***
- ***Authorized U.S. Army Corps of Engineers (USACE) Chief's Reports received since previous legislation (WRRDA 2014); Chief's Reports are the final recommendations to Congress by the Corps' Chief of Engineers for water resources infrastructure investment. (These infrastructure improvements have been proposed at the local level, in cooperation and consultation with the Corps, and have national economic and environmental benefits).***
- ***Accelerated and broadens reforms for infrastructure project permit processing, and***
- ***Cut red tape by requiring timely approvals for non-federal modifications to Corps of Engineers projects.***

The harbor deepening authorized by WIIN includes marquee projects at Port Everglades (with a Federal contribution of $229.8 million) and Charleston, SC (with $231.2 million Federal cost). Hence, for the domestic dredging industry, and the blue water ports they serve, the bill was good news indeed. William Hanson, Washington, DC-based Vice President at Great Lakes Dredge and Dock, the largest dredging contractor in the States,) explained to ***MLPro***, "WIIN allows projects to become eligible for funding. We look to WRDA bills to set the stage for future projects, but to the appropriations budget for immediate work." Sounding an optimistic note, Hanson added: "Fortunately, Congress has done a terrific job of improving funding for Corps of Engineers in recent years and so we hope to see a continuation of that trend in 2017."

Hanson talked about the budgeting process, telling ***MLPro***, "We would prefer to see Congress pass a budget though rather than short term CR's, since working on short term extensions hampers the Corps' ability to manage its dredging program."

Separately, John Witte, Jr., an executive at U.S. dredger, Donjon, told ***MLPro***, "With the need to continually maintain access to our Port's and water accessible facilities as well as deepening to keep up with the larger and more cost effective shipping, we are optimistic that with the support of the Federal Government in the form of funding, 2017 will provide for the opportunities the Dredging Industry needs to stay engaged with an opportunity for success." About WIIN, Witte added,

"Obviously this will only provide industry players with an opportunity, the rest would be up to the individual Dredging Contracts to earn the Success through Bidding and performance."

Big WI[I]N: Domestic Dredging Heats Up

The regulatory filings of GLDD provide insight into the ebbs and flows of the domestic business. In 2016, its "Capital Dredging" segment benefited from work done at Savannah, where it participated in the first portion of deepening a 40 mile channel that reaches inland to the Garden City container terminal. Its work on the Delaware River – a multi-phase project where the waterway will be deepened from 40 feet to 45 feet – was also cited as a positive for GLDD's business. For that work, GLDD used its cutter suction dredges Illinois and Florida for deepening, and its Apache for late-stage blasting work. GLDD stayed busy, also working at Cheniere's Corpus Christi LNG export project and in Louisiana, conducting restoration work at Southwest Pass.

WIIN promises even more business, as ports will now see their plans for harbor deepening realized. In an early December conference call, just prior to final approval of WIIN in Congress, American Association of Port Authorities (AAPA) President and CEO Kurt Nagle, explained that the allowable harbor dredging depth would be increased to 50 feet (from the present 45 feet) on harbor deepening projects, which become eligible for a 75% federal contribution. GLDD's Hanson added, "WIIN authorizes projects within certain parameters, final engineering and environmental approvals are still necessary before they get funded. We generally pay most attention to projects obviously involving dredging, including port expansion and coastal projects. WIIN like most WRDA's also includes policy changes that will have a positive impact on our business. Increased emphasis on beneficial use of dredged material and regional sediment management will help make projects more sustainable." In Charleston, for example, where GLDD has a long history of work, the WIIN authorization sets the stage for dredging to 52 feet.

WIIN also provides more certainty of funding maintenance of existing channels. Washington, D.C.-based K&L Gates explained to clients that the new law ensures that the amount of harbor tax revenues dedicated to the Harbor Maintenance Trust Fund (HMTF) will be at least 3 percent higher than the previous year's allotment, and 100 percent of the tax is dedicated to the HMTF in 2025." Echoing that optimism, Hanson from GLDD noted hopefully, "HMTF language will assure that funding for maintenance dredging will continue to increase toward full utilization and an agreement that the Federal government will pay for maintaining authorized channels to 50' helps more ports rationalize expanding their channels."

Way Beyond Washington

Mother Nature also creates demand for beach renourishment, where a beach that's seen erosion or damage from a hurricane is replenished with sand pumped from an area near the coastline. Weeks Marine, another major U.S. contractor, recently completed a five month replenishment project along seven miles of beachfront at Hilton Head Island, SC, not far from the landfall of Hurricane Matthew in October 2016. The shoreline was filled in with roughly 2.2 million cubic yards of sand, piped in from a shoal four miles offshore by the Weeks-owned CR McCaskill (a 17,400 Thp cutter suction dredge built 2012). This unit was also deployed on a 2013 project at Rockaway Beach following Hurricane Sandy. And in late 2016, two GLDD hopper dredges, Dodge Island and Padre Island, were filling in a depleted beachfront at Dewey Beach and Rehobeth, Delaware.

Farther afield, the international market sees demand for the biggest units supported by mega-projects. In its 2016 report, Dredging in Figures, the International Association of Dredging Companies (IADC) notes: "Despite the slow growth and

Trailing suction hopper dredger – ***Costa Dorada***

fluctuations in the world's economy, the dredging industry's turnover in 2015 (excluding the "closed markets" of China and U.S.) increased to €7.115 billion compared to €6.415 billion in 2014 – mainly as a result of the sizable Suez Canal expansion project (€1.1 billion)."

The Suez Canal expansion, a major demand driver with 180 million cubic meters of material dredged has now completed, but other projects still provide work for the major international players. The large port projects have benefited from funding sourced from the large international development banks.

The biggest projects can be seen by tracking the fleet of Jan De Nul, a large Belgian contractor with noteworthy units, including Cristóbal Colón and Leiv Eriksson, trailing suction hopper units with a capacity of 46,000 cubic meters (equivalent to the cargo intake of a Handysize bulk carrier), working on a reclamation project where a Free Trade Zone is being expanded at Lagos, Nigeria (funded by Chinese development banks). The Vasco da Gama, with a capacity of 33,000 cubic meters, has been deployed at in the construction of a new port at Nador, Morocco funded by the Europe-

"Donjon was built based upon the simple principle that you do the work you are capable of with, for the most part, equipment that you own. We look to add equipment based upon need and our ability to purchase what we need. Debt, while a simple fact of life, is something that we try very hard to aggressively manage."
– John Witte, Jr.,
an executive at U.S. dredger, Donjon

Credit: Van Oord

an Bank for Reconstruction and Development (EBRD) and the Arab Fund for Economic and Social Development (AFESD).

In Kuwait, the Dutch firm of Van Oord has been a contractor to Kuwait National Petroleum Company in a 65 million cubic meter reclamation project for construction of a "greenfield" port at Al-Zour that will serve a new refinery producing low sulfur fuels and petrochemicals. Two suction hopper dredges have been used on the project. In a joint venture with Boskalis, Van Oord's trailing suction hopper dredger Vox Maxima is in the midst of a three year project where 20 million cubic meters of sand will be used to create an artificial island for residential use kin the bay near highly crowded Jakarta, Indonesia. Van Oord will be part of a consortium working on the West Nile Delta project, which will tie offshore gas drilling to an onshore facility at Burrulus, near Alexandria, in Egypt. Van Oord will also deploy a trailing hopper suction dredge as part of the landfall portion of the project in 2017. In a two year project in Kingston, Jamaica – where loc al authorities hope to capitalize on larger containerships entering the Caribbean from Asia – Jan de Nul's cutter suction units Marco Polo and Pedro AlvaresCabrál will be deepening the channel and the port basin.

Dike reinforcement, vital in the Netherlands where flood protection and water management are paramount concerns, is an important segment for Van Oord. Its 2016 built cutter suction dredge Biesbosch was employed in the ZeetoegangIJmond project, the construction of the new sea lock at Ijmuiden. Along with GMB, another Dutch provider, Van Oord has been a lead contractor on the Dutch "Room for the River" program, a national flood protection effort in low-lying river areas. To that end, Van Oord also has equipment working at Maasvlakte, near Rotterdam.

Van Oord has also played a role in international beach replenishment projects. In Spain, the contractor has recently completed projects at Barcelona and La Pineda. Work at Playa de Castillo (in the Canary Islands) is also ongoing using the small trailing suction hopper dredger "Costa Verde" acquired in early 2016. This new addition to the Van Oord fleet was recently named, after the coast of Asturia in northern Spain. In describing this asset, Van Oord said: "With its small dimensions and shallow draft, the ship is very well-suited to the shallow water and smaller harbours that dominate the Mediterranean market."

Closer to Home, Looking Ahead

In the United States, policy changes on the horizon may bode well for investment in maritime equipment, if the proposed investment tax credits (ITCs) take shape in an actionable way, but it's too early to draw a firm conclusion. Donjon's Witte noted, "Like all prudent operators, we will look into the advantages and disadvantages of whatever changes the new administration will bring (or not) and make an informed decision based upon a number of different factors; all of which will hopefully result in the continued success of Donjon marine."

When asked about the role of ITC's at GLDD, going forward, Mr. Hanson said: "I don't think there have been enough specifics to really comment on this." Nevertheless, he was quick to mention the newbuild soon to be completed at Eastern Shipbuilding, and told ***MLPro***, "We recently launched our new hopper dredge, the Ellis Island and plan to continue to invest in new equipment, so yes, ITC's would theoretically help us make investment decisions. Obviously we are monitoring these developments and appreciate the new administration's interest in infrastructure and US manufacturing and US job creation that is critical to us."

Ultimately, however, government incentives don't relieve businesses of their roles to manage balance sheets, a point emphasized by Mr. Witte, who said simply, "Donjon was built based upon the simple principle that you do the work you are capable of with, for the most part, equipment that you own. We look to add equipment based upon need and our ability to purchase what we need. Debt, while a simple fact of life, is something that we try very hard to aggressively manage." Assuming the developments inside the Beltway continue produce positive news and that IADC's annual projections and recap of the previous year are correct – and typically, they do a very good job – there is a lot to look forward to; here and abroad.

Bigger and deeper ships are coming, and further inland, the barges need to move those products to the deepwater gateways. There's a dredge for that.

The Author

Barry Parker
of bdp1 Consulting Ltd provides strategic and tactical support, including analytics and communications, to businesses across the maritime spectrum. The company can be found online at www.conconnect.com

Credit: Van Oord

Container Security Devices: the time is now

A Look at international trade and cargo security provides a short primer on how to reduce unnecessary costs.

By Ed Harrison and Stefan Reidy

Global Trade Challenges

The global market is unbelievable in size and scope, and it is expanding with global demand for goods and the growing adoption of offshore-sourcing by major U.S. and EU corporations, creating increasing demand for cargo transport in unprecedented volumes. Over 16 million maritime containers are in transit throughout the world on any given day – at sea, on rail, and/or over the road. Moving these containers is a $900 billion business per year, accounting for an estimated 10% of the cost of goods sold for a container load. In addition to cargo shipped in containers, an additional 980 million full truckloads are utilized every year, and much more by air or rail.

An incident rate of only 1% would already lead to over 200,000 interruptions (container intrusions, cargo loss, temperature, and shock damage, delay and more per day). Importers/exporters are commonly affected by such interruptions and delays in the supply chain. The conventional control and reporting systems do not use the available chain-of-custody shipping process which provides an end-to-end visible and auditable control system. Currently, each trade stakeholders gathers and reports trade transaction data at different stages of the supply chain without a comprehensively linked process. These proprietary trade systems are not connected and often involve paper-based transaction trails and updates.

This results in poor end-to-end data timeliness and creates visibility, quality, and integrity issues. Because of the inefficient and vague control on the international supply chain, importers, exporters, and their intermediaries must face the following challenges:

- ***30% of all shipments are either damaged or delayed;***
- ***15% of companies' logistics costs are either inventory costs or safety costs;***
- ***30% of all perishable goods never reach the end destination;***
- ***1 in 5 cargo claims is due to moisture; and***
- ***$60B cargo is stolen worldwide annually.***

Eliminating uncertainty and reducing variability by providing more visibility and creating an auditable chain-of- custody will enable global trade to become more efficient, more cost effective, and secure. The analytics component of cargo movement also leverages the power of big data. Thanks to the availability of historical shipment data across different clients from different industries, predictive analysis can be done to improve the effectiveness and efficiency in today's supply chains. It is time to correct negative trends before they become more costly problems than they already are. These data analytics investigations provide unique, industry and corporate specific business cases for security, operational efficiencies, quality control, customer support and costs savings. Modern technology now includes the use of container security devices (CSD) and systems that provide verification of the cargo, its quantity, identification of the conveyance, the method of shipment, and the control and monitoring of its movement from stuffing at origin to accessing the cargo at destination, all the while automatically providing visibility and control,

Trade Compliance, Control, Visibility & Cost Reduction

Research in the private sectors in the EU and U.S. has confirmed the reliability of certain CSDs and modern control monitoring and control technologies and their global scalability. Clearly, the private sector has developed and demonstrated the use of sophisticated CSDs that are affordable to the user and do more than just monitor the door openings. They provide a complete end-to-end chain-of-custody control just as evidence of a crime is gathered and protected. In fact, the new CSDs also provide an unforeseen benefit of providing all stakeholders, an automatic electronic audit of the conveyance movement and any breach into it from origin to destination.

Since 9/11, there have been a plethora of new government programs and requirements involving control within the international and domestic supply chains beginning with what we really know about the actual contents, access to, and control

of the movement of these cargo conveyances into, out of, and through the United States.

One such system to reduce supply chain costs is an auditable chain-of-custody process. That process involves the use of container security devices and a communications platform that provides an auditable chain of custody, utilizes an identified authorized agent of the entity shipping and loading the cargo at origin and opening it at destination. This authorized agent is the individual who is responsible for insuring the accuracy of the shipment and is accountable for confirming the contents and quantity of the cargo prior to securing the conveyance at origin for its movement to destination. In effect, this places liability for the accuracy of the cargo's identification and quantity on the firm and its agent. Its use makes the shipment visible from origin to destination, avoids potential Customs issues.

These varied government requirements contain both trade compliance and trade facilitation components. The fundamental foundation, role, and purpose of these programs are accommodated in this electronic chain-of-custody process which employs the use of the appropriate CSDs and begins at origin and ends at destination. The highly controlled coverage serves the needs of Customs and Border Protection with respect to Customs issues and its anti-terrorism mandate, the needs of the Department of Transportation (DOT) regarding hazardous materials control, and the Food and Drug Administration (FDA) with respect to safe food and pharmaceutical movement control, trade facilitation and how all of these international and domestic movements from origin to destination are recorded and available as an auditable record automatically saved in an electronic format for the number of years required by government regulation.

CSD's: Trade Facilitation + Supply Chain Security = Profits

The bottom line is that the use of currently available chain-of-custody systems combined with the right CSDs will save money, speed up movement through Customs, provide visibility, and knowledge from the time of stuffing at origin what the cargo is and its quantity, and conveyance identification, and knowledge of the identity of the person verifying the cargo, its movement monitoring, any breach into the conveyance during its movement, and even a divergence of path to its ultimate destination. It even shows the identity of the individual who opens the conveyance at destination. It should be a "no-brainer" for all supply chain stakeholders. It is an answer to trade facilitation and security while the international supply chain stakeholders make money by using these technologies.

The Authors

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MARITIME LOGISTICS
PROFESSIONAL

A Closer Look

PORTS: **Long Beach**

The Port of Long Beach: the green port

There are two kinds of green. At Long Beach, the commitment to environmental progress remains at the forefront of the port's business plan. That's just smart business.

(*) all images courtesy Port of Long Beach, CA

By Joseph Keefe

A March 2017 visit to the Port of Long Beach provided a close-up view of one of America's premier seaports. Most stakeholders already know that the port is a major gateway for containerized traffic and a host of other goods and commodities on the U.S. West Coast. That's not news. Neither is the fact that $180 billion in total trade annually moves through the nation's second-busiest seaport. The bigger story, it became clear during a two-day tour and executive interview with interim Chief Executive, Duane L. Kenagy, P.E., is how all of that gets accomplished in the same space that is spending $4 billion in infrastructure upgrades while also providing leadership in the all-important area of environmental stewardship.

The Port of Long Beach bills itself simply as 'the green port.' And, interim Chief Executive Kenagy told ***MLPro*** from the outset, "Our commitment to environmental progress remains at the forefront of our thinking." All other efforts and initiatives follow and stem from this baseline, says Kenagy. Eventually, the port's long term success depends on it. An accomplished engineer with deep roots in maritime infrastructure planning, the port's chief executive likes the other kind of green just as much. He also knows that without securing the first part, the second won't be possible.

"Over the last ten years, we've cut diesel emissions by 84%, Sulfur Oxides by 97% and Nitrogen Oxides by almost 50%," says Kenagy, adding quickly, "We do get a lot of credit when you listen to the comments that come in. There is recognition of how far we have come, but there's also recognition that this isn't the end of the road. We can do even better. The challenge is that the last bits are always the hardest and a lot of the low hanging fruit has already been taken. We believe that by working with industry, and as long as we don't specify the technologies or how to get there, we think industry will get closer to zero emissions."

– Duane L. Kenagy,
Interim Chief Executive

The Impact of Numbers

The port is the primary economic engine for both the city and the region, supporting more than 30,000 local jobs, 316,000 jobs throughout Southern California and 1.4 million jobs throughout the United States. It generates about $16 billion in annual trade-related wages statewide. A port staff of over 500 people with an annual budget of nearly $900 million receives no direct taxpayer funding.

Kenagy lays out the port's real impact crisply, saying, "U.S. Customs officials rake in about $5 billion in Customs fees each year for cargo moving through the port. And, one thing to keep in mind is that the port is an enterprise and it is totally funded from its fees – wharfage fees, dockage fees – there is no direct tax money. We do get traditional transportation grants, things like that to develop certain types of infrastructure. For example, we're building a bridge which is part of the highway network, so there is grant funding there. But, we don't get direct taxpayer funding here at the port. As a matter of fact, we pay into the city funds for police, fire, water, sewers and things like that."

It all sounds good. And, it is probably tempting for local officials to sit back, enjoy the many benefits that the port provides and simply wait for the cargo to arrive. But, that's hardly the plan, and Kenagy, who previously served as the Port's Capital Program Senior Executive Lead, now finds himself overseeing the Port's decade-long, $4 billion+ capital development program – the largest infrastructure investment of any port in the nation.

The landmark projects include the replacement of the Gerald Desmond Bridge. Kenagy explains why. "From an engineer's perspective, that's a functionally obsolete bridge – it is safe but it is narrow and 15% of all containerized cargo goes over that bridge every day, so it's a vital connection for the U.S. transportation system." This year, the port budget for capital improvements is about $500 million. Some projects can take up to a decade to complete, especially when considering the planning process, permitting and eventually, the construction. Other major projects include the Middle Harbor terminal redevelopment project ($1.3 billion), various dredging projects, and a rail project that, over ten years, will eventually benefit the overall efficiencies of port complex.

Today – and since the end of September 2016 – Kenagy has been the interim chief executive at the port. As the board conducts its national search for a new permanent chief, Kenagy at the same time wears a lot of hats and candidly looks forward to the time when he can return to what he does best. We asked him about the differences with his current role and that of the Senior Capital Project lead, and he replied, "There's always a little more politics in this office but in this role, you're responsible for the entire enterprise. Here, you deal directly more with customers, and with all aspects of the organization, whereas in the capital program, you coordinate with other agencies to keep projects moving forward – like CalTrans, for example. We spend a lot of time with our partners at Caltrans to keep

Port of Long Beach

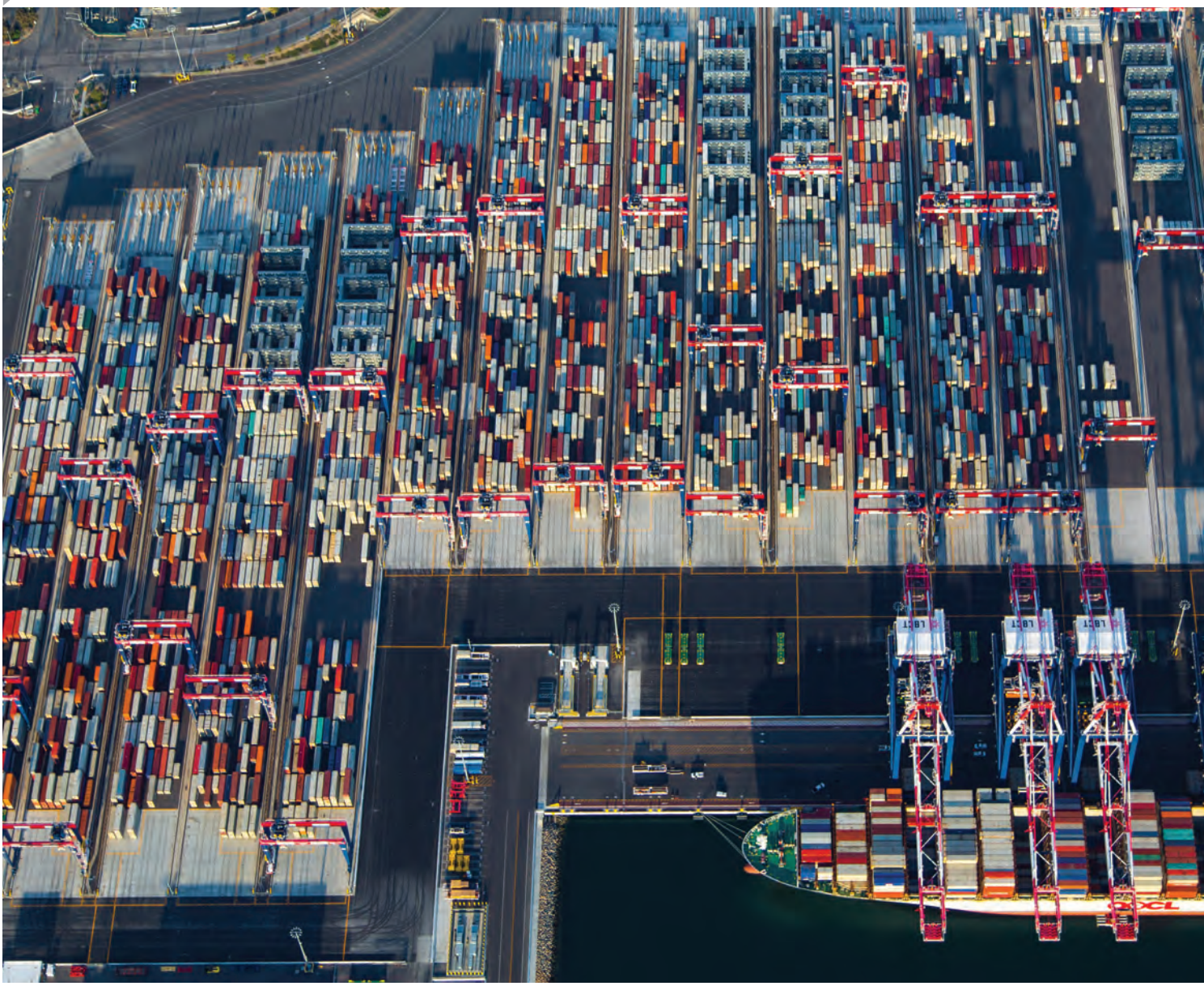
those projects moving forward."

The capital projects are not without purpose. The port isn't at maximum capacity yet, but the 'baywide' (LA/LB) combined forecasts for future growth call for a doubling of TEU throughput to about 32 million TEU's by 2035. Getting there is important. How the port does it, says Kenagy, is far more critical.

The Other Kind of Green

They don't call it 'the green port' lightly. With a Green Port Policy that calls for maximum effort to minimize or eliminate negative environmental impacts, the Port has also developed a reputation as a pacesetter for innovative environmental programs. For example, the Port of Long Beach pioneered such programs as the Green Flag vessel speed reduction air quality program, Green Leases with environmental covenants and the San Pedro Bay Ports Clean Air Action Plan. The Port also moved aggressively to outfit container terminals with shore power. Shore power allows docked ships to plug into the land-based power

LBCT 1st Ship Aerials



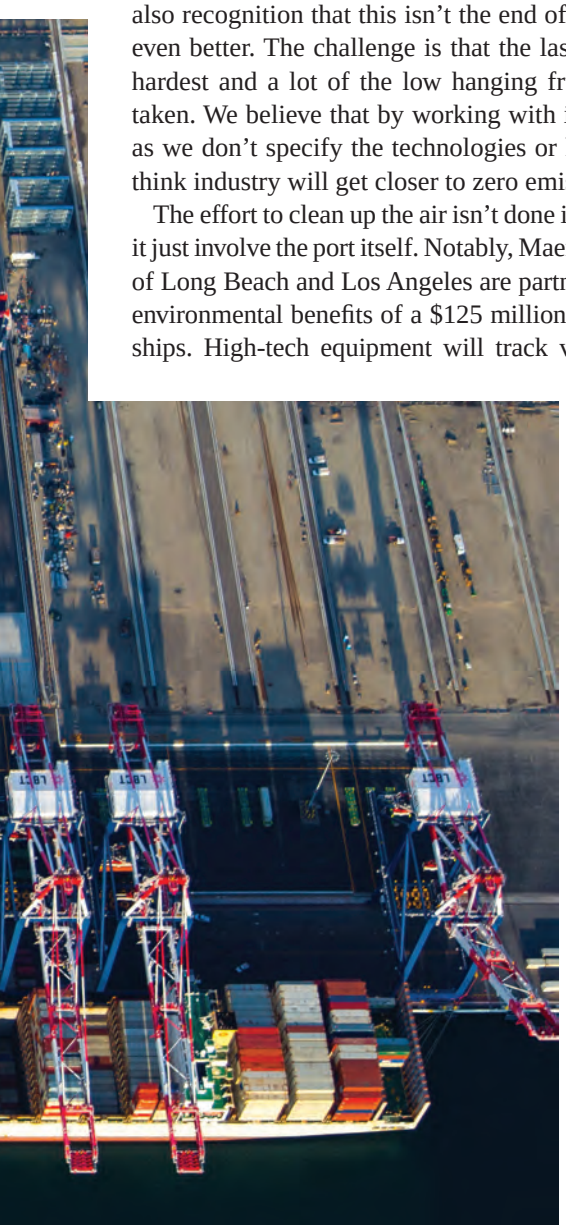
grid, instead of burning diesel fuel to run their auxiliary engines. Today, at least one berth at every container terminal has shore power. By 2020, all container berths will have shore power.

The port's environmental efforts have been copied by seaports everywhere. Recognized internationally as one of the world's best and locally as a partner dedicated to helping the community thrive, community relations here are good. That sort of accolade is nice, but we asked Kenagy to put some data behind the green slogans. "Over the last ten years, we've cut diesel emissions by 84%, Sulfur Oxides by 97% and Nitrogen Oxides by almost 50%," says Kenagy, adding quickly, "We do get a lot of credit when you listen to the comments that come in. There is recognition of how far we have come, but there's also recognition that this isn't the end of the road. We can do even better. The challenge is that the last bits are always the hardest and a lot of the low hanging fruit has already been taken. We believe that by working with industry, and as long as we don't specify the technologies or how to get there, we think industry will get closer to zero emissions."

The effort to clean up the air isn't done in a vacuum; nor does it just involve the port itself. Notably, Maersk Line and the ports of Long Beach and Los Angeles are partnering to measure the environmental benefits of a $125 million upgrade for 12 boxships. High-tech equipment will track vessel emissions and energy efficiency over the next three years, with the ultimate goal of reducing the environmental impact of vessels calling at the San Pedro Bay port complex. The effort, of course, also requires the other kind of green. A combined contribution of $1 million from both ports helped to fund the project, one which has been hailed as unprecedented in its scope and scale.

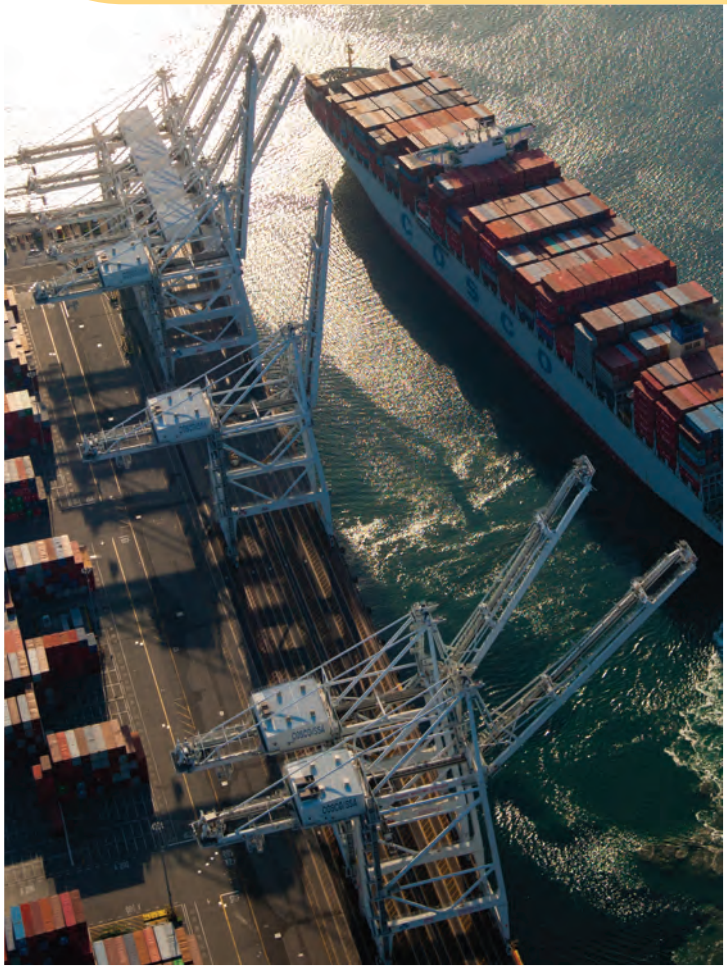
Separately, years of efforts to reduce environmental impacts related to goods movement have resulted in a flourishing ecosystem for fish and marine mammals, according to a new report on the water and habitat quality of Long Beach and Los Angeles harbors. The survey identified 558 species of plants and animals living on the rocks and pilings in the harbors. This represents a 60 percent increase from the last survey in 2008.

These initiatives, which include the ship plug-in programs and other efforts to improve water quality, have paid handsome rewards. Kenagy points to the biological diversity that has grown over time in the harbor. In 2000, for example, there were only 27 acres of Kelp in the harbor and in 2013; that figure had expanded substantially to 132 acres. "We're also seeing a dramatic increase in the number of species and wildlife that we find in and around the inner harbor areas. It's great to see that wildlife return to these environments. So we've made great progress even in mundane things like traps in our storm drains that trap sediments," added Kenagy.



Discussing the port's relationship with the Port of Los Angeles: *"My predecessor invented a term called 'coopatition' and I think that explains our relationship very effectively. We obviously compete for business. I think that competition keeps both of us sharper and the entire industry and the nation benefits from that economic competition. On the other hand, many issues lend themselves to cooperation & collaboration between the two ports. Environmental issues come to mind. It is hard for us to clean up the water without them cleaning up the water at the same time. Air quality is another place where we can collaborate. We collaborate very carefully on our clean air action plan and our water cleanup plans."*

– Duane L. Kenagy, Interim Chief Executive



A substantially beefed up oil spill response system rounds out the port's environmental signature. But, the next big thing is the port's "clean air action update," now underway. Still, Kenagy admits, "We still have a tough challenge in NOX, because of our reliance on diesel. That's much more difficult for us to address, but you know we want to get that last inch."

A greener footprint necessarily requires what Kenagy refers to as 'energy resiliency.' That's because, taken as a single entity port complex, the port of Long Beach is the largest single customer of Southern Cal Edision. Operating under that premise, the port actively investigates clean energy initiatives in many ways. For example, says Kenagy, "If we go to a lot of battery operated vehicles, then that means you have a tremendous amount of storage. Can we use that to take surplus energy from our solar installations in use in some terminals during the day and then use that power at night or during an emergency? Are there other things that we could do to strengthen the grid? We're trying to get ahead of that. And every one of these changes results in an infrastructure demand. So, energy resiliency is and will continue to be an important theme here at the port, going forward."

'Coopatition'

The Port of Long Beach's success stands on its own, but at the same time, you can't mention Long Beach without giving a nod to its next door neighbor and competitive rival, the Port of Los Angeles. Each a powerful force in its own right, both ports, with their economic and intermodal might combine to form the basis for the most formidable one-two maritime punch in the nation.

That sort of relationship necessarily requires collaboration in some areas, even as both warily look to the changing landscape of liner shipping alliances in a post-Hanjin world, while trying to secure the largest possible share of that intermodal traffic.

Kenagy is both philosophical and at the same time, pragmatic about what is ultimately a partnership, when the rubber meets the road. "My predecessor invented a term called 'coopatition' and I think that explains our relationship very effectively. We obviously compete for business. I think that competition keeps both of us sharper and the entire industry and the nation benefits from that economic competition. On the other hand, many issues lend themselves to cooperation & collaboration between the two ports. Environmental issues come to mind. It is hard for us to clean up the water without them cleaning up the water at the same time. Air quality is another place where we can collaborate. We collaborate very carefully on our clean air action plan and our water cleanup plans."

The collaboration runs deeper, even into business processes. In terms of supply chain optimization, both ports try to find out where a public port can drive more efficiency to benefit the overall system. And then, there are security issues for two of the most important ports in North America, operating in an edgy, perilous post-9/11 world. Close cooperation there ensures the safety of the massive freight gateway and the millions of people living in close proximity to the port(s).

One such cooperative project, now completed, was the all-important Alameda Corridor, a 20-mile-long rail cargo expressway linking the ports of Long Beach and Los Angeles to the transcontinental rail network near downtown Los Angeles. The series of bridges, underpasses and overpasses separate freight trains from street traffic and passenger trains, eventually facilitating a more efficient transportation network.

Coopatition: Cooperation, sure, says the pragmatic, but also competitive Kenagy, who also points to the benefits of the free market system, one which produces his closest rival, a mere stone's toss across the channel. "Yes, there are a number of ways we can work together," he insists, but qualifies that statement saying, "Again, the alameda corridor was a joint port project that we both equally benefit from the high quality, fast rail access that this provides. But, we make each other better on a daily basis. I think you could apply that to any industry. If we had only one airline, or just one shipping line – how would the service be? Competition makes people improve their game. From our perspective, our number one goal isn't competing with LA. Our number one goal is to improve and maintain our value proposition to our customers. If we do that, the market will take care of us."

Intermodal, Environmental and Efficient

It wasn't too long ago that, faced with environmental issues, the vast majority of businesses in any sector would implement so-called 'green programs' only when necessary; kicking and screaming all the way. That's never been the case for the Port of Long Beach, because embracing the environment is part and parcel of a more efficient port. Kenagy insists that Long Beach is already moving cargo very efficiently, and he says,

"The gateway remains strong. But, we're very committed to intermodal; I mean the ultimate commitment to intermodal was the completion of the Alameda corridor about 15 years ago. It provided excellent rail access into the port complex. Going forward, a great deal of our capital program – about $1 billion – is to invest in rail facilities. Right now, we operate about 26 percent on dock to rail and we would like to increase that to about 35% over the near term. Overall, we have an aspirational goal of 50%." The first leg of that journey is on rail, and then a short drayage out into the inland empire. But, he cautions, "That has to become commercially attractive in order for that to work."

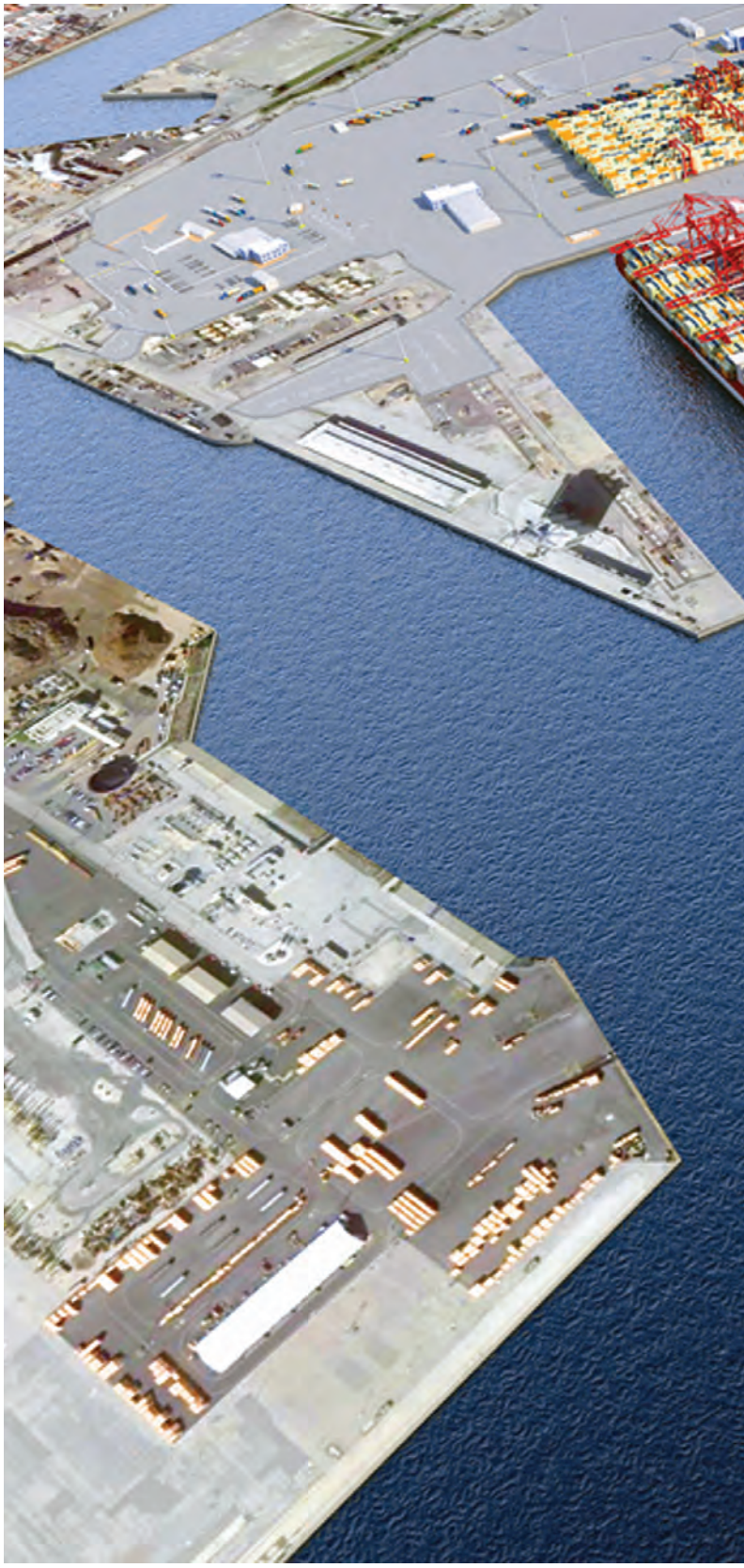
The port is in the early stages of investigating the feasibility of inland FTZ sites – much like what the port of Charleston, South Carolina is setting up. With any operation like that, there's always a lot of environmental and community considerations. That said; Kenagy says that "everyone agrees that moving rail out of the port is good for the region but there are a lot of challenges to overcome from the economic and environmental sides to make that happen." A renewed interest by the railroads in this kind of a concept could be the key. Investigated very thoroughly as far back as 2004, the economics just didn't pencil out and so, it did not move forward. Today, it is closer to feasibility and that's got to do with trucking rates and the fact that the railroads are more interested in new business opportunities than perhaps they were, 14 years ago.

Somehow, it seems to always come back to the environment. Kenagy sums the situation up nicely, saying, "We've heard from the community loud and clear that they would like to move more cargo out of the port via rail; its cleaner, its more efficient, certainly reduced congestion, wear and tear on the roads, and improved safety on our local highways."

Getting Green

Everyone wants that 'green.' At the Port of Long Beach, the logo that touts 'the green port' has more than one meaning. Duane Kenagy will tell you that the port's environmental efforts are at the forefront of every decision. And, that may well be true. At the same time, he and his colleagues have found a way to transfer that green footprint into a fatter bottom line. Not too many other businesses can make that claim, and at the same time, it is nothing to be ashamed of.

Looking ahead, the port's new executive office building is taking shape nearer to downtown and the port. The project, another P3 (public private) initiative is naturally a Leeds Gold designed and certified space. By the end of 2019, the entire management team will move to that location. At a time when the regulatory machine is placing extraordinary pressures on the already struggling maritime space, the Port of Long Beach blends both sides of the equation into one shade of green. That might leave a lesser port, 'Green' with envy.



Middle Harbor Rendering

Maritime Logistics Professional

Executive Interview

Duane L. Kenagy, P.E.

Interim Chief Executive,
Port of Long Beach, California

(*) all images courtesy Port of Long Beach, CA

Duane L. Kenagy, P.E., is the Interim Chief Executive for the Port of Long Beach. Kenagy leads the Port's 500-member staff while the Commission conducts an international search for a permanent executive to replace outgoing CEO Jon Slangerup. Kenagy came to the Port in November 2014 in the newly-created position of Capital Programs Executive to oversee all elements of the Port's decade-long, nearly $4.5 billion Capital Development Program – the largest infrastructure investment of any port in the nation – with a goal of completing a number of landmark projects on schedule and within budget. As an engineering consultant, Kenagy has worked with the Port on a number of projects since 1990, primarily with the $2.5 billion Alameda Transportation Corridor Project, where he served as Director of Engineering and overall Program Manager for 20 years. He has more than 35 years of engineering and design project management experience in the U.S. and overseas, most recently with the Moffatt & Nichol engineering consulting firm. He joined the company

in 1994 and served in various roles, both domestically and internationally. His experience working with goods movement, alternative project delivery and transportation-related commercial investments closely aligns with his role at the Port. Kenagy earned a Bachelor of Science degree in Civil Engineering from Oregon State University (1979) and, in 2011 was appointed to the University's Academy of Distinguished Engineers. He is a registered Civil Engineer in California and six other states and is a member of the Transportation Research Board, the American Society of Civil Engineers and the Design-Build Institute of America. He is additionally the recipient of numerous awards from the Orange County and Los Angeles County Chapters of the American Society of Civil Engineers for his work on the Alameda Corridor program, including the ASCE Outstanding Civil Engineering Achievement award and ACEC Grand Award.

Listen in as he shows how the port can and does embrace two kinds of green on its way to maintaining its current port ranking and preparing for what comes next.

We have very ambitious goals for intermodal. The natural demand for IPI cargo, we often call it, is somewhere around 35%. We have goals to go even higher.

Port of Long Beach: *Interview*

You previously served as the Port's Capital Program Senior Executive Lead, overseeing all elements of the Port's decade-long, $4 billion+ capital development program. What were those projects and why are they important?

You're right, I came to the port 2-1/2 years ago to head up the capital program. I was attracted by the $4 billion capital program here. This year, our budget for our capital improvements is about $500 million because some of these projects can up to a decade to complete when you go through the planning process, permitting and eventually, the construction. Our major projects are the Gerald Desmond Bridge at about $1.5 billion, and our middle harbor redevelopment project is about $1.3 billion. We also have various dredging projects, a rail project that we plan out over a ten year period where we development infrastructure for the port complex.

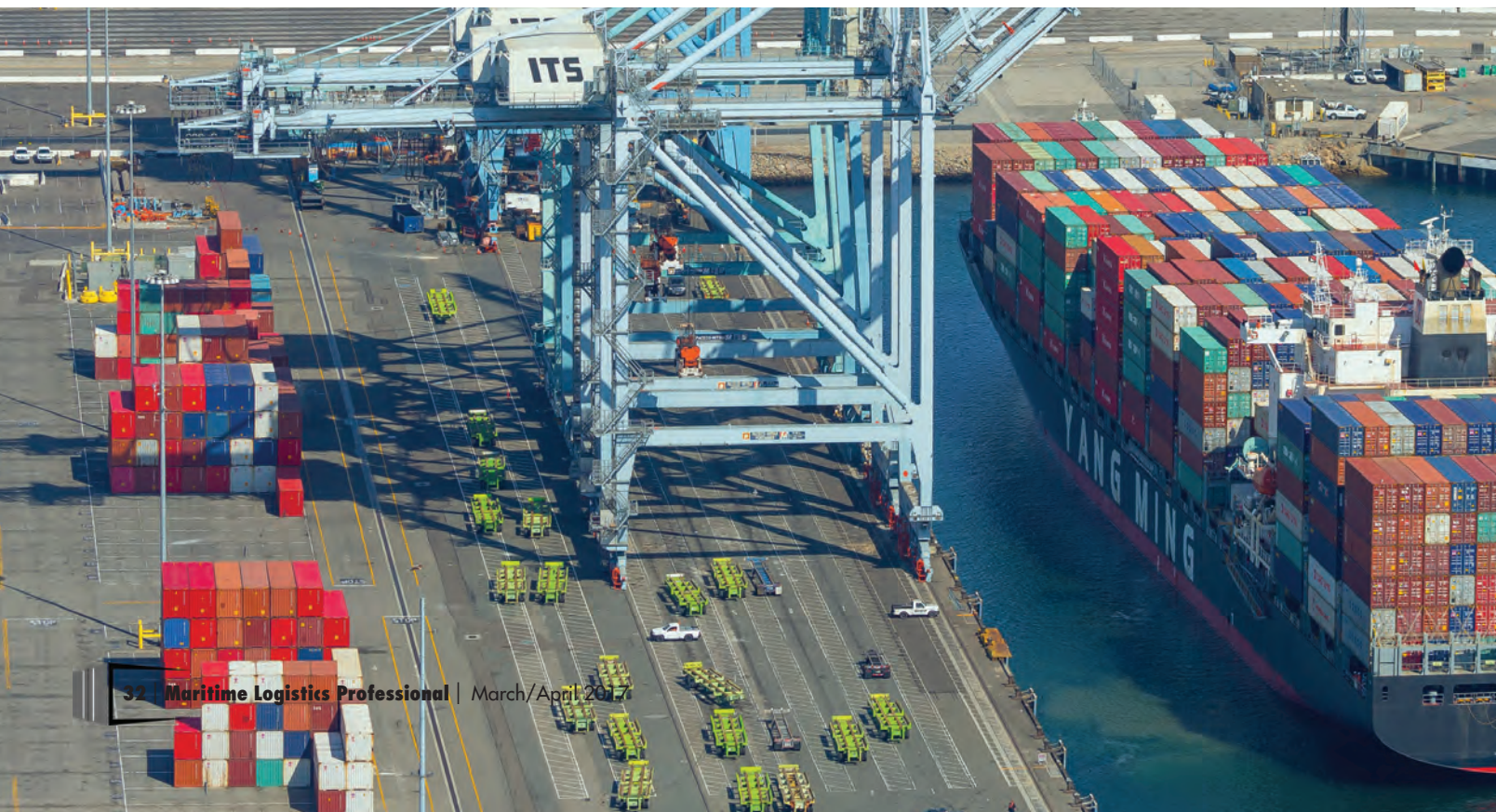
Does it help to have an engineer in the Chief's role?

Well, given that our budget is about two-thirds capital program, it does help. But, I would have to say that the advantages I found were two things. One: as a large project engineer, you work with a multi-disciplinary team and this is kind of the ultimate multi-disciplinary team. The other thing is that for the 20 years before coming here, I worked with Moffatt and Nichol, a maritime engineering firm, and I got exposed to a lot of things including the commercial aspects of the port sector. That's because I headed up their commercial division. But, I'm not competing for this job and I want to go back to the engineering.

P3 port and infrastructure finance are hot topics in a domestic funding era where a lot of concrete gets poured with federal dollars but port funding sometimes lags. What is long Beach doing – or contemplating – when it comes to P3 projects and who might they be collaborating with?

We are engaging in those discussions. P3 is a broad spectrum. It means a lot of things to a lot of people. In a sense, you could say that many of our projects are P3s, jointly developing middle harbor for instance, working very closely with our tenants, we're making investments in certain things, working very closely with them, we are coordinating on what those facilities should look like. That includes configurations, capacities, what size of equipment that they're going to install. At the same time that we're making a $1.3 billion investment in infrastructure, they're making a corresponding $600-$700 million investment in the terminal equipment, the operating equipment and the facilities that go with it. So that it is definitely a public/private partnership towards developing a terminal that can handle the largest ships on the drawing boards. Our bridge project is a design/build project. And that usually fits within the rubric of "P3." We've also got very ambitious plans to build our pier B rail yard, so one of the things we're looking at is whether or not there's an opportunity to fund it with some sort of P3 type mechanism. My background from the Alameda Corridor was kind of the ultimate P3 project, with private railroads in the public ports, developing a mechanism to generate the capital to fund a $2.5 capital project that all those communities through that corridor reap the benefits from, every day with reduced train noise, reduced congestion, etc.

Do you think that the nation's port planners (everywhere) give enough thought to the interconnectivity of



ports to the other modes?

I certainly believe that we, as a port, are. We have very ambitious goals for intermodal. The natural demand for IPI cargo, we often call it, is somewhere around 35%. We have goals to go even higher. But, you are absolutely right, the connectivity to the inland infrastructure from the port has a footprint and it is a tight footprint. So, the connectivity to the rest of the nation is vitally important to the operation of the port and in some ways, it is also the biggest challenge that the port faces. That's because it is easy to finance the development of a terminal, signing a contract for X number of years, have projections of throughput. It is much harder to finance these connectivity projects that are not only outside the terminal fence, but also outside the property that we control. Clearly, we work with our counterparts in public agencies, to ensure that freight and cargo movement get the proper consideration and public investment. And we are encouraged by the renewed emphasis on goods movement at both the state and federal level. We work very closely with them and in fact, tomorrow I will be up in Sacramento visiting with various key legislators to make sure that they understand the importance of goods movement. And not just in the ports but what happens throughout the entire supply chain system. After that, I'll also be going to Washington to do the same thing. The bridge is a good example of where we have CalTrans funds, MTA local funds, federal grants and considerable investment from the port itself.

Talk about environmental initiatives. It would be a little hard to make environmental improvements at one port – LA or LB – without the other reciprocating, because the environmental advantages (think air emissions) would ultimately be negated and one port might have a competitive advantage over the other. How do you cooperate in these ways?

Yes, we do very much collaborate on the environmental issues. Strategies that are implemented on a case by case basis may be different because of the configuration of the terminals. But, we want to collaborate, and our boards work together jointly on the clean air action plan. Our interests, therefore, are very much aligned on environmental issues and goals. Both communities are very much concerned about the impacts and how those should be addressed. And quite frankly, both ports are very proud of what we've accomplished over the last ten years. What we see is that things that start here in San Pedro Harbor – LA and Long Beach – are being adopted around the world, including in China. We look at ourselves as a model. If you would've talked to some industry folks back in 2000 and said this is what we were going to do in 2005 and 2015 and they would've said, "No way." But, we've actually proven it can be done and it can be done in a reasonably economical way. These efforts don't come without costs, but they can be done and we've had remarkable results.

What is the biggest challenge on the plate of the port at this moment? Why? And, what are you doing about it?

Our biggest challenge was to get through the Hanjin bankruptcy – something that had a very large impact on our port and largest terminal, Pier T. They had a controlling interest in it. We worked with Mediterranean Shipping to assume the lease and we're quite excited about our new partnership with Mediterranean Shipping and their terminal operating subsidiary, TIL.

We still have things to resolve related to shifting cargo around and the effects on our other terminals but we're very excited about that. The new alliances that occur on April 1st; we're going from four major shipping alliances to three. And, we're just now starting to see the schedules form the alliance structure and we do assume that there will be challenges. This includes rail operations. Historically, rail lines tended to worked with one terminal or another. So there will likely be some realignment. We could see some issues with the chassis. The Hanjin bankruptcy, for example, was a big disruption to the chassis pool. At one time you had about ten thousand Hanjin controlled containers that were sitting on a chassis and with no place to go. As we go into April, we worry about it. Is it going to be a Y2K event or is it going to be a non-event? In the end, we think that if we have the most efficient terminals, and we're able to accommodate the kinds of vessels that a particular alliance wants to deploy on that trade route, then we will get our market share.

Long Beach is the second-busiest port in the United States. And, with 66 post-Panamax gantry cranes, you are arguably as ready as any port in terms of the Panama Canal expansion. What is your controlling draft (depth) today, and is it enough? Will you go deeper if the funding is there?

In many places, we are at an ideal draft; in some, no. Right now, our main channel depth is 76 feet. Pier T and our Middle Harbor are both dredged to 55' at the berth, so that can accommodate just about any vessel we anticipate serving. We don't believe that there will be any vessels at our outer harbor terminals that won't be able to call there. We are doing a deep draft navigation study, working with the Corps of Engineers to look at other channels and unique dredging needs within the port. That study is expected to be completed by July of 2018. And if it shows we need dredging, that would be reported to Congress and we'd apply for authorization.

According to your web site, Long Beach is the 21st-busiest container cargo port in the world. If combined, the ports of Long Beach and Los Angeles would be the world's tenth-busiest port complex by container volume. All of that is impressive. But, land constrained and urban, there is only so much room for growth. How much more growth could Long Beach sustain, especially in terms of TEU throughput? What's the immediate goal?

We are not at maximum capacity. Let's look at the forecast. We do our term forecasts on a baywide basis. Because it is the attractiveness of the Gateway that dictates that and right now our forecast is that this gateway will double to about 32 million TEU's by 2035. We're roughly at a combined total of 16 million TEU right now. At one time, that forecast was for 40 million TEU or more, but the great recession of 2008 has tempered those forecasts. And a lot of this has to do with the strategies of the various shippers – what do they want to do? Deciding on the capacity of a terminal is an elusive thing.

Getting to an efficiency of 10000 TEU's per acre goal would certainly not be out of reach. The whole key is how do you deal with the surges of very large vessels and as you start to see ships of greater than 14,000 TEU call regularly here, means that as many as 8500 containers would be coming off that ship and 8500 containers going back on. So, we need to drive those kinds of operational efficiencies in the terminal. All of the cranes at Middle Harbor, for instance, are of the new – post Panamax size. We can handle 18000 TEU vessels there. And the last two cranes they intend to install there in phase two will be able to able 22,000 TEU ships. And Pier T has committed on paper to install cranes that will handle 22,000 TEU vessels. But, the big challenge is getting it in and out of the terminal. It's why rail is so important to us. The more cargo we can move in and out on rail, the better. Hence, our investment in these rail facilities in close proximity to our terminals.

Labor always seems be an issue for box ports every three to five years. Certainly, this issue isn't unique to the West Coast. But typically you hear about it there first. How does long Beach approach the situation – or is that the purview of the terminal operators?

First of all, we have some of the most productive labor in the world. And we think that labor and the PMSA have a strong and vibrant relationship and they are talking. And, they are addressing issues of mutual concern. As a port authority, we encourage them to continue those discussions. We'd like to see them negotiate their next contract early – up in 2019. Both sides recognize that labor and management have an obligation to make sure that the gateway remains reliable. I have every confidence that they will address their issues and maintain the reliability and efficiency of the gateway. I am an Oregonian, I have seen what happened up there, and those lessons are not lost on any of us.

You've said that "with new alliances beginning this spring, 2017 is expected to be a transition year for the industry." How so and in what way?

We're forecasting a modest growth in 2017. We still have to get through the changing alliances and let that shake out. That said; we're very excited about the continuing ramping up of operations at middle harbor. The new terminal Phase 1 that we completed last year and we're excited about what we're going to see at Pier T, the terminal most impacted by the Hanjin situation. Just last week we saw the first 14000 TEU vessel call at Pier T. We're quite optimistic about our long term prospects, even knowing that February will be soft – largely because of the timing of the Chinese New Year. And, at this point, MSC hasn't yet begun bringing in the vessels with the new alliance. But, we'll see a surge in April of our Pier T volumes.

CORDERO TAKES THE REINS AT THE PORT OF LONG BEACH

The nationwide search for the Port of Long Beach's Executive director has ended. The Long Beach Board of Harbor Commissioners voted April 14 to name Mario Cordero, a former chairman and current member of the Federal Maritime Commission, as the Port of Long Beach's new Executive Director. Cordero, a Long Beach resident and attorney, served previously as president and as a longtime member of the Long Beach Board of Harbor Commissioners. Cordero, via presidential appointment, has served on the Federal Maritime Commission since 2011, with a term set to expire in June 2019. He served as chairman from April 2013 until January 2017.

While a Long Beach Harbor Commissioner from 2003 to 2011, Cordero helped to spearhead the Port's pioneering Green Port Policy, formalized in 2005 and aimed at reconciling economic growth and environmental stewardship to achieve long-term, sustainable port development; he also served as President of the Harbor Commission from 2007 to 2008. Cordero has forged relationships with maritime representatives around the world, and he is poised to build consensus as new alliances change the face of the shipping industry.

Concurrent with his leadership positions at the Port of Long Beach, Cordero served on the Executive Board of the American Association of Port Authorities' Latin American delegation. In this role, he led efforts to develop policies for greater cooperation, increased trade, and joint growth across the combined North American and Latin American footprint.

Cordero has practiced law for more than 30 years and has taught political science at Long Beach City College. He earned his Bachelor of Science in Political Science from California State University, Long Beach, and his law degree from the University of Santa Clara. Cordero will succeed Duane Kenagy, who has served as Interim Executive Director since late 2016. Cordero is expected to join the Port in May.

Editor's Note MLPro Editor Joseph Keefe interviewed Interim POLB Director Duane Kenagy in late March.

The Port of Long Beach

The Port of Long Beach

is one of the world's busiest seaports, a leading gateway for trade between the United States and Asia. It supports over a million jobs nationally and generates billions of dollars in economic activity each year. As surging imports powered March cargo gains, one of America's most environmentally correct ports also sees a different kind of green.

The Port of Long Beach had its best first quarter since 2007 and containers arriving in Long Beach with goods bound for U.S. consumers spiked 20.2 percent in March compared to the same month in 2016. And, although dockworkers offloaded 249,534 twenty-foot equivalent units (TEUs) from vessels in March, shipments to overseas markets continue to face challenges due to the strong dollar, as exports decreased 5.3 percent, to 120,435 TEUs. In total, the Port of Long Beach moved 505,382 TEUs in March – an 8.7 percent increase.

A gateway for trans-Pacific trade and a trailblazer in goods movement and environmental stewardship, the Port's loaded containers account for fully one-third of all boxes moving through California ports, 25 percent of West Coast box volumes and represent nearly 1 in 5 moving through all U.S. ports.

In addition to its impressive box numbers, the port also handles a myriad of other cargo types, including large volumes of break bulk (automobiles, lumber, steel, iron ore) cargoes, bulk cargoes in the form of petroleum coke, salt, gypsum and cement and. Of course, five liquid petroleum facilities handle large volumes of tanker traffic annually.

The second-busiest port in the United States, Long Beach is also the 20th-busiest container cargo port in the world. Notably, and if combined, the ports of Long Beach and Los Angeles would be the world's tenth-busiest port complex by container volume, after Shanghai, Singapore, Shenzhen (China), Ningbo (China) Hong Kong, Busan (S. Korea), Qingdao (China), Guangzhou (China), and Dubai (UAE). East Asian trade accounts for more than 90% of the shipments through the Port, with top trading partners (by tonnage) being South Korea, Japan, Hong Kong, Taiwan, Vietnam, Iraq, Australia, Ecuador and Indonesia.

According to the National Retail Federation and Hackett Associates, retail imports continue to grow nationally as the economy once again expands. The report also predicted that imports at the nation's major retail container ports would continue to see strong increases throughout the spring and summer as the nation's economy improves. In Long Beach, interim POLB Executive Director Duane Kenagy agreed, promising, "We are not at maximum capacity … it is the attractiveness of the Gateway that dictates that and right now our forecast is that this gateway will double to about 32 million TEU's by 2035. We're roughly at a combined [LA/LB] total of 16 million TEU right now." And, although the port numbers have rebounded nicely, there is plenty of room for that growth, as TEU throughput still has not rebounded to the port's pre-recession best numbers. The best, then, is yet to come.

Port of Long Beach

Latest Month / Container Trade in TEUs

	March			Fiscal Year to Date***		
	2017	2016	%Change	2017***	2016	%Change
Loaded Inbound	249,534	207,635	20.2%	1,607,203	1,692,647	-3.3%
Loaded Outbound	120,435	127,210	-5.3%	729,078	736,102	-1.0%
Empties	135,413	130,010	4.2%	885,145	969,835	-8.7%
TOTAL (TEU)	505,382	464,855	8.7%	3,251,426	3,398,584	-4.3%

Likes Both Kinds of Green

RANK	TOTAL TRADE 2015	
	PORT/STATE	TONS
1	South Louisiana, LA	259,102,230
2	Houston, TX	240,933,410
3	New York/New Jersey	126,690,317
4	New Orleans, LA	87,809,854
5	Beaumont, TX	87,169,875
6	Corpus Christi, TX	85,674,966
7	Long Beach, CA	78,164,597
8	Baton Rouge, LA	68,781,974
9	Los Angeles, CA	60,187,840
10	Mobile, AL	58,594,752

Source: U.S. Army Corps of Engineers, Waterborne Commerce Statistics Center

Container Trade in TEUs* Yearly TEU Totals					
Year	Loaded Inbound	Loaded Outbound	Total Loaded	Empties	Total Throughput
2016	3,442,575	1,529,497	4,972,073	1,803,098	6,775,171
2015	3,625,263	1,525,560	5,150,823	2,041,243	7,192,066
2014	3,517,514	1,604,394	5,121,908	1,698,898	6,820,806
2013	3,455,323	1,704,932	5,160,255	1,570,318	6,730,573
2012	3,062,290	1,540,188	4,602,478	1,443,184	6,045,662
2011	3,024,965	1,506,693	4,531,658	1,529,427	6,061,085
2010	3,128,860	1,562,398	4,691,258	1,572,241	6,263,499
2009	2,534,897	1,352,053	3,886,950	1,180,647	5,067,597
2008	3,189,363	1,687,051	4,876,414	1,611,402	6,487,816
2007	3,704,593	1,574,241	5,278,834	2,033,631	7,312,465

Source: Port of long Beach

By the numbers, the port looks something like this:

10:	**Number of piers utilized to move cargo.**
22:	**Number of Shipping terminals on site.**
66:	**post-Panamax gantry cranes available to move cargo.**
80:	**Total number of berths available for waterborne traffic.**
82.3:	**Millions of metric tons of cargo handled annually.**
175:	**Number of shipping lines calling at Long Beach.**
180:	**Billions USD that Long Beach handles in trade annually.**
217:	**Number of Seaports the port trades with.**
2,000:	**Number of vessel calls at port each year.**
3,000:	**Number of acres of land controlled by the port.**
30,000:	**Number of jobs (about one in eight) attributable to the port in Long Beach.**
316,000:	**Number of port related jobs in the five-county Southern California region.**
6.8 million:	**Number of 20-foot container units (TEUs) the port handles annually.**
5 billion:	**USD in U.S. Customs revenues collected from Long Beach/LA ports.**
14.5 billion:	**Annual trade-related wages generated.**

Navis Puts TOS on Cloud 9

You don't have to go it alone. The most experienced Terminal Operating System provider on the planet has already been there and done that.

By Patricia Keefe

The average terminal is a city unto itself – a jumble of berths, loading docks, automated cranes and transportation vehicles, equipment control systems, yards of containers, integrated gates and tracking systems, all linked into the outside world via rail and trucking connections, and of course, the ocean.

These entities and technologies need to be able to communicate with each other, with the buyers and sellers, and also with the back office systems used for scheduling, tracking, billing and invoicing. There can be no gains in efficiency or costs or time savings, much less a boost to competitiveness, otherwise.

Connecting these disparate pieces together into one system is not unlike building an enterprise resource planning (ERP) system, which manages and integrates the important parts of a business. In fact, the platform used in terminals to make that happen, the Terminal Operating System (TOS), essentially is an ERP system, for moving and tracking goods in and out of the terminals, says Andy Barrons, chief strategy officer and senior vice president for Navis, a provider of TOS platforms, modules and business intelligence tools.

Heart of the City

"The TOS is the core system to the heart of the terminal operation's IT landscape. It's where the planning and execution take place to make sure containers are moved through the terminal as efficiently as possible, while also making sure that equipment and labor are used as productively as possible," says Barrons. "The TOS is the heart and brains of what makes a terminal run," agrees Raj Gupta, Navis' chief technology officer & senior vice president of engineering.

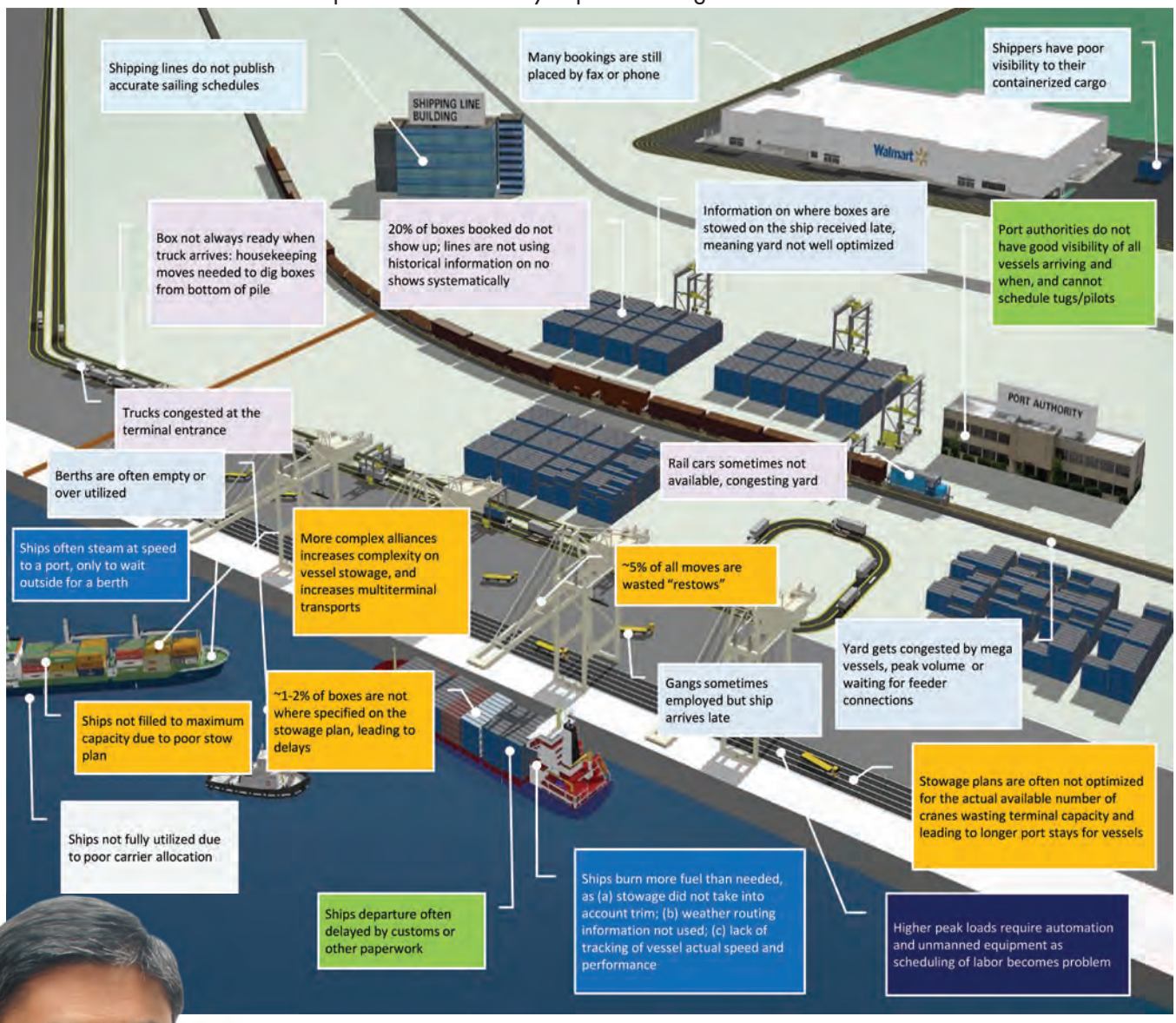
It wasn't always that way. Much like ERP, TOS got its start in the early '90s in the nascent days of stowage planning. The business of optimizing the loading of vessels evolved into looking at how to plan and execute all the moves for a terminal, and from there the TOS began to develop. By the mid-2000s, Navis was working on its N4 system, which has been evolving in terms of capacity, scalability and automation.

As Barrons sees it, the first wave of automation meant replacing people in stacking cranes and vehicles with robotics. In the late 2000's came a second wave that saw more types of equipment being automated. The current third wave is producing more sophistication around remote management and automating the process of instructing equipment.

Along the way, Navis, one of the early pioneers, has, after 25 years, become the predominant player in the TOS market, with installations in 315 of an estimated 1,200 terminals worldwide. Navis users range from 50,000 to 100,000 containers all the way up to 14 million containers. Half of that 1,200 are using some form of commercial system with varying degrees of sophistication, according to Barrons, who adds that another 25% are still using homegrown systems.

Navis customers, meanwhile, expect a lot out of their investment. They want a system that will save time, cut costs and give them a competitive advantage in terms of service delivery to clients, and they need a system to enable them to comply with whatever regulations there may be. They want to speed up planning time and get the most of out their assets, for example, saving fuel and wear and tear even as they

Graphic from a McKinsey Report outlining waste and issues in marine container terminals.



CREDIT: Navis

Some of the terminals feel the need to create their own TOS because there tends to be many unique (to them) business processes in the way they handle operations. But we are also seeing over time, that many of them are starting to come around to what they can get from Navis. We are able to dedicate a larger set of resources than they can, and the automation we build is not easy to do, and would be difficult for even a larger terminal to maintain.

– Raj Gupta,
Chief Technology Officer & Senior Vice President Engineering

work to get equipment like cranes moving at the fastest possible rates consistently so they can optimize the labor working on a particular vessel. They want to provide good service – boosting turnaround time at the gates and also at the berths. They want to be able to manage all this information and provide accurate invoicing. More and more, adds Barrons, they are also looking for transparency and visibility into the TOS data so they can find opportunities to improve operations or identify bottlenecks.

"People are becoming more aware of the value of data. If you look at an industry like the airlines, in the '90s they lost tens of billions of dollars. They had no control over capacity or their customers coming through travel agents. They've controlled capacity over the last decade and also become expert users of data-driven demand forecasting and dynamic pricing. As a result, in the last couple of years, the airlines have made $40 billion," says Barrons, who believes the shipping supply chain today is on the precipice of a similar evolution.

The industry is at a "tipping point," he says, predicting that the next five to 10 years will see investments in technology around exchanging information and putting data to work. Terminals today have systems managing operations internal to their yard, but, explains Barrons, "the future is having systems that are actually connected to other systems outside your four walls, to share information" between carriers, terminals and all shipping parties. To get to the next level of supply chain efficiency, more focus needs to be placed how different systems integrate across the supply chain.

He says this will pose a challenge to sites that have sunk a lot of cost into their in-house developed TOS. "The market today is moving toward automation and optimization – a new level of efficiency. A lot of legacy systems will have to be redeveloped, perhaps from scratch, to manage the level of data required for an automated terminal," claims Barrons. Those sites will have to decide whether to stay in-house or leverage outside expertise.

The DIY Route

Undertaking a TOS implementation is not for the faint of heart. It's a colossal, very complex undertaking, and yet, a substantial number of terminals opted to take the project in-house. In the early '90s, when the commercial TOS application market was in its infancy, forward-thinking ports and terminals had no choice – if they wanted to get a handle on traffic, they had to go it alone.

Fast forward 20-25 years, and that's no longer the case as there are a reasonably wide range of commercial platforms to consider. The typical TOS accesses everything through a browser, with the back end running on AWS servers, the clients run on Windows, Linux and mobile phones, and data is stored in Oracle and Microsoft SQL data bases. Only a small number of vendors offer cloud-based TOS today, and they are targeting smaller terminals that lack IT resources. While Navis doesn't currently extend to intermodal transportation, it has published APIs that can be used to interface to outside systems.

Another reason many operators went in-house is that as the saying goes, "If you've seen one port, you've seen one port." Ditto terminals. Beyond the basic platform, one size isn't going to fit all – not without some degree of customization and the use of optional modules targeting specific functional areas. And who knows that port or terminal better than the IT professionals who support it?

"Some of the terminals feel the need to create their own TOS because there tends to be many unique (to them) business processes in the way they handle operations. But we are also seeing over time, that many of them are starting to come around to what they can get from Navis. We are able to dedicate a larger set of resources than they can, and the automation we build is not easy to do, and would be difficult for even a larger terminal to maintain." says Gupta.

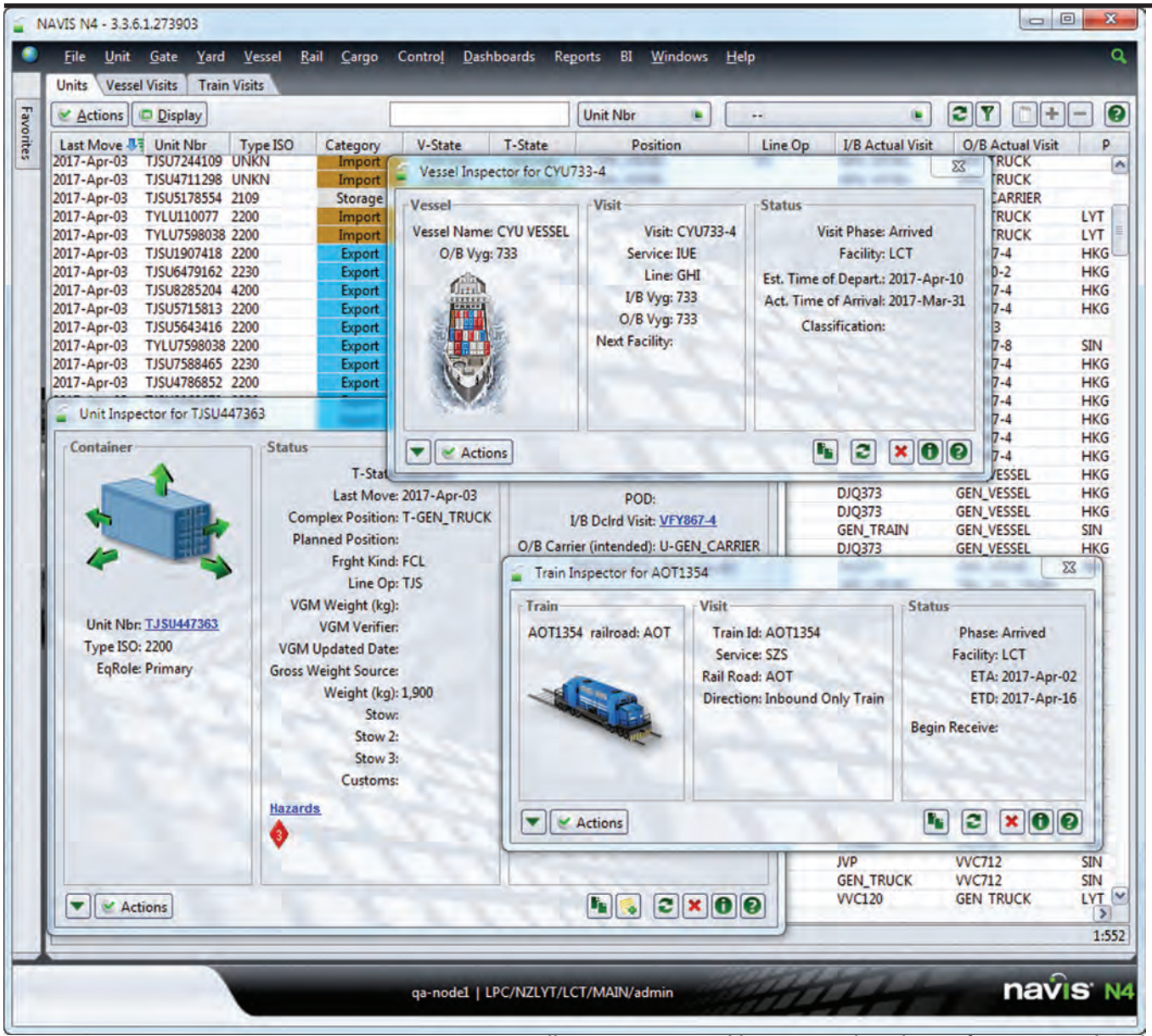
It generally takes six months to a year to design, install, train and test a TOS system. Done right, it will involve a dedicated team on the terminal side working with the vendor. In the immortal words of Rambo, however, "Nothing is over." You don't just get a TOS up and running and settle in. "Buying a TOS is a 20-year commitment," says Richard Willis, senior director, Port Technologies consultancy.

Data is the New Gold

The heavily automated and digitized next stage of that commitment will come with a greater emphasis on data analytics and B2B connectivity and communication. Those two are the keys to providing the insights needed to improve decision making and reduce what Navis estimates to be a staggering $17 billion in annual waste in current port and carrier activities (see McKinsey charts).This includes economic losses from not optimizing stowage, or time savings not realized from not automating, or fuel wasted by sailing too quickly to unavailable berths.

The existence of huge areas of inefficiencies across the supply chain have been reinforced, says Barrons, by industry leaders such as Hapag-Lloyd CEO Rolf Habben Jansen referencing "mind-boggling inefficiencies," APM Terminals' CEO talking about the need for far greater productivity in terms of predictable vessel turnaround at the port, and, at Maersk's Capital Market Day in December, Maersk unveiled a new Transport & Logistics division, which it said "aspires to become the global integrator of container logistics, providing global supply chain solutions while delivering great customer

Along the way, Navis, one of the early pioneers, has, after 25 years, become the predominant player in the TOS market, with installations in 315 of an estimated 1,200 terminals worldwide. Navis users range from 50,000 to 100,000 containers all the way up to 14 million containers. Half of that 1,200 are using some form of commercial system with varying degrees of sophistication, according to Barrons, who adds that another 25% are still using homegrown systems.



Inspectors allow users to quickly view and update information related to the entity and also see relationships with other entities.

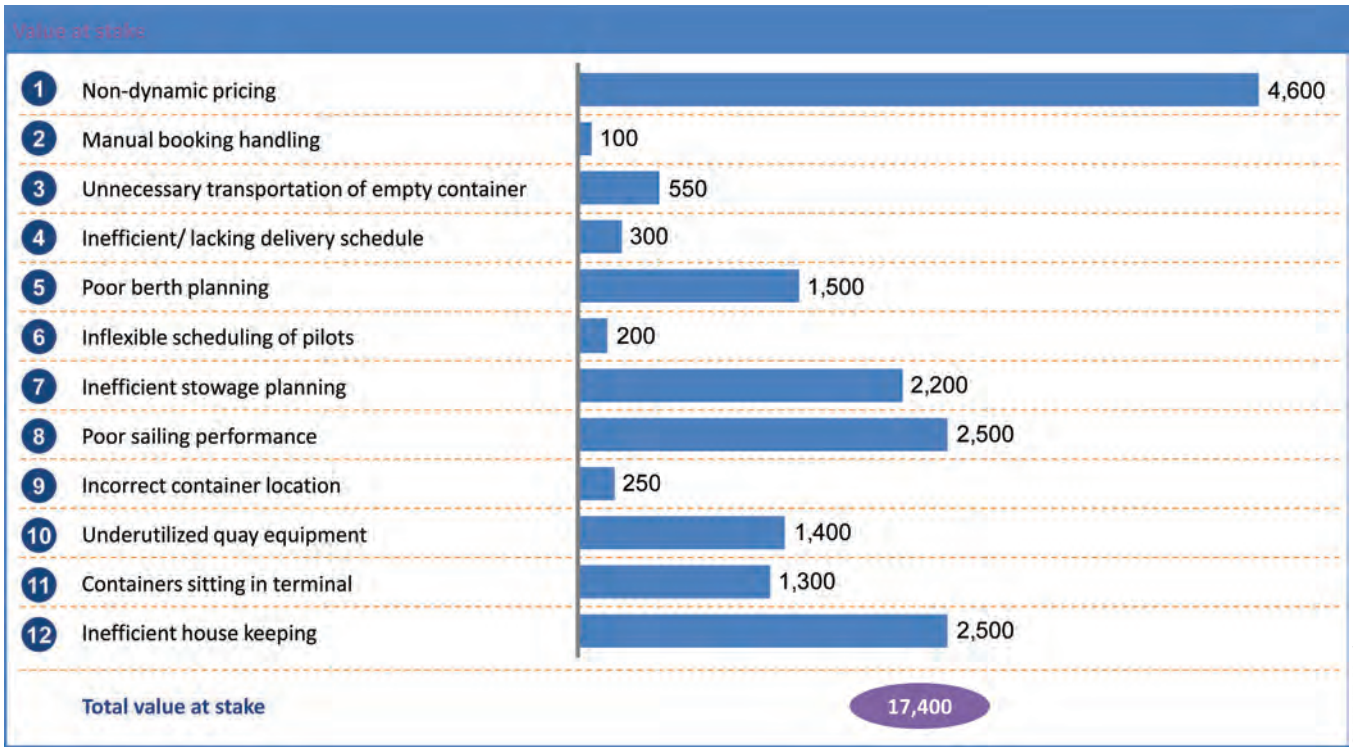
> *The market today is moving toward automation and optimization – a new level of efficiency. A lot of legacy systems will have to be redeveloped, perhaps from scratch, to manage the level of data required for an automated terminal,*
>
> – Andy Barrons,
> Navis Chief Strategy Officer & Senior Vice President

experience." Meanwhile, the focus is off building new vessels and on automation. "Everything that can be digitalized will be digitalized," said Jakob Stausholm, Maersk's Group Chief Financial, Strategy & Transformation Officer.

But, thanks to better business intelligence tools, "we'll have a better understanding of that data, the quality of it, what it means, and how to use it to improve cooperation and services," to eliminate some of that $17 billion in waste, says Barrons.

Timely and accurate analysis of real-time data can help to head off equipment issues, improve efficiencies, drive up productivity, push down wait times, and maximize container moves and yard space, as well as provide transparency to customers. On the client side, data analytics can be used to improve stowage planning, enable real-time EDI, cut fuel costs and waiting times, provide greater visibility into where containers are and provide an invaluable assist with contract negotiations.

It can even help determine whether and where a yard might have added capacity, leading to more revenue. "A lot of customers, for example, Long Beach Terminal, use TOS [data] to know where to improve operations or improve capacity to bring in additional bookings," says Gupta.



CREDIT: Navis

ROI On, ROI Off

Yet, despite all that effort, time and money, there's debate over the ROI to be realized. Barrons says a TOS as a core system delivers ROI on many different levels, dependent in part on the individual terminal's end goals.

Others say there may not be a definable ROI at the end of the day. But, notes Port Solution's Willis, ROI is not necessarily the real end game. A TOS changes every department in some way, says Willis and it can take a long time for the dust to settle. "You could install a TOS and not necessarily see any ROI. It's more about how the business is changing and it's what you do with it," says Willis. "Sometimes it's the cost of not doing it because you will gradually lose to competitors."

Willis notes that you could install a TOS and never technically see an ROI, but says that's okay, because there are other ways of measuring a return on investment. For example, there's all the money and opportunity being lost because the terminal either wasn't using a TOS or hadn't optimized what it was using. There's the potential for better customer relationships, additional capacity and business, along with using historical data to prevent future problems and to improve worker and machine productivity.

While customers work at mastering and stretching a TOS platform and its modules to direct and monitor every activity in every corner of the yard, and to keep partners and clients up to data on where their containers are, vendors are busy too.

Over the next 5-10 years, terminal operators can look forward to the ability to dig ever deeper into the operation; expand connectivity out to intermodal transportation; fly higher into the cloud; and, gain better integration with, and oversight of, increasing automation in general, and automated machines in particular, that are coming down the strait.

But that's not enough, according to Navis. "The whole industry is going through a turbulent time with everyone trying to be much more efficient, and that's what we are working on right now, trying to provide a much more optimized way of getting containers off and on into the yard, smoother, faster, to help them realize the savings right now," says Gupta.

Some of that turbulence is due to vessels getting larger and larger and the shipping alliances that have sprung up. "The capacity is increasing more and more, but the amount of global trade isn't. When you have more capacity, prices go down. Suddenly it's not so easy to take a ship out of circulation," says Gupta.

For example, a ship sailing from China to the West Coast that is having a tough time saving money, Gupta says, Navis can help them save money on fuel use by telling them when to speed up or slow down, when the window will be available, which way to move containers, how to optimize loading of containers, and if they are making multiple stops, which containers are easier to offload. "Over time, we can make this much simpler for them. We can help them to become profitable." And when it finally arrives, terminals plugged into the system will know what they have. And if an accurate list is provided to the terminal, it won't have to challenge what is in the container and where it should go

The Great Leap Forward

What's needed to enable this, says Navis, is a global trade, cloud-based digital framework in order to drive a "productivity quantum leap." Much of the inefficiencies in the supply chain is between parties, not so much within terminals, which have invested heavily in internal systems and improving efficiency in the yard, says Barrons.

That "many-to-many" platform, which Navis intends to provide, would bring together terminals, carriers, shippers and cargo owners to easily share and synchronize data, and it claims, "transform how goods are efficiently delivered." To make that happen, will require "a different type of IT infrastructure, industry leadership and a change in mind set," says Barrons.

At its user conference last month, Navis unveiled what it calls a "broader strategy" that will move the company beyond the terminal yard to also service "a broader set of ocean trade entities." In addition to its N4 TOS, optimization modules and BI portal for terminals, Navis Carrier Solutions will offer software designed to improve vessel capacity, performance and monitoring, including Navis StowMan, a stowage planning product, with a 25% market share, acquired from INTERSCHALT. Also on tap, Navis MACS3, an onboard loading computer, is said to have a 65% market share and Navis Bluetracker to track fleet performance.

A Navis-backed, but separate entity, XVELA, will provide the cloud-based stowage collaboration network, which is built around open file standards that reportedly will allow network members to move beyond EDI messaging into real-time planning. Network participants will be able to use common vessel visualization tools to support stowage activities using "shared, identical and validated specifications of each ship,'' to realize new operational efficiencies and "capture untapped savings." Shared data will reduce the operational data errors caused by outdated or incorrectly configured ship files. XVELA is thinking big. "Replacing fragmented data silos and manual information exchange with digital information hubs connecting multiple parties and processes could have a huge impact on almost every area of logistics and transport," Navis claims.

"You can't manage what you can't see," observed XVELA President Guy Rey-Herme at the announcement.

Gupta sees XVELA as functioning more like a B2B online task-based exchange, much like an Ebay or Arribaa, but only

> *You could install a TOS and not necessarily see any ROI. It's more about how the business is changing and it's what you do with it, sometimes it's the cost of not doing it because you will gradually lose to competitors.*
>
> – Richard Willis,
>
> Principal, Port and Terminal Operations consultancy

for the businesses. Participants will get to see all different parties, how they handle inspections, see what terminals are available, and the terminals can see the carriers' schedules. The goal, he says, is to make the system of information exchange much smoother and easier to interface.

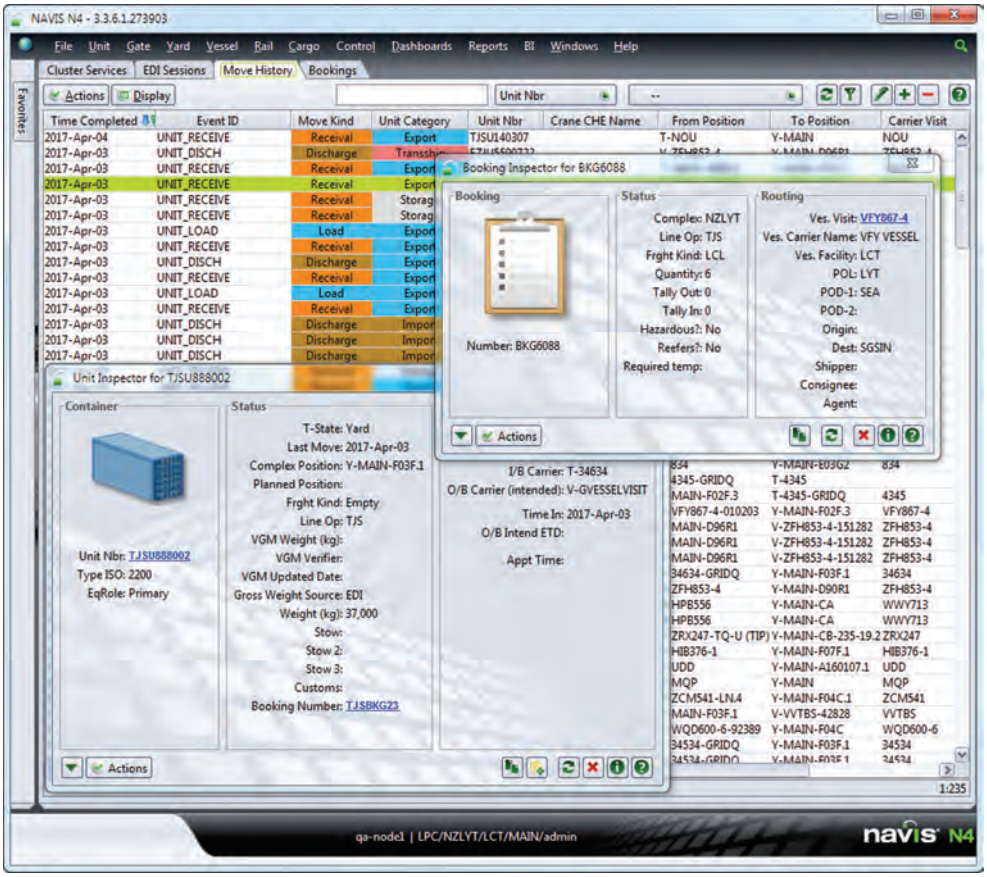
But, say Gupta and Barrons, the exchange will require industry leadership and a change in mindset among industry players, who will have to be willing to share their information – not a strong suit of the maritime industry. They will also have to change the way they work, the processes they use – a definite barrier to adoption. And points out Barrons, they will need to "deal with thorny issues of data transparency and ownership. "

"The challenge with these big implementations is definitely more with the peple and the process change, not the technology you are interfacing with," agrees Willis.

Putting All that Data to Work

Also on tap from Navis are more and better business intelligence tools designed to enable the business side especially to dig its way out from under the mass of data compiled by the TOS system and shared between supply chain partners. Navis is also working on providing cloud-based services and storage – something some competitors mainly targeting smaller terminals with limited IT and technology support. When they get that into place, the window for upstart competition will continue to narrow.

Despite amassing huge silos of data on worker productivity, machine productivity and lifespans, the best approach to stowage, wait times and gate traffic, etc., it turns out that customers aren't making the best, or even much, use out of that goldmine. They know they should. They know they need to. This is another area where the mindset needs to change, Barrons said.



Business Intelligence Docks

Terminal Operators Need Data Analytics to Unlock TOS Data Potential.

By Patricia Keefe

Navis undertook an extensive survey of users of its Navis terminal operating systems (TOS) in mid-2016, focusing in part on the use of business intelligence (BI) and data analytics tools. What the survey, conducted by *TechValidate*, found overall is that while terminal operators know what BI and data analytics could do for their operations, and how the lack of analytics is impacting their decision making and understanding of the issues facing their terminals, many are just not utilizing these tools, and hence, not being well served by the reams of data generated by their TOS. Specifically, TechValidate found that:

- ***81% of respondents did not use data for predictive analytics to anticipate exceptions, such as equipment breakdowns;***
- ***54% were not conducting deep-level key performance indicators (KPI) analysis to identify operational root causes of delays;***
- ***32% were not using that data to provide KPI reporting to customers and partners for performance tracking and or improvement; and***
- ***51% did not conduct reporting and analysis to provide insights useful for business planning.***

According to *"Business Intelligence, Big Data & The Impact on the Global Supply Chain,"* authored by Manoj Bhardwaj, director of Navis BI Solutions, and Bryan Miller, director of Navis Professional Services, automating analysis of the mountains of data collected daily "allows organizations to make business decisions based on facts, rather than ... unreliable intuition and gut instincts." That's because analytics-based KPIs can provide much needed insights into operational efficiencies, for example:

- ***Improving decision-making by using historical data to identify failures and correct mistakes;***
- ***increased visibility into overall terminal performance, enabling measurement of asset performance in the yard to help reduce 'rehandles' and associated costs;***
- ***and measuring and tracking truck turnaround time to better deploy resources and better match customer demands based on volume, freight type, dwell time, etc.***

And because they were not analyzing TOS data, the survey also found that respondents were dealing with the following issues:

- ***53% lack confidence in, or question, the quality of the data they are using;***
- ***48% are unable to identify root causes of delays;***
- ***36% are operating on "gut" decision-making based on "feelings";***
- ***34% lack data and analysis to provide insights on worker performance; and***
- ***31% are finding it difficult to conduct optimal negotiations with clients.***

Dawn of the BI Age

While acknowledging that use of BI has been slow to take off in shipping, the survey found that there is a growing understanding among terminal operators that analyzing their TOS data could inform, and even predict, events that have long- and short-term impacts. Specifically, respondents said that better data and analytics could help improve their operations by:

- ***76% could plan better to improve operational performance.***
- ***68% say they could enhance their terminal's efficiency and consistency.***
- ***62% believe they could improve customer service.***
- ***47% believe they could respond better to unplanned events.***
- ***39% believe they would be able to negotiate better contracts.***

While speaking about big data at the 2015 Maritime CIO Forum, Martin Kits van Heyningen, CEO of KVH Industries, Inc., urged the industry to make big data a priority. "Data is becoming a resource in its own right, and offers incredible possibilities for understanding every aspect of your business better," he said. The constant pressure to improve efficiencies, cut costs and provide greater transparency to partners and clients in order to remain competitive, will likely push or force terminal operators into making data analytics more of a priority. It's not hard to make the case when TechValidate found 65% of respondent estimating they are losing between 10%-25% productivity while another 13% say they are losing a minimum of 25% productivity due to poor or insufficient data analysis. That's learning the hard way that in the internet age, white boards and Excel spreadsheets (28% of respondents) – never mind, no tools at all (28%) – aren't robust enough at most operations to do the trick.

As noted by Richard Willis of the Ports Solutions consultancy and other observers, working with TOS is a long-term commitment, and as operators master each area of communication and connectivity, and get comfortable with the systems' reach and capability, they can be expected to move onto the next stages of evolution, one of which is BI and data analytics.

The days of relying on gut instinct are long gone. There is a growing understanding that it's not enough to just collect silos of data – it only becomes useful if it is analyzed and the resulting knowledge is applied to fixing yard problems or improving processes. "The maritime industry has spent the past 20 years trying to limit the amount of data going on and off vessels, while the rest of the world has been doing the exact opposite in adopting big data," observed Martin Kits van Heyningen in his 2015 talk.

So as terminal operators seek to increase efficiencies; cut waiting times, be it at the berth, gate or in the yard; and determine the most effective deployment of workers, vehicles and equipment, more and more are seeing there's only one way out – data analytics.

Murky Waters Persist

Ballast Water rules and approvals advanced in 2016. Shipowners, OEM's and shipyards now have to do the same, as 2017 looks to be even busier.

By Barry Parker

September, 2016 was a milestone for the international shipping business. Fully 12 years after the international convention on Ballast Water Treatment (BWT) was agreed by the International Maritime Organization (IMO), the convention was officially ratified, after Flag States for 35% of merchant shipping tonnage voted "yes." One year later, in September 2017, the convention, impacting ocean-going vessels of 400 gross tons, or greater, becomes effective. To put it bluntly, it's been a long and tortured journey from 2004, when the IMO's Marine Environmental Protection Committee (MEPC) began formulating best procedures (expressed in its "G-8" guidelines) and best practices.

Along the way, there's been a great deal of confusion- still ongoing, amidst murky regulatory standards (changing guidelines, changing standards for testing) against the backdrop of about various technologies' viability to measure up to IMO's dictates. Importantly, a Port State with enormous clout, recently brought a measure of clarity to the muddied situation.

In December 2016, the U.S. Coast Guard (USCG) issued

> *I expect 10 systems to be type approved by end of 2017.*
>
> **– Jad Mouawad, Consultant, BWT**

as Ballast Water Weighs on Shipowners

its first "type approval" for a BWT solution, the Optimarin Ballast System, which irradiates organisms with ultraviolet (UV) rays. Just prior to Christmas, type approvals were announced for two additional systems – Alfa Laval's PureBallast 3 system (which also uses UV) and OceanSaver's BWTS MKII (deploying an electro-chlorination process). Consultant Jad Mouawad told ***MLPro***, "I expect 10 systems to be type approved by end of 2017." Separately, and according to ABS Regional VP Michael Michaud, it is possible if not very likely that as many as 12 BWT systems in total could be approved by the end of the year.

With the type approvals (in contrast to earlier USCG alternative approvals, with a five year duration), one set of shipowner worries about long-term compliance have been assuaged. However, uncertainties are far from over; the IMO's "G-8" guidelines are set for a re-write in the coming year when the IMO's environmental committee meets, and scientists continue to quibble over testing procedures.

In a nutshell, owners of deepsea vessels trading internationally will be required to manage their ballast water according to requisite standards, detailed in a vessel-specific management plan. For most owners of tonnage already on the water, this means that they will need to install a system to treat vessel ballast water, prior to discharge overboard, sometime during 2017 to 2022 – with the requisite timing depending on the expiry of a vessel's "IOPP certificate" (a document evidencing pol-

lution prevention, which comes due every five years, usually re-issued in conjunction with a vessel's required drydocking).

Installation on existing vessels – depending on the type of system installed – may require significant mechanical and piping work within machinery spaces of the vessels, so the work must be done in conjunction with shipyard work. Mr. Valentios "Eddie" Valentis, the Chairman & CEO of Pyxis Tankers (a Nasdaq-listed owner with a fleet primarily hauling refined petroleum products) explained, "The Convention comes into effect in September, 2017, but vessels will have to install the units at the first drydocking following that date," adding that, "In our case, our company has some runway. Our first required installation is not until Fall 2018."

AMERICAN PIE

U.S. based owners in particular were caught in a regulatory logjam – U.S. legislation passed in 2012 required installation of systems in 2014 and 2015, but U.S. approvals were effectively limited to a five-year timeframe with uncertainty thereafter. The result was that many U.S. owners had requested, and received multi-year extensions from the USCG. Whether these extensions will be readily available going forward is an open question.

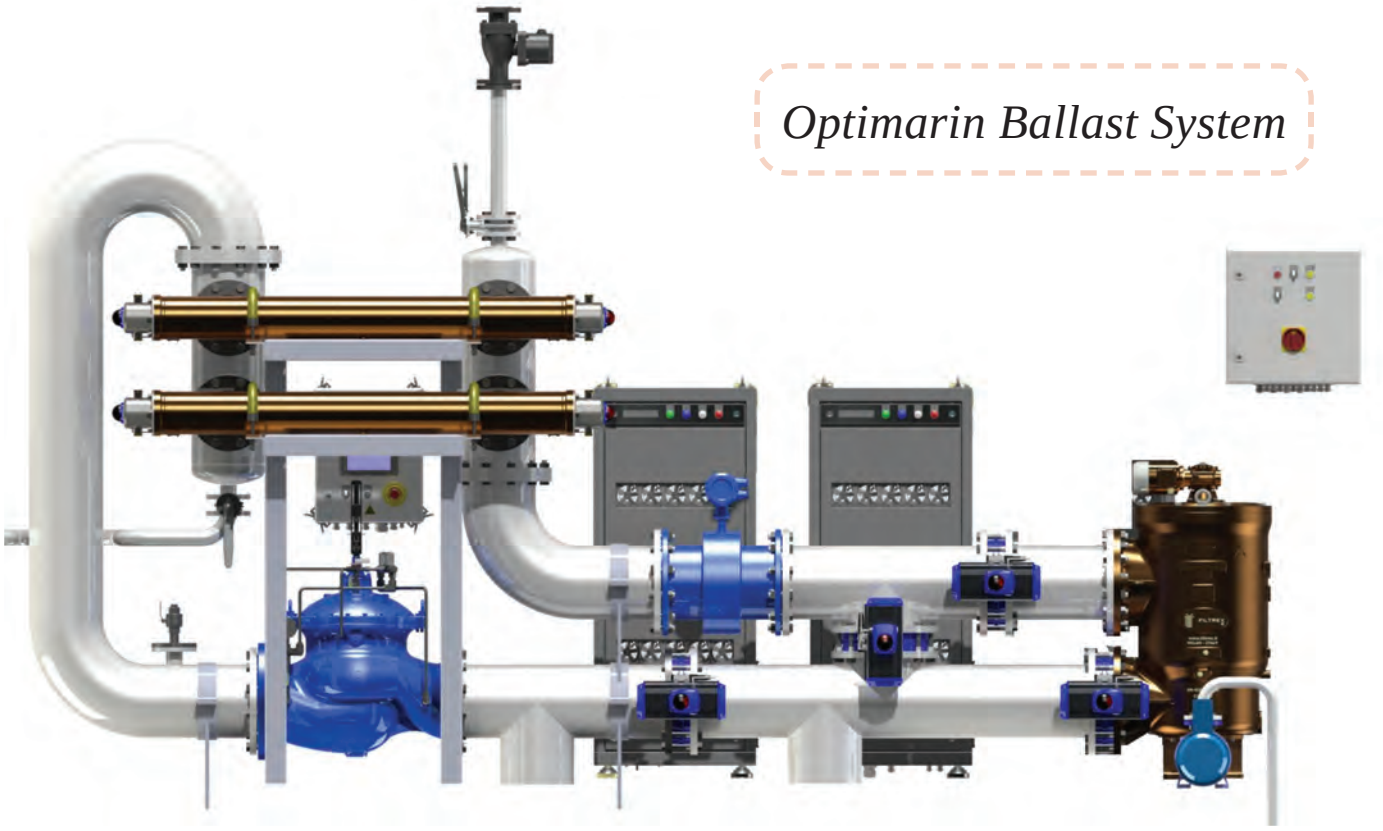
Richard Wells, Vice President at the Offshore Marine Service Association (OMSA) recently advised OMSA members (active in the OSV sector), "Previously, the Coast Guard would automatically grant a five year extension … now [following the first "type approval"], to get an extension, you will have to point to something specific, with a particular vessel, that makes it not possible to comply."

For U.S. yards, sadly, the INTEL from a recent BWTS conference was that virtually anyone with a blue water, Jones Act hull needing BWT retrofits was either fleeing (or getting ready to bolt) to an Asian drydock for a cheaper price.

LOOMING CAPEX, CAPACITY WORRIES

Beyond the worries of when the equipment absolutely has to be on board, capital costs and installation of the requisite equipment, with capital costs are estimated variously between $0.5 million and $2.5 million (and possibly as high as $5 million, if a recent statement from the Liberian shipping registry is accurate) for each vessel. This will potentially impose a severe strain on an industry presently in the midst of a severe slump across all sectors.

Lloyds Register (LR) estimates that as many as 68,000 ships that are subject to the new rules. Because many, though not all, will be installing systems, the overall capital spend, during the five year period out to 2022. This equates to between $50



Optimarin Ballast System

> *Everyone is trying to get a handle on BWT system costs. Depending on the circumstances, and in conjunction with forthcoming emission control regulations, an owner of an older vessel could opt to scrap earlier than anticipated.*
>
> **– Eddie Valentis, CEO, Pyxis**

billion and $100 billion, or $10 billion to $20 billion annually, depending on assumptions. To put this into perspective, annual ship finance drawn from banks has been estimated by commercial bankers to be on the order of $100 billion; with total portfolios for the industry's largest bank lenders totaling just under $400 billion at end 2015, according to Greek researcher Petrofin.

Ahead of the looming CapEx, owners took steps to reduce costs in the advent of the new regulations (a matter of "when" not "if"). Pyxis Tankers, with new ships, said: "Our company, being proactive, has ordered 'BWT-ready' newbuilds, which means that the cost will be more efficient as soon as a specific system is chosen." Mr. Mouawad suggests, "For 2017, I see very few retrofits, only newbuilds. For 2018, in addition to new builds, we will see a slight increase in retrofits. The bulk of the ship will come during 2019 – 2023, with some even distribution between those years." Analysts at VesselsValue.com, an information provider linked to on-the-market brokers for deepsea ships (a smaller universe than the LR number), told MLPro: "We have 55,538 live vessels in our system. According to our BWTS check for Class Society notations there are around 2,027 vessels fitted with BWTS. This leaves us with 53,510 vessels in need of retrofit," as of mid December 2016.

Another concern has been the ability of shipyards to handle a burst in BWT related work. But, Mouawad insists, "I believe there is capacity to handle the new work. Especially shipyards and equipment capacity is available. You will see some lack in engineering capacity but this will quickly be filled by shipyard staff, with varying quality. Therefore when the implementation is down by some years and we know where, and how many retrofits are done, we can look at whether we should give ships a year or two more to comply with the D-2 standard (measurement of allowable concentrations of microbes discharged). But now, we just need to start."

These huge dollar impacts have not been lost on a business that is both capital constrained (with each week bringing reports of banks exiting the sector) and over-tonnaged (supply of ships greatly exceeding demand for vessels). Analysts have pointed to the potentially positive impacts of BWT requirements on the supply side- more ships might be retired. Veteran shipping equities analyst Noah Parquette, at JP Morgan (JPM), explained to investors that, "Incremental costs could bolster scrapping over the implementation time period" as calculations of shipowners, facing a bleak market outlook, cannot justify the capital investment in a BWT system.

In the shipping market's perpetual tug-of-war between supply and demand, some sectors may benefit more than others. Parquette suggested that the new rules "…could become a greater factor for smaller, cheaper ships, as the BWT systems could be a greater percentage of the ship value." He suggested that three sectors of the markets could benefit from the relatively outsized capital expenditure (in relation to depressed ship values): smaller drybulk, container and product tankers. Shipowner Eddie Valentis, from Pyxis, explained it this way: "Everyone is trying to get a handle on BWT system costs. Depending on the circumstances, and in conjunction with forthcoming emission control regulations, an owner of an older vessel could opt to scrap earlier than anticipated."

LOGISTICS: LOOKING AHEAD

What about the impact on cargo interests? With interconnected logistics, cargo owners are not immune from consequences of the actions of shipowners. Mr. Valentis, whose customers include demanding movers of refined products and chemicals, told MLPro, "For the time being, there is no charterer involvement on the specific issue." Jad Mouwad explained that charterers were influencing the choice of system (and timing of installations), telling ***MLPro,*** "… this is

We have 55,538 live vessels in our system. According to our BWTS check for Class Society notations there are around 2,027 vessels fitted with BWTS. This leaves us with 53,510 vessels in need of retrofit.

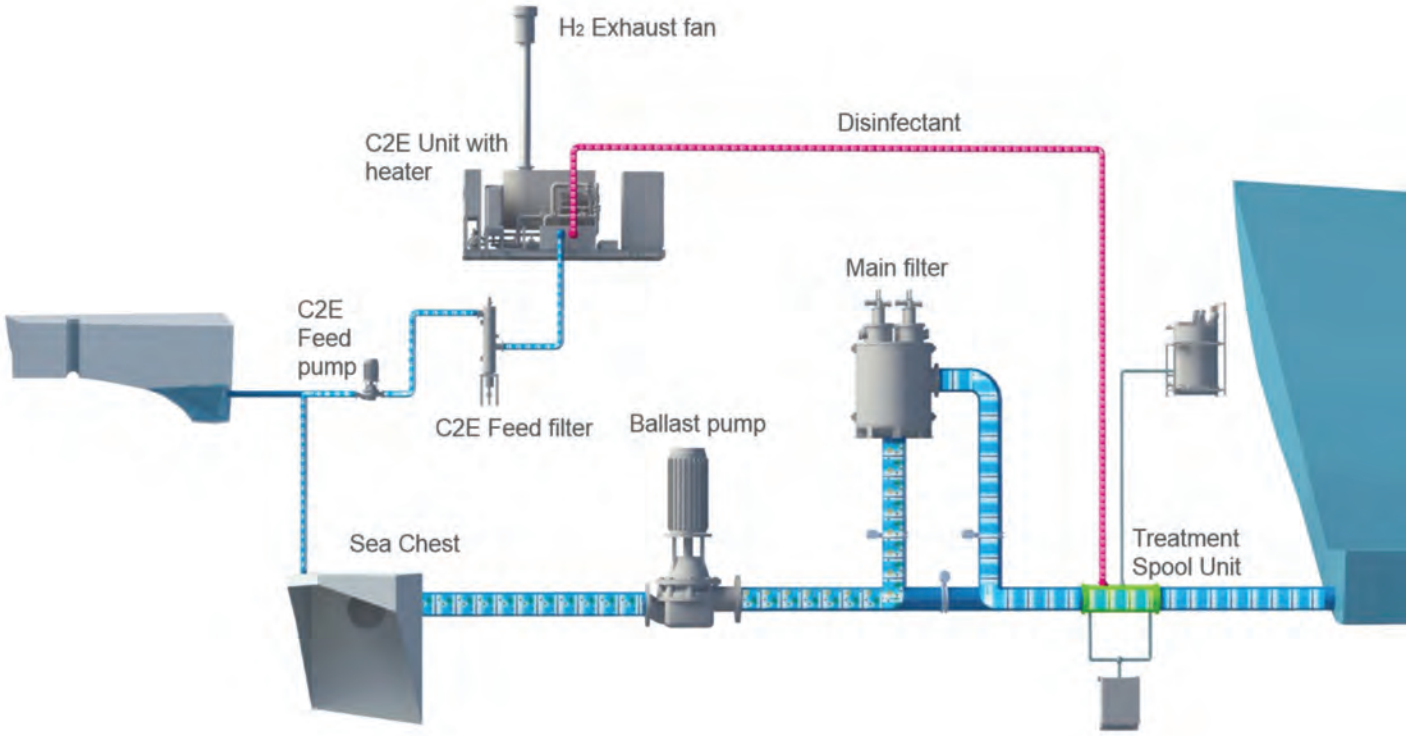
– VesselsValue.com

Credit: Alfa Laval

happening to a certain degree especially with small ship owners. The larger ship owners are still presenting their plans to charterers who will then have less to say about the choices." The maritime industry is bombarded by regulation, sometimes without apparent payoffs to shipping interests. In describing the commercial advantages for owners who install BWT, Mr. Valentis said: "There are no material business benefits besides being able to trade in areas such as the U.S. where BWT rules are strictly enforced and therefore commercially appealing." And, unspoken in all of this the impact of handling ballast in conjunction with cargo operations, how that will affect the ability of a vessel to comply with charter parties, and who is going to pay for the OpEx associated with the cyclical and now endless treatment of ballast.

Even with the ratification of the BWT convention and its entry into force in September, 2017, additional pieces are needed to fall into place for U.S.-based vessel owners. In the States, the Environmental Protection Administration (EPA) and numerous individual states all have something to say about discharges from vessels – including ballast water. A coalition of industry groups has been seeking to consolidate all the diverse and sometimes contradictory rule-makings. One trade association

PureBallast 3.1 - 300m3/h system



on the front line of efforts to streamline rules on discharges is the American Great Lakes Ports Association (ALGPA), which said in a year-end 2016 update, "The resulting regulatory chaos threatens the viability of interstate and international maritime commerce." ALGPA has fought hard for a new piece of law-making, the C Vessel Incidental Discharge Act (C VIDA), which "…would have simplified ballast water and other vessel discharge regulations by consolidating oversight in the U.S. Coast Guard." The legislation did not move forward, but ALGPA says, "Indeed, there is strong support for VIDA in Congress and with Congressional leadership. We will work with our coalition partners to enact the bill next year." Ms. Kathy Metcalf, President and CEO of the Chamber of Shipping of America, also on the I-H-S conference call, said that the C VIDA bill, which would be re-introduced in the new Congress, could possibly pass in 2017, but 2018 is a more likely date.

In the meantime, all assumptions are based on the premise that OEM's themselves can ramp up quickly to produce the necessary hardware in quantity. A good engineer and/or naval architect will tell you that ship operators ought to be planning now for the big event, something which can take up to six months to put all the pieces into place.

And yet, talk often seems to come back to the topic of how one might obtain or apply for an extension from the U.S. Coast Guard. Consensus at the show was that, looking at the three systems already approved and with as many as nine more looming large in the proverbial porthole, the nation's fifth uniformed service was about to get a lot more stingy with any approvals for delay. In other words, you better have a compelling reason for that delay. Bottom line: if, in terms of BWT progress 2016 was exciting, then 2017 is probably about to get equally more expensive.

The Author

Barry Parker

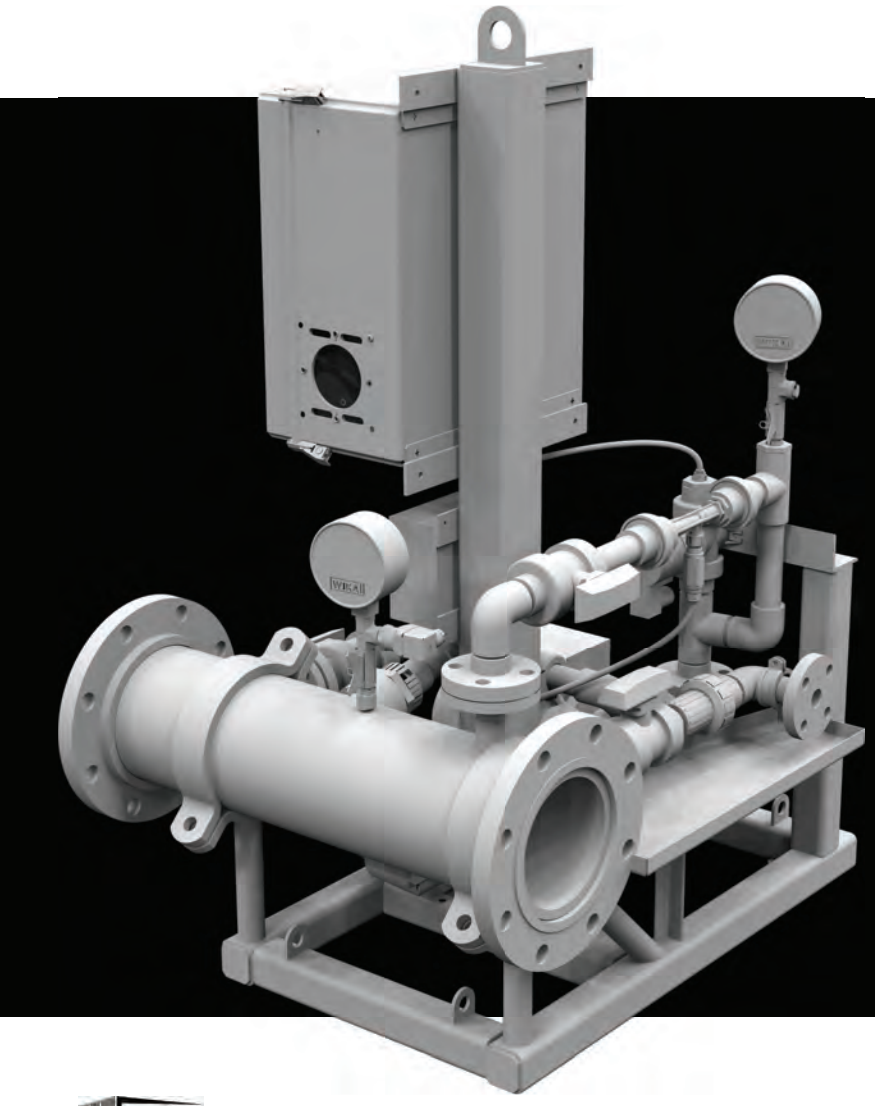
of bdp1 Consulting Ltd provides strategic and tactical support, including analytics and communications, to businesses across the maritime spectrum. The company can be found online at www.conconnect.com

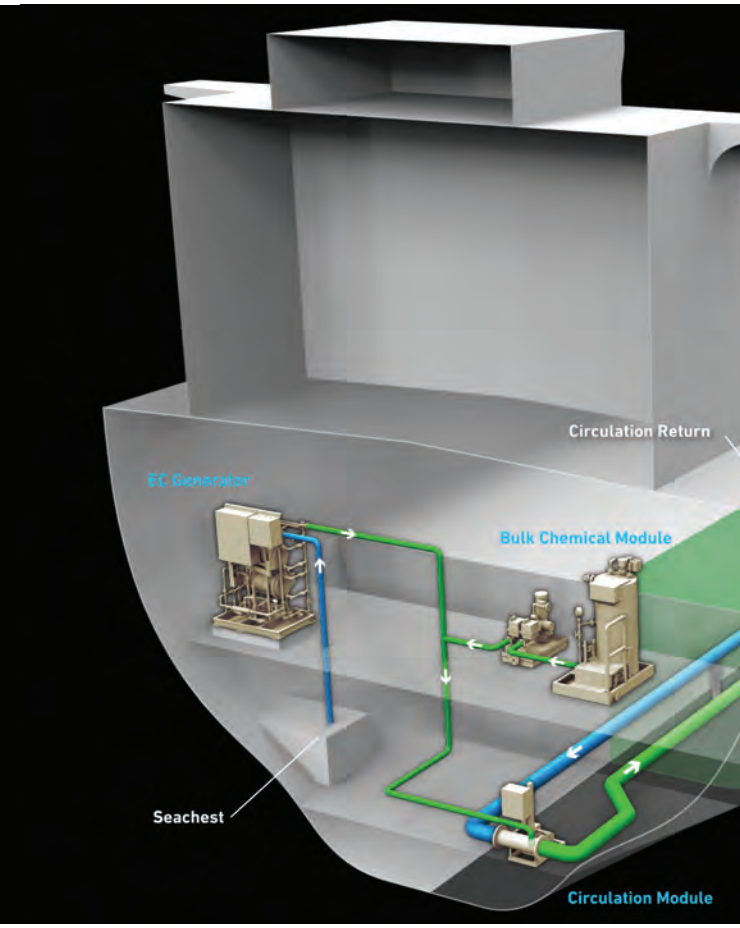
Images on this page: Oceansaver

Invasive Species Meets its 'Silver Bullet'

A new entry to the ballast water treatment promises compliance along with savings in both CapEx and OpEx. Who says there's no 'silver bullet' in the BWTS game?

By Joseph Keefe



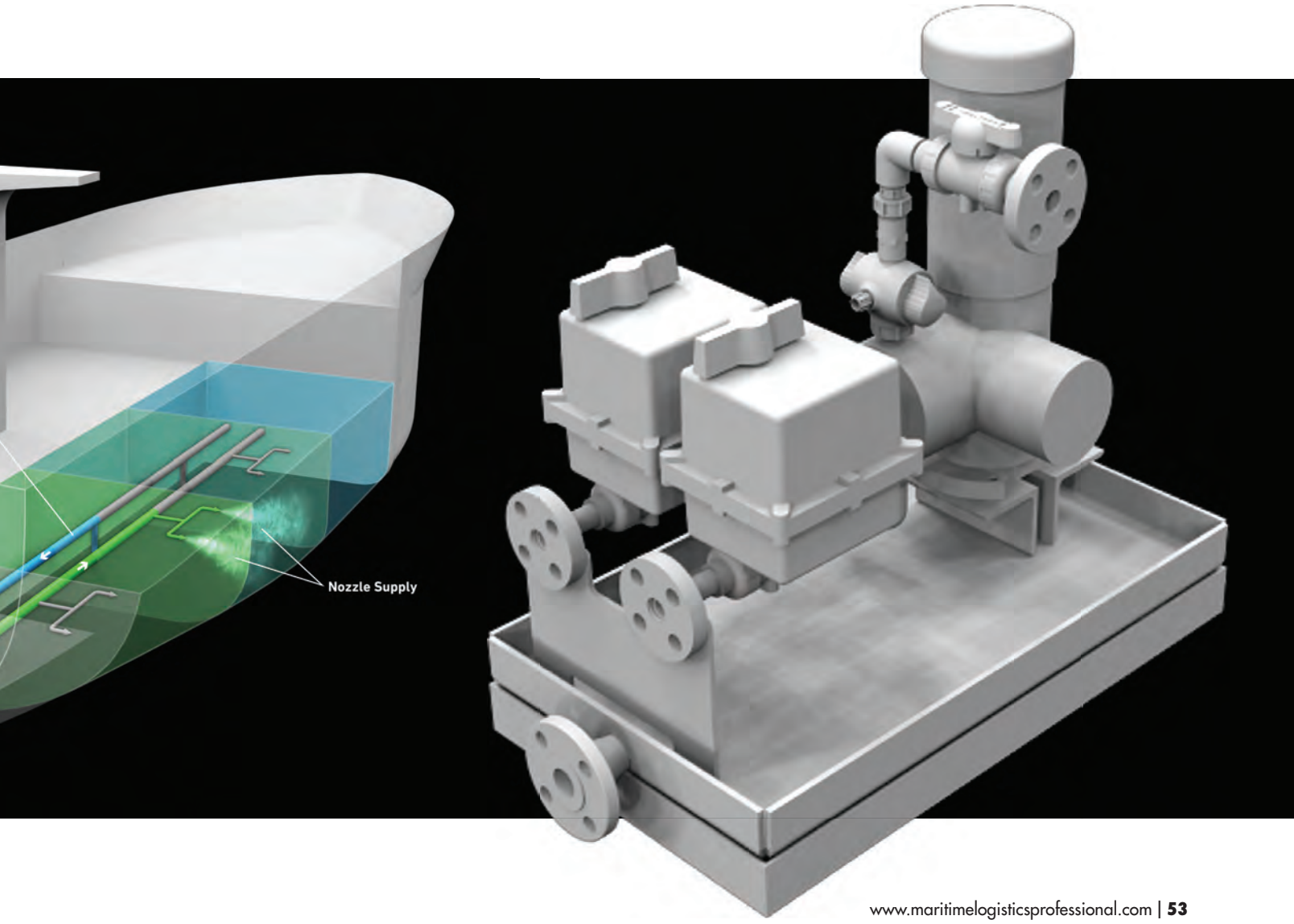


In the port of Houston, Texas, three medium-sized tankers are berthed adjacent to one another at this sprawling petrochemical complex. The first, a 70,000 ton shuttle tanker, is discharging a parcel of Brent Crude Oil. The second, a coastwise product carrier, is taking on a parcel of gasoline destined for the East Coast. And the third, another crude carrier, is also discharging bulk crude oil. All considered quality vessels, operated by reputable and fully vetted owners, only one is experiencing what could be described as a satisfactory port call. For the two poor performers, that's got nothing to do with cargo equipment, and everything to do with their newly minted ballast water treatment systems.

As the product tanker loads cargo, it struggles to keep up with the delivery volumes from shore. On at least one occasion, cargo is interrupted for two hours and for the balance of the lifting, a ship-imposed restricted loading rate – owing to restricted draft at the berth – kept the vessel at the berth well past its allowed window. The demurrage quickly eats into what had been thought to be profitable charter party. Slow deballasting rates, owing to the necessity to 'retreat' in-line, is determined to be the culprit.

Across the channel, crude tanker number one has a different problem. As discharge continues, the intake of murky, muddy ballast water also impacts its ability to get enough ballast on in order to make a speedy departure from the berth once finished stripping its tanks. It experiences ballast filters that impede the flow of water into its segregated ballast system. Many hours after finishing discharge – and not before receiving a raft of Letters of Protest for poor performance – it finally departs the berth.

In contrast, tanker number three discharges an entire 70,000 ton parcel of Bonny Light crude oil in just 22 hours, including crude oil washing of 25 percent of its cargo tanks. Ballast was loaded at maximum rated pumping capacity. Unimpeded by



> *There are two distinct modules to our system; the treatment module and the dosing module. The dosing module must have access to the ballast water system and will likely go in or near the pump room. It can be constructed with EX rated components and be installed in classified areas when needed. The treatment module can be located almost anywhere. We simply need to be able to run piping from the treatment module to the dosing equipment. In short, the entire system as a whole is very flexible and modular. Also, each component is smaller, as compared to other systems.*
>
> *– Matt Hughes P.E., Envirocleanse Executive VP of Marketing & Salespresident and CEO*

an in-line ballast water treatment system, the vessel was ready to depart immediately upon hose disconnection, and then presented promptly for her next fixture.

On the way, the tanks are treated, and then neutralized in transit – while employing real time monitoring to optimize dosing – using one of the newest entries into the ballast water treatment game. The vessel's Envirocleanse inTank™ BWTS utilizes salt water and Electrochemical Activation (ECA) to generate Hypochlorite as the active substance to achieve ballast water discharge standards. The dosing module mixes one tank at a time where ballast water quality is assessed and the generated disinfectant is applied until the target Total Residual Oxidant (TRO) level is reached.

The circulated ballast water is returned through the patented in-tank nozzle mixing system that ensures even chemical distribution. After an initial hold time, the dosing module rechecks the TRO in each tank, applying more disinfectant if required. For our tanker, this was repeated for all ballast tanks that require treatment. Prior to arrival in port, the dosing module checks the remaining TRO in the ballast tanks and applies Sodium Thiosulfate to neutralize any remaining active substance and the ballast water is ready for discharge.

The inTank™ BWTS does not filter the ballast water on uptake, which is different than most in-line systems. To ensure consistent and effective kill of target organisms and pathogens, the Concentration-Time (CT) treatment approach is utilized. The recirculation capacity enables monitoring and re-dosing to meet the target combination of oxidant dose and hold time. The ability to dose in-tank and re-dose ensures effective treatment regardless of organic and inorganic loads in the ballast water. And, while those advantages translate into real operational gains – and profits – the Envirocleanse BWTS delivers in many more ways, as well.

Fashionably Late

The Envirocleanse BWTS product is not yet the best known of the 50+ systems that have dipped their toes into the global ballast water treatment game, nor is it the first to hit the market. On the other hand, when the dust shakes out from the testing, certification and production phase of this burgeoning market, it will likely be one of the few to survive.

Anything but new, Envirocleanse LLC is a division of Charter Brokerage LLC, a Berkshire Hathaway company. Charter Brokerage knows its way around the waterfront. A market

Envirocleanse Testing & Approval Timeline … at a glance

DATE ON BOARD THE GOLDEN BEAR:	DATE STARTED TESTING:	DATE EXPECTED COMPLETION TESTING:	DATE OF EXPECTED SUBMITTAL OF DOCUMENTS TO USCG:	EXPECTED USCG APPROVALS:	EXPECTED IMO APPROVALS:
JANUARY 2017	MARCH 2017	OCTOBER 2017	DECEMBER 2017	1Q 2018	MEPC 72 IN MARCH 2018

leader in duty drawback recoveries; import brokerage and freight forwarding services; marine barging both inland US and ocean voyages; and import/export commodities trading, the firm has been interacting with shipping for many years. Beyond that, Berkshire Hathaway, through their ownership of Marmon Water Technologies, also knows water treatment.

All of that said; the Envirocleanse entry into the market was anything but late. Matt Hughes, Envirocleanse Senior VP of Sales and Marketing told ***MLPro*** in April, "We have admittedly been fortunate with much of our timing for market entry, some by design and some by luck. Several requirements have changed, even over just the last year. Being currently in the middle of our Type Approval testing however, we are able to incorporate the new G8 testing requirements, as well as all current guidance from The US Coast Guard and the EPA."

With a proven disinfectant treatment solution already in hand, the firm was also hesitant to commit too early to a market that had no ratified or defined standards. And, adds Hughes, "There was no interest at a corporate level to simply 'be another player' just because it appeared to be a large market potential. When we were able to team with Glosten to bring the inTank™ BWTS to market, we felt very strongly at that point that we had something unique to offer." The choice to partner with Glosten proved to be a smart one.

Marinizing-to-Market

Envirocleanse management knew that just because a technology worked ashore didn't necessarily translate into a successful marine offering. And after interviewing several other groups, Envirocleanse determined that Glosten was the right fit for marinizing their system. Matt Hughes adds, "Their inTank™ treatment technology was the perfect complement to our EC system, enabling Envirocleanse to bring a uniquely ship operator-focused solution to market."

Kevin Reynolds, Principal at Glosten, leverages prior experience in the marinization and integration of as many as a dozen of the leading ballast water treatment technology providers. He explains, "We help them understand how controls work on ships, the testing regimen, and how to navigate marine-style hazard assessments. We understand how ships work, and we understand how to integrate and get marine equipment working on vessels. You can bring the best shoreside technology to a vessel, but that doesn't guarantee you success on the water at all. In fact, I don't think there's anyone out there who has done more marinizing of equipment than Glosten."

After seeing what Envirocleanse had to offer, Reynolds and his team were convinced that in-tank treatment was the way to go. Eliminating the need to install massive amounts of equipment into existing pumprooms and/or engine spaces was at the top of the list.

In fact, says Reynolds, "It is rare and unusual to be able to install a large 3,000-to-5,000 cubic meter per hour system along with heavy filters without having to do significant relocations of equipment in those spaces. In addition, there's quite an additional effort to put together a rigging plan just to get that equipment into the belly of the ship," he said, adding, "We've actually had to cut holes in the bottoms of ships to put those filters in because to do otherwise would've involved too much equipment removal. And that involves recommissioning equipment that had to be relocated. So you end up commissioning not just a BWT system, but other equipment as well."

The inTank™ approach, with no filtration, has a very small amount of work required in crowded pumprooms or machinery spaces. What this means is that the installation team can install the piping and equipment in different areas of the ship at the same time, removing any bottle necks. This significantly reduces the total time for installation as compared to inline treatment systems, making refit within a 10 day period practical.

Beyond the complexity of the typical in-line BWTS system installation, the reality of the matter is that the vast majority of these retrofit systems will be installed overseas, to a large extent in Asian yards. Hence, says Reynolds, on a tanker or a bulker that requires an extraordinarily large in-line system,

shipyards that are used to cropping and replacing and other simpler items and coating repair, will now be asked to employ skills that they are not used to – those very complicated relocations and installations. He explains, "If you go with the in-tank system, you've put your shipyard – particularly those that typically do repair work – back into their comfort zone. Their traditional work is cutting and replacing steel and running pipe. With the in-tank treatment – the main effort is running pipe – and that's their comfort zone."

Taking into consideration engineering, labor and material line items, the CapEx involved with an in-tank treatment system is significantly lower than the cost of the in-line systems. Real CapEx and OpEx savings are easy to calculate. But, the purpose of ballast water treatment is to meet compliance. According to Reynolds, using the in-tank process is the only way to actually respond to the water quality that the ballast treatment sees. "Any other method puts in a fixed amount of UV radiation or a fixed amount of chemical," says Reynolds, adding, "The in-tank process adjusts how much chemical is added based on the oxidant demand in the ballast water. It is the only method that we're aware of that can really assure compliance."

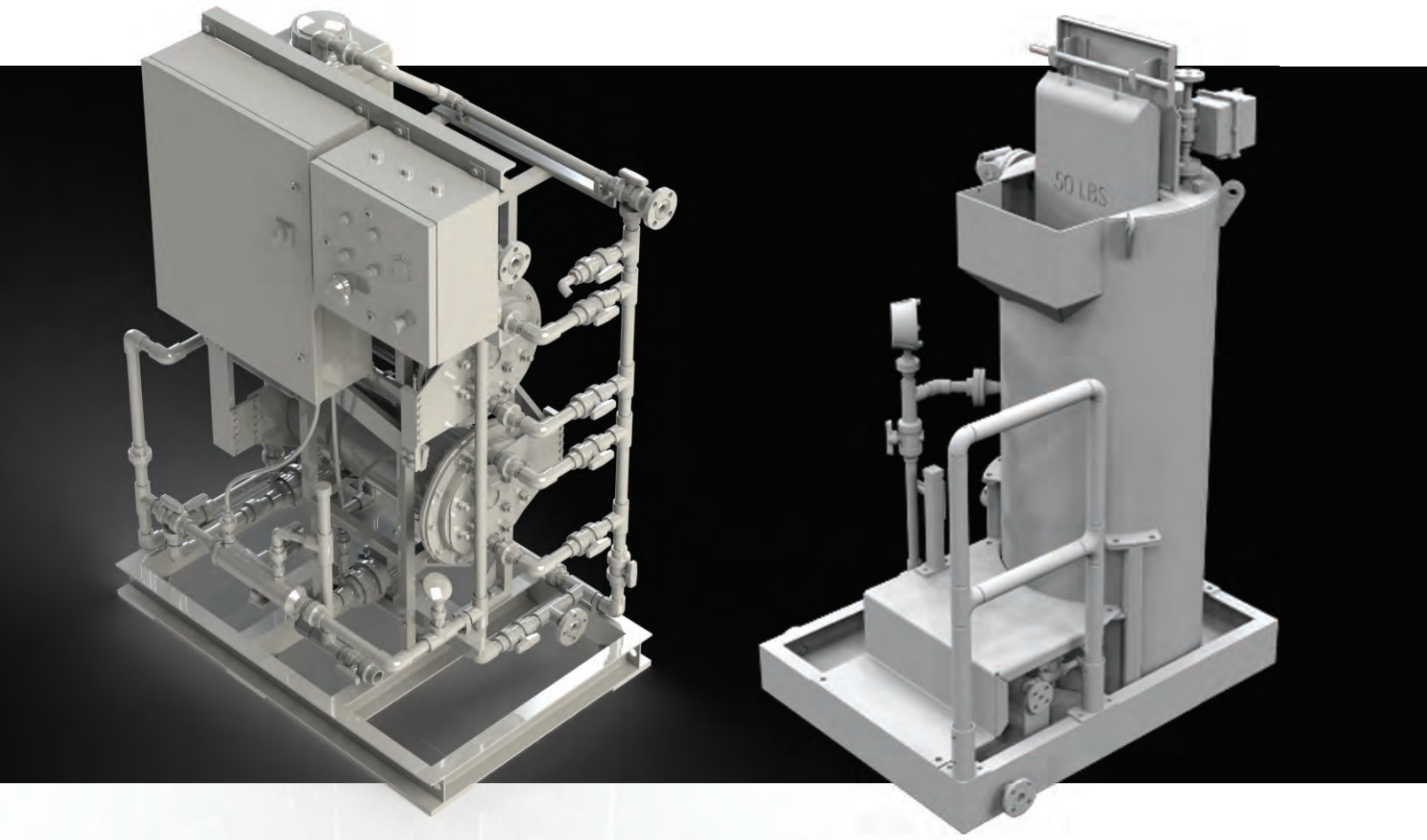
For those operators still unsure about the long term impact of chemicals on ballast tank coatings, IMO research in collaboration with coatings manufacturers has determined that as long as the oxidant level stays below 10 mg/liter in the ballast tank, it doesn't compromise the tank coatings.

Advantage: Envirocleanse … at a glance

- *The ability to separate ballast treatment from cargo operations.*
- *A simpler system – easier / cheaper to install (easier for retrofit yards), easier to run (automation).*
- *The system is able to fulfill all the IMO and USCG ballast water disinfection requirements.*
- *Flexible and modular Installation, lower upfront CapEx.*
- *Operation is simple and fully-automated, with very low maintenance requirements.*
- *Low OpEx: power consumption is very low, circulation pumps smaller than typical ballast pump.*

Testing & Type Approval

Envirocleanse LLC has previously received both EPA registration and FDA approvals for usage in various indus-



tries including oil & gas applications, food preparation and medical disinfection. Also armed with in-house knowledge of water disinfection utilizing electrically-activated treatments systems, Envirocleanse expects U.S. Coast Guard regulatory approvals to occur in the first quarter of 2018. Already commissioned on the Golden Bear testing facility in California and having been through pilot testing, the system has already passed the first couple of tests.

How it Works

Under the vast majority of cases the system will use sea water to generate hypochlorite on-site. In cases where fresh or brackish water is the feed, bulk dosing using liquid hypochlorite or NaDCC are options. Because the system constantly and automatically monitors the residual oxidant in the tank, the vessel can allow the oxidant to degrade over the life of the voyage, keeping a minimal amount to ensure there is no regrowth. By allowing degradation to a level of .1 ppm - .5 ppm towards the end of the voyage, there is minimal neutralization using sodium Thiosulfate. Typical neutralization will require roughly .5 kg per 1,000 m3 of ballast water, and the cost of STS is about 50 cents per kg. Thus, chemical costs for neutralization is quite minimal. And, sea water is free.

Finally, and for vessels operating in fresh and/or brackish water, there are several options available to shipowners. Unlike some other systems, Envirocleanse was designed to allow fresh water ballast to be treated by an electrolytic system. This is accomplished by using clean sea water feed during the ocean voyage to feed the generator. Hughes adds, "For vessels that trade exclusively in fresh water, we've developed bulk chemical options. These bulk chemicals are part of our type approval kit, and treat in the same manner as the electrolytic version in the ballast water tank."

Power requirements are indeed an advantage when using power in transit at non peak times, as opposed to in port. The reactor cells creating the disinfectant are very efficient, and have low power requirements. The unit can be properly sized to take into account the typical voyage time. So a system could be smaller than might otherwise be anticipated by the ship owner which again, would use less power.

A key concern of vessel operators and regulators alike has been the fear that BWTS OEMs wouldn't be able to ramp up quickly enough to produce enough equipment in a timely fashion to meet demand. According to Matt Hughes, that's unlike to be an issue for Envirocleanse. "Manufacturing will be 100% in the USA, using almost exclusively U.S. made parts. We are prepared to manufacture up to 10 complete systems per week, he said, continuing, "I would rather anticipate that industry wide, the engineering, project management, and ship yard availability will be more problematic. However, these are all issues we are already in the midst of solving for the Buyer."

Underscoring the compact, flexible and easy to install nature of the equipment, Matt Hughes told ***MLPro***, "There are two distinct modules to our system; the treatment module and the dosing module. The dosing module must have access to the ballast water system and will likely go in or near the pump room. It can be constructed with EX rated components and be installed in classified areas when needed. The treatment module can be located almost anywhere. We simply need to be able to run piping from the treatment module to the dosing equipment. In short, the entire system as a whole is very flexible and modular. Also, each component is smaller, as compared to other systems."

No Silver Bullet?

In the BWT business, 'there is no silver bullet.' Nevertheless, Matt Hughes tells ***MLPro***, "While we do believe we are a viable option for the vast majority of vessels, certainly the high-ballast longer-voyage ships will see the most benefit from our system." He adds, "We do not have a maximum ballast volume capacity, in fact, we believe our system has benefits at the higher ballast rate levels. By treating in-transit, our primary evaluation is total ballast capacity, and voyage time. When taking those two factors into consideration, we can then present the option for a customer vessel, both for pricing and anticipated commercial uses. The rate of ballasting during uptake is of absolutely no consideration for our system."

Beyond the easier and less expensive installation process, a key fundamental of the Envirocleanse solution is that it does not operate during cargo operations. Everything in the vessel's current ballast system remains exactly the same. Kevin Reynolds explains, "The ability to completely separate ballast water treatment from in port cargo operations is a huge benefit. Imagine you clog the filter on an in-line system during cargo operations and now you must either notify the Coast Guard or other flag state that you no longer are able to meet your treatment requirements or you need to shut down cargo until you remedy some sort of fix. With an in-tank system, you avoid it and you defer that treatment to the sea passage."

As the Envirocleanse BWTS entry marches quickly towards market entry and regulatory approvals, vessel owners suddenly have a new option – one which costs less to install, less to operate and one which doesn't impact cargo or ballast operations. Backed by one of the most recognizable and successful names in business today, Envirocleanse also has the staying power to provide service for the long run. If that sounds like the full package you've been waiting for, then perhaps there is a 'silver bullet' for BWTS compliance.

Disruption "Powered by Transas"

Maritime Logistics Professional *caught up with Frank Coles, the ubiquitous leader of Transas, fresh from his company's user's conference in Malta. In typical candor, Coles paints his picture of maritime and shipping's future.*

By Greg Trauthwein

With a captive audience of more than 400 clients in scenic Malta for several days earlier this year, one might be surprised when Frank Coles admits that the meeting was not all about Transas. "I wanted something completely different. I didn't want to talk about Transas; I wanted to talk about the industry and what we can learn from aviation. I wanted to talk about what we are we missing."

Coles knows what he is talking about. For example, and just late last year, ***MLPro*** visited and toured Cathay Pacific's amazing air cargo freight handling center at Hong Kong's International Airport, as part of a broader visit to the port's sprawling container handling complex. As the world's number one air freight hub, and although at first glance only of peripheral interest to maritime stakeholders, the logistics technology and efficiencies on site there are enviable. Yes, the maritime sector could take some lessons there.

And so starts another candid conversation with Coles, a corporate leader that speaks with a Steve Jobs-like vision and zeal when discussion turns to the future of maritime.

"Everyone's talking about ships, ship technology and autonomous ships, but no one is talking about why we should be doing these things. What is the business model? We're all missing that point. If we are ever going to have unmanned ships, can you see the United States, can you see the Chinese allowing an unmanned ship to simply sail through territorial waters without some sort of ship traffic control?," Coles questions. "It is unthinkable. So the whole world has to change. So you can have an unmanned ship, but you have to envision the structure that goes with it."

Maritime vs. Shipping

Coles is clear from the start to differentiate between 'shipping' and 'maritime.' "I live in the United States. When we talk about 'shipping' something in America, we talk about using FedEx. When we talk about shipping something, we talk about moving it from the west coast to the east coast. That's shipping it, whether by truck, train, plane or ship. Shipping is the movement of the goods and anything economically associated with that. Maritime is the water transport piece," said Coles.

Distinguishing the terms is important according to Coles, as he said the economics of shipping and logistics is much more compelling for change than is the economics of the 'floating truck.' "You see the economics of shipping changing faster than the technology an innovation in the maritime part of shipping."

But while Coles is looking big picture, make no mistake that he sees Transas firmly in the maritime realm. "Transas belongs in the maritime industry, so Transas' role is about the ecosystem of the new world; that being the ship talking to its operation center, the way that it is evolving in the container shipping and cruise sectors today. Transas is an enabler from a software perspective and from an artificial intelligence perspective. But Transas has two other key elements to its business: Vessel Traffic Systems which is, by another name, is ship traffic control. The other part is the simulation."

Disruptive Disruption

When asked regarding his thoughts on "Disruptive Technology," the term of the day in maritime circles, Coles is blunt: "It doesn't mean anything. 'Disruption' means something to me."

When talk turns to disruption in maritime circles, it often is technology centric, hand-in-hand with the 'Big Data' discussion. But Coles sees it differently. "Disruption means you don't see it coming. It means it comes from outside, not from within. It comes from people who have no respect for the so-called special position that those that are traditional within maritime think they are. They have no respect for history and they will come in seeking an easier, better, simpler, smarter way to remove the middle man. This industry is full of middle men. Disruption will come from changing the process and changing the business model. It is not the technology, it is the model, and it is the process that changes."

Specifically, Coles envisions a world where the ecommerce giants, the Amazon's and Alibaba's of the world, increasingly gain control of the various transport segments to ensure that their supply chain is delivering to a greater degree of efficiency. "There could a time when they move into maritime shipping, and they're not going to rely on the stevedores that go on strike every so often and screw up American trade," said

Ecommerce giants, the Amazon's and Alibaba's, increasingly will gain control of the various transport segments to ensure that their supply chain is delivering to a greater degree of efficiency. "The freight forwarder is dead in my view. It is inevitable that more cargo booking, cargo management and cargo control will be online."

Coles. "They're going to get their own port, or they're going to get their own wharf and they are going to control their own port. It is inevitable. (In addition) the freight forwarder is dead in my view. It is inevitable that more cargo booking, cargo management and cargo control will be online."

Think Global, Act Local

As the oft-characterized 'conservative' maritime market digests a historic change in operational direction, Coles offers some bold predictions regarding the direction:

- ***Fleet Operations:*** I see the largest transformation in terms of fleet operations centers where the ships will be managed in a much more scaled manner from the shore. It's happing now.
- ***Vendor Market:*** There's not enough room for all of the Satcom companies, there's not enough room for all of the vendors that supply applications. Digitalization leads to commoditization; to survive commoditization, you need scale.
- ***Consolidation:*** I see ship management companies becoming large ship management companies. If they innovate, they could be the key components in the digitalized world.
- ***The Human Factor:*** If we can't find enough people of the right skills, that will speed up automation, that will speed up the use of artificial intelligence and the use of other technologies.

While the younger generation is generally viewed as the hinge to driving change, a big wild card in the pace of change remains the regulators. "When a lot of the old guys are gone, change will start to happen much quicker. What I haven't factored in is whether we can get so far ahead of the regulators, as regulators could be the anchor that drags it all down," said Coles. "But if Uber and AirBNB can come in and challenge around regulation, there is no reason why the disruptors won't come in (to maritime) and find a way to challenge the IMO, to challenge the regulators.

And while Coles thinks and talks 'big picture,' inevitably the conversation comes back to Transas, the company he leads. When asked what Transas will look like in 10 years, he is clear.

"It will look like a software business, providing decision support tools; it will be 'powered by Transas.' Transas' strength is the brains behind the decision support that goes on in the industry. Our ECDIS is about the capabilities for the user; our simulators are about the platform for training; our VTS is about decision support for operators; and our fleet operations and artificial intelligence routing that we are building is about enabling the operator to use the tools. The Transas vision is to join the dots so that all four of those work together in an ecosystem that's not unlike the aviation industry."

When the Intermodal Rubber Meets the Road

Images courtesy of TRAC

Possibly the most important – and least appreciated – piece of the domestic intermodal puzzle has undergone some serious shakeups in the past ten years. More still is likely to come.

By Joseph Keefe

It wasn't too long ago – actually in the Q4 2016 edition of this magazine – that Jim Newsome, the South Carolina Ports Authority (SCPA) President and CEO told ***MLPro***, "There is a lot of waste in intermodal, and if I were back in the shipping line industry, that's where I would focus. I also see some opportunities in the chassis fleet area, and demurrage and detention can be more effectively handled." Fast forward to April 1 2017, and those words ring especially true as the new boxship alliances emerge and begin to impact the world of liner shipping.

In a post-Hanjin world, port authorities, terminals, liner companies, NVOCC's, and the customers themselves will need to adjust to a new normal. Much of that 'new normal,' especially where it impacts intermodal efficiencies, will actually revolve around the efficient handling of truck chassis inventories. If that sounds boring, make no mistake; it is anything but. And, no one knows that reality better than Keith Lovetro, President & Chief Executive Officer of TRAC Intermodal – the largest pool manager and chassis supplier in North America.

Lovetro joined TRAC in June of 2011 and is responsible TRAC's financial performance, long-term strategy and day-to-day operations. Prior to joining TRAC he was President & CEO of the YRC Regional Transportation Group, the Executive Vice President and U.S. Board member at DHL Express, and President & CEO of FedEx Freight West. He has shipped and seen some freight in his day. In this edition, he weighed in on intermodal logistics and in particular, his niche specialty in that space.

Constant Change: a Chassis Crisis

It turns out that SCPA's Jim Newsome knows what he's talking about. In 2010, ocean carriers en mass began divesting and getting out of the chassis provisioning business. Maersk was the first – and they happened to be the largest in the world – who made the proclamation that they were going to change strategy. Almost every steamship line lined up behind them. The United States is the only market in the world they provide chassis as part of their transportation solution. In most countries, a steamship line moves what they call 'port to port.' They haul it from Shanghai to LA/Long Beach and once it hits LA, the chassis (the land operation) is somebody else's problem.

On this side of the pond, says Lovetro, the steamship lines wanted to get back to their core business, which is moving cargo, port to port. "The land part isn't their core business and it isn't necessarily what they are good at. Maersk wanted to get out and each steamship line over the course of the last five or six years, principally exited ownership of chassis," explained Lovetro, continuing, "And, there are two elements to getting out of chassis. One is the physical asset. There are only maybe one or two lines that have any size of chassis fleet left. Most have sold the physical asset. That's step one. The second piece of that equation is even though they don't use them, they are still paying for the chassis usage."

The earthshaking move by the liner companies precipitated an equally significant change in the chassis business model. In 2010, TRAC had no motor carrier customers. The 'motor carrier model' is defined as where the beneficial cargo owner (BCO) pays for the chassis. TRAC principally catered to steamship lines, the railroads and maybe a few logistics companies. Today, TRAC boasts over 5,000 motor carrier customers and they now pay now for the chassis. Lovetro says, "The designation is MH – motor haulage – versus CH, which is steamship line haulage. So, in 2010, we were 100 percent CH and today, 42% of our marine pool transactions are billed to the motor carrier and the balance, to the steamship line. They sold their chassis, but they are still paying, in large part, for the use of the chassis."

The second problem facing all aspects of the intermodal equation involves the major shifting of alliances, like the one that kicked off on April 1st of this year. Lovetro defines the challenge by breaking it down to its lowest common denominator. "That [the alliance shift] creates turmoil. For us, a little less so, for marine terminal operators, it is much more so. The pie doesn't increase; it's just a matter of how the pie is cut up. As the alliances change, however, the amount of cargo coming through a specific landing point can change. Here's an example: yesterday, they might have been only handling 10,000 TEU's at one terminal in the port of Long Beach. Tomorrow, that increases to 20,000 TEU's per week. We need to make sure that they'll have 20,000 chassis available so that when that boat lands, it can offload the goods. We have to reposition the fleet in accordance to how the alliance lands. And that's the complication. It involves moving single chassis. It takes time and it is expensive."

Responding to a Changing Business Model

We suggested to Lovetro that it must have been a happy day for TRAC when shipping lines en mass left the chassis owning market, but he couched the event in a different way, insisting, "I'm not sure you could make that general statement. There are three principal intermodal equipment providers (IEP). TRAC is an IEP, as are my two facing competitors, Flexi-Van and DCLI. TRAC – you are right – we said 'that's our core business; they want to get out; we want to get in. Perfect intersection of interests.' But, not all of our competitors saw it that

That [the alliance shift] creates turmoil. For us, a little less so, for marine terminal operators, it is much more so. The pie doesn't increase; it's just a matter of how the pie is cut up. As the alliances change, however, the amount of cargo coming through a specific landing point can change ... We have to reposition the fleet in accordance to how the alliance lands. And that's the complication. It involves moving single chassis. It takes time and it is expensive.

– Keith Lovetro, President & Chief Executive Officer of TRAC Intermodal

way. We embraced the change. We were the first one to make a purchase of a steamship asset line back in May of 2012."

Looking ahead to the challenges of the new liner alliances and the changing way that these entities will interact with terminals and port authorities, Lovetro has his own thoughts on how things could be made better. "What I can say is that there are inefficiencies in the model today. And what is needed is a fully integrated port operation; meaning that the marine terminals that operate in a port – in NY/NJ for example, there are five principal MTO's (marine terminal operators). In LA/Long Beach, there are 13 MTO's. The old model dictated that each steamship line had an affiliation with a marine terminal and they had their own chassis that they operated as a single entity and they were probably pretty well integrated and it worked pretty well. Well, now they are out, and there are more alliances and so the single string model is now a more complex model of integration. And so today, if you want to share chassis in a gray chassis pool – that's fine."

Separately, Duane Kenagy, Interim Chief Executive at the Port of Long Beach, California also has his eyes on the liner realignment. He told ***MLPro*** in March, "We could see some issues with the chassis. The Hanjin bankruptcy, for example, was a big disruption to the chassis pool. At one time you had about ten thousand Hanjin controlled containers that were sitting on a chassis and with no place to go."

Apart from 'Black Swan' events like the Hanjin disaster, Lovetro insists that marine terminals also have to operate in a more collaborative form. That's because the chassis model has some amount of slack. There is not a 'coop' pool in each market. In fact, TRAC is just in the process of putting one into NY/NJ. That, he says, will make that pool more efficient. But, if you've seen one port, well, you've seen one port. He adds quickly, "The pool out at LA/Long Beach is a bit of a hybrid; a 'pool of pools.' It is three individual pools that we interline the chassis together. It's not a gray pool, but it acts as one. There are places where the chassis model today has some opportunity to become more efficient. We've gone from a time where firms owned their own chassis and it probably worked pretty efficiently and now – they have to share with others. With that, some of the business rules have to change. An efficient gray pool in the future is going to require a more collaborative group of ocean carriers.

Chassis Challenges

Beyond the headache of a constantly changing business model – and perhaps an integral part of it – chassis shortages are fast becoming the bane of ports everywhere. The issue impacts costs, box dwell time and a host of other issues. In fact, these shortages are not consistent, but they emanate from a number of specific items, says TRAC's Lovetro. He ought to know. TRAC Intermodal is the largest chassis supplier in North America. In aggregate, they control a total of 305,000 units in two separate segments of business; the marine side (20, 40 and 45-foot units) and the domestic (53-foot) model. "It is not a lack of supply. Are there enough marine chassis in the US? Yes, there are," explains Lovetro, adding, "Are they always in the right location? No. Are they always repaired and available for movement? No. Therein lies the crux of the issue. So, if demand were flat, which it is not; if chassis were always in the right location – which they are not, and if they were always in good repair, then there would never be a shortage. Shortages occur situationally."

TRAC has chassis 'pools' in every single port in the country, but the ports of NY/NJ and LA/Long Beach are the two largest. Lovetro explains further, "In both of those ports today, there is absolutely no shortage of chassis, so commerce is flowing smoothly. That's because import volumes are at a bit of a lull. This is a seasonal lull that occurs after the Chinese New Year. There are situational shortages; only situational. Now, as import demand begins to spike up and vessel "bunching" occurs, then this crunching together of demand, and shortages are possible."

Responding to that challenge, Lovetro says that TRAC runs complex freight flow algorithms to figure out supply and demand. The problem with algorithms is that they want consistent variables. They handle lots of variables, but the variables are usually fairly well defined. It's the flex in the variable that causes any forecasting or predictive challenges. "We use a combination of predictive analytics and pool managers that have lots of experience. That adds human intel to the top of it."

ABC: A Better Chassis

It's a pretty simple piece of equipment. And, for something that is so very important to the entire supply chain, at the end of the day, it boils down to steel, rubber and some hoses. Simple in comparison to a lot of other pieces of equipment in the transportation world, the chassis is nevertheless a registered piece of rolling stock. It is regulated, and says Lovetro, regulated to a degree that also is changing. "The Federal motor Carrier Safety Administration (FMCSA) is requiring an inspection and a certain level of safety on the chassis. The amount of regulation is increasing. Is it as strict as some other industries? Probably not yet." We asked Lovetro what could be done better and what; in particular, TRAC was doing to set itself apart in the market.

"There are pieces of this simple equipment that have evolved," says Lovetro, explaining further, "The piece or part that breaks the most is the lights. When they are full, there's a lot of pressure to move, they back up in to loading docks and hit the loading board. They bounce when they are empty. Previously, they all had incandescent lights. Today we are retrofitting them to LED lights. We've actually designed a specific light for our chassis; better quality, longer lasting and harder for anyone to steal."

Another area getting attention from TRAC is the move from bias ply tires to radials, something they tout as an advantage in their new TRAC Select offering. In the greater Mobile, AL market, for example, TRAC Intermodal is converting all marine chassis in its fleet from bias ply to radial tires. The program, begun in December 2016, was completed at the end of March.

TRAC Select is a specialty product that launched in February and is targeted to the beneficial cargo owner, the NVOCC's, and the actual shippers of goods. The TRAC Select pool is designed to not only target the shippers of goods, but to also provide a higher quality chassis and specialty equipment. Lovetro explains the concept, saying, "For example, if you are a motor carrier and you happen to have long runs from the port to wherever it is you are delivering your goods, maybe the current pool chassis doesn't give you enough confidence. You want radial tires; you want a better piece of equipment; that's what this pool is designed to do."

Another key point involves paint. Chassis are exposed to sometimes corrosive environments and in order to keep that acid off the asset, paint is an important consideration. And brakes, that's the other piece that's really critical. "Those are all technical upgrades to a chassis. Are we there yet? No. But we're in the process of upgrading the fleet," said Lovetro.

The industry uses 22.5 years for the basis of book value of a chassis. Properly taken care of, the actual life of the chassis can be much longer. Lovetro, in way of comparison, put the average age of his marine fleet at just 13 years and his domestic fleet at about 8. "That's a couple years younger than our facing competitors," he claims, adding, "To improve the quality, we take 6,000 chassis per year out of the running fleet and we strip the chassis down, blast them to bare metal, inspect them to make sure the metal is sound, repaint it with TRAC blue paint, put all new wiring on board, all new airing systems, new tires, new brake, lights, the whole nine yards. It then looks like a brand new chassis. So, we've taken a 17 year old chassis and extended its life another 15 years. So, a 32-y/o chassis will look brand new and probably run like brand new. That refurbished chassis is what we put into our TRAC select pool."

The New Normal for Chassis

Today, TRAC Intermodal is the nation's largest intermodal chassis pool manager and equipment supplier for domestic and international transportation companies. TRAC Intermodal's active fleet consists of over 264,000 chassis over a broad operating footprint with over 600 marine, 160 domestic and 60 depot locations across North America.

The steamship lines are a global enterprise. They want to know that no matter where they land, that chassis providers have the ability to handle their traffic volume. At TRAC, Lovetro's daily routine revolves around those requirements. "We consider the steamship lines a significant customer group. 58% of transactions are still billed to them. So, we have a commercial relationship with every steamship line in the world. And yes, we go to the CMA's of the world and the Hapag-Lloyds and we negotiate usage deals. And then, we send them bills when they use our product. The other 42 percent – the BCO's and NVOCC's – cater to that customer segment, also. We sell them a service; that's chassis usage."

Even in a changing business model, the competition is fierce. As to what sets TRAC apart, he responded, "We also have 264,000 pieces of equipment – we don't run out. We have capacity in both facilities and in assets. And, I would tell you that we're more customer-focused than our competitors. And by that, I mean that as the business model has changed, so too have the requirements to support those customers. Billing is an incredibly important and complex piece of this business. We've invested a tremendous amount of money in our systems and billing processes so as to be able to customize it for our customers – the steamship lines and motor carriers. We're responsive, we're flexible, we have ubiquitous coverage, a large amount of fleet, and we have business rules that accommodate our requirements."

When it comes to chassis management, it seems today that 'change' is the new 'constant.' Two of the most prominent port executives in America – SCPA's Jim Newsome and POLB's Duane Kenagy – both know it. How these ports, their individual terminals, the new liner alliances and the chassis providers themselves respond to the shifting landscape, will eventually make all the difference. Already known for smoothly managing the seismic change of how and who provides chassis on the waterfront more than five years previous, TRAC also stands ready for what comes next.

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