

# Cruise Ports

*Managing Fast  
Changing Logistics*



**LNG PROPULSION**  
THE CRUISE SECTOR OUT IN FRONT

**INLAND PORT  
DEVELOPMENT**  
TAKE THE TRAIN

**PORT SECURITY LOGISTICS**  
ALWAYS EVOLVING,  
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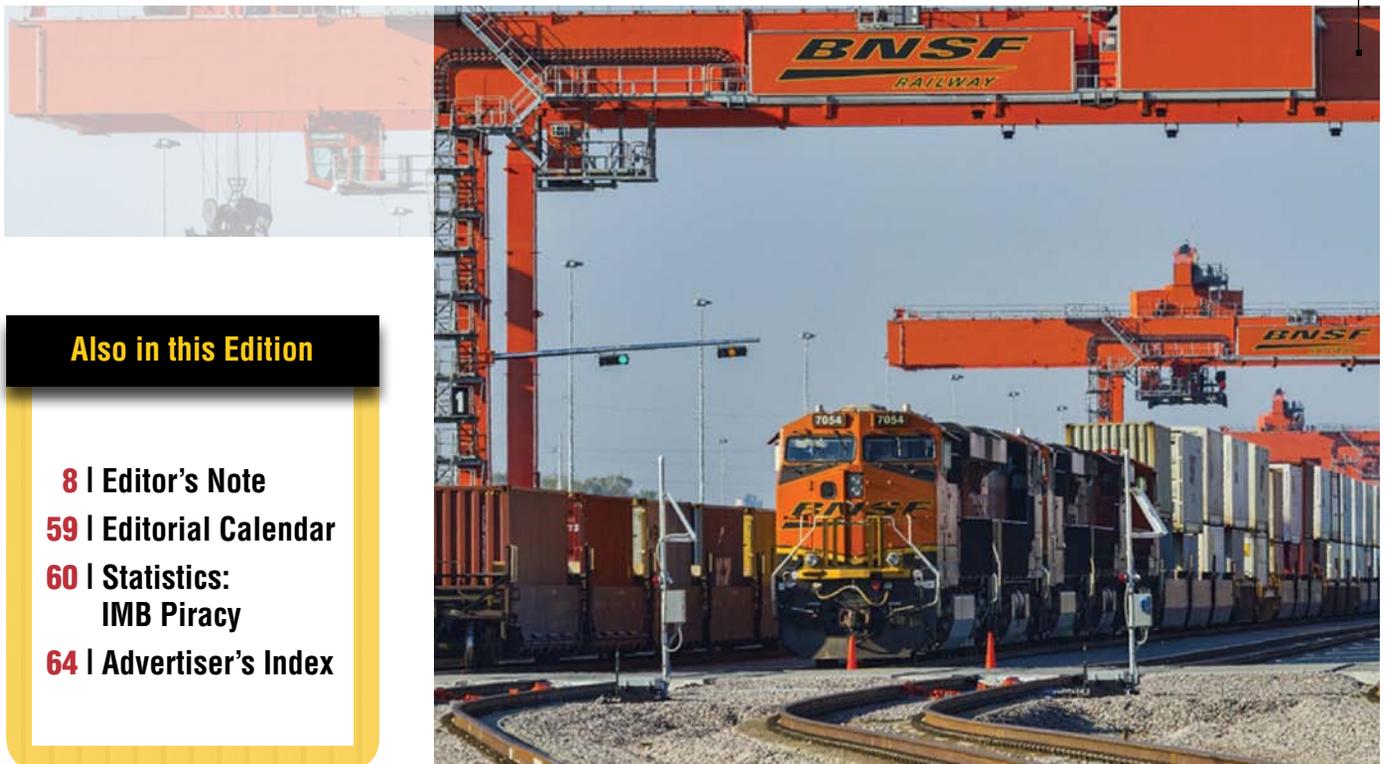
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*“JAXPORT can access the world and we want the world to know it. Within the next 18 months, I want to ensure that all of our current and potential business partners have a crisp, clear understanding of JAXPORT’s outstanding intermodal connectivity.”*

**– Kristen DeMarco,**  
JAXPORT Chief Commercial Officer

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ISSN - 24739308  
USPS # 005-893

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**Maritime Logistics Professional** (ISSN 24739308) is published bi-monthly (6 times per year) by New Wave Media, 118 E. 25th St., 2nd Floor, New York, NY 10010-1062. Periodicals postage paid at New York, NY and additional mailing offices.

**POSTMASTER:** Send all UAA to CFS. NON-POSTAL AND MILITARY FACILITIES send address corrections to Maritime Logistics Professional 850 Montauk Hwy, #867 Bayport, NY 11705.

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## ON THE COVER

AIDAnova, the first cruise ship to ever be powered at sea by LNG, set sail on its maiden voyage on December 19, 2018. And, with that, Carnival Corp. ushered in a new era of environmentally correct cruise ships. The story begins on page 30.

Image: Carnival



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Credit: Carnival Corporation

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*By Greg Miller*

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# Editor's Note

*Cruising  
Full Speed  
Ahead*

When it comes to cruise logistics in the coming year, there are three important 'take-aways' to be noted. First, 2019 is going to be a busy year in the global cruise sector. In many of the world's national economies, there is a great deal of discretionary income that consumers have to spend. The cruise industry aims to capture a large percentage of that potential spend. They'll do that by rolling out scores of new vessels, beckoning the consumer with unique offerings, upscale amenities, new destinations, and a cleaner environmental signature. It adds up to an auspicious sector outlook.

Cruise Lines International Association (CLIA) says that 18 new ships are on order for its member cruise lines. The next few years will see the arrival of new cruise giants at PortMiami and Port Canaveral. But first they will need giant terminals. To that end, infrastructure spend at individual ports – here and beyond – is increasing to accommodate the anticipated 30 million global travelers expected to be counted as cruise travelers in 2019. That growth comes with new responsibility for CLIA members, especially in way of reducing their collective impact on the environment. It turns out that they are up to the task.

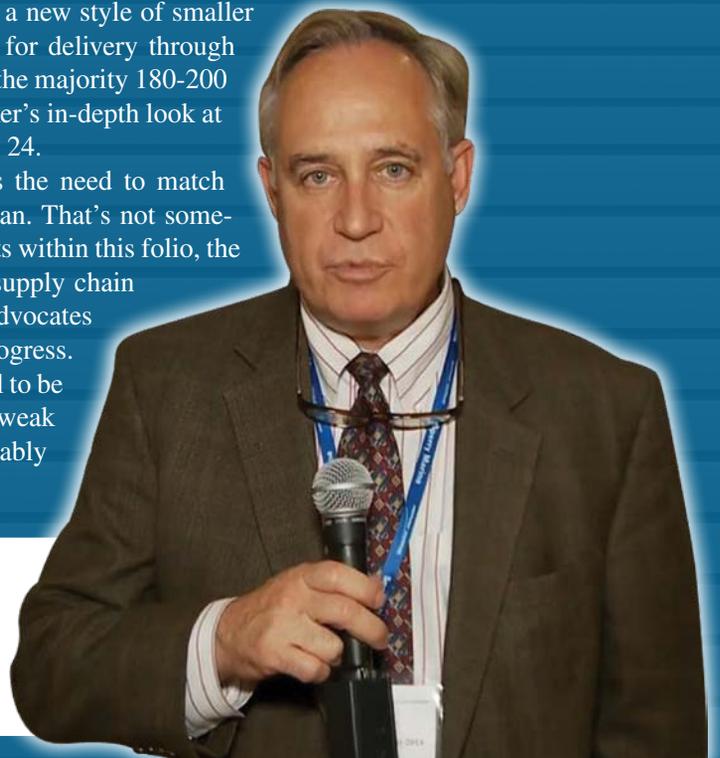
AIDAnova, the first cruise ship to ever be powered at sea by LNG, set sail on its maiden voyage on December 19, 2018. And, Carnival's choice of LNG power in early 2015 significantly pre-dates many of the decisions to do so in commercial shipping. Belief that the IMO 2020 date would be pushed back was rampant within shipping circles well beyond 2015. Consequently, many non-passenger-ship owners held off. But, the cruise industry has been a leader – and continues that trend today. *MLPro* contributor Greg Miller's comprehensive report on LNG propulsion for the cruise sector begins on page 30.

The third and arguably most interesting trend set to impact the cruise sector in 2019 is the advent of great numbers of smaller expedition size and style vessels. Suddenly, isolated and obscure places are now accessible, thanks to a new style of smaller vessels. This fast growing segment – with 26 ships due for delivery through 2021, ranging in passenger capacity from 100 to 300 with the majority 180-200 lower berths – has sea legs. Within this edition, Barry Parker's in-depth look at the cruise industry's most interesting trend begins on page 24.

Finally, and equally important for the cruise sector, is the need to match growing global impact with an equally robust security plan. That's not something that can be done in a vacuum. In three separate reports within this folio, the growing concern over rising threats to shipping and the supply chain becomes obvious. The good news is that industry and its advocates are doing something about it. It is definitely a work in progress. 2019 therefore begins with great optimism, much work still to be accomplished, and a global waterfront that continues to tweak the logistics of doing business in the most diverse and arguably important business sector on the planet.



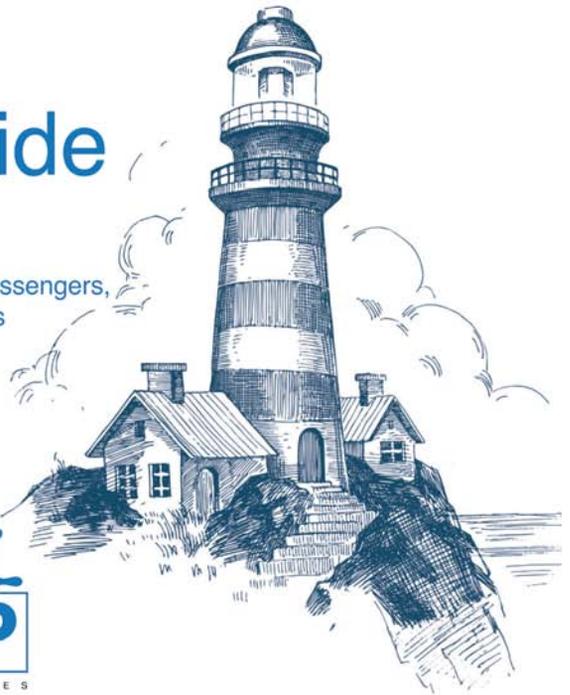
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**K**risten DeMarco is JAXPORT's Chief Commercial Officer. She is responsible for leading JAXPORT's international cargo sales and marketing initiatives as well as tracking trends and issues related to maximizing the port's business potential. DeMarco has nearly two decades of business development experience in the logistics industry, with a track record of successfully negotiating multi-million dollar deals and building relationships with decision-makers from some of the world's largest companies. Prior to joining JAXPORT, she served as Vice President of Ocean Business Development – North America for CEVA Logistics, leading the divi-

# Kristen DeMarco



sion's ocean product sales efforts during a time of double-digit revenue growth. She has also served in business development roles of increasing responsibility for shipping lines owned by A.P. Moller – Maersk. DeMarco holds a Bachelor of Science degree in Business Administration from Kennesaw State University. This month, we caught up to her in Jacksonville, Florida to find out what's happening in one of the nation's fastest growing ports. It turns out there's plenty to talk about.

***You joined JAXPORT in July 2018 as Chief Commercial Officer. Tell us a bit about yourself and what you've ac-***

# Chief Commercial Officer, JAXPORT



***completed in the approximately six months that you've been on board.***

I am someone who moves with intention and thrives on seeing those around me lifted up. I have the foundation of 17 years of successful carrier experience and the support of some amazing colleagues and mentors, all of which has led me to this great opportunity at JAXPORT. I felt it was critical to come into my new position at JAXPORT with an open mind and to listen to my team and to our customers. To find out from them what is already working well and what needs immediate attention. After that, it is about ensuring we have the

foundation of our Commercial team in place, ready to execute our strategy and grow our global presence.

***Give us the 10,000 foot view of the port today. What is your vision for the future – what's the one thing that you absolutely have to get done in the next 18 months?***

JAXPORT can access the world and we want the world to know it. Within the next 18 months, I want to ensure that all of our current and potential business partners have a crisp, clear understanding of JAXPORT's outstanding intermodal connectivity. That they understand the opportunity present-

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ed by the scale of population growth, in the region, in the state and here in Northeast Florida. That there is room to grow here with 6 million square feet of spec warehousing space projected for the next 5 years. That all of the pieces of the efficiency puzzle are already in place – superior highway and rail connections, updated infrastructure, deep and experienced labor – and ready for the completion of our 47 foot harbor deepening project.

***You are responsible for leading JAXPORT's international cargo sales and marketing initiatives as well as tracking trends and issues related to maximizing the port's business potential. Give us a synopsis of that international footprint and then, the upside potential for the port to achieve its ultimate potential.***

We currently touch 140 ports globally through ro-ro, container or breakbulk services. This is just the start. The potential here is extraordinary. JAXPORT is a tremendous success story and on the cusp of continued, incredible growth both for the port and for our business partners. However, we cannot simply tell the story of what is working here; we must also explain and validate the reasons behind our success. It is about instilling confidence in our very real ability to help our customers and their customers reach business goals.

*The potential here is **extraordinary**.*

*JAXPORT is a tremendous success story and on the cusp of continued, incredible growth both for the port and for our business partners.*

***You have served in business development roles of increasing responsibility for shipping lines owned by A.P. Moller – Maersk. In theory, ports and liners all want the same thing: robust profits, quick turnarounds and safe operations. Does your previous experience help you market the port today? How so?***

It is the perspective I bring. My prior experience allows me to understand the carrier decision base for a deployment schedule and that understanding helps our team build a meaningful value proposition for choosing JAXPORT.

***Jacksonville remains at the epicenter of Post-hurricane Puerto Rico recovery efforts. Much of that effort stems from Tote and Crowley, of course, but the port also has to play a role. Where has Jacksonville been helpful?***

JAXPORT serves two fundamental roles. First, we offer operational flexibility. This gives us the ability to flex on schedules, labor fluidity and round the clock accessibility, which leads to nimbleness. Second, we help coordinate with entities within the community. This allowed us to capture the charitable energy of the greater Jacksonville area for the benefit of the hurricane victims and assist with all of the logistics services that keep the supply chain fluid with Puerto Rico. We also serve Puerto Rico through Trailer Bridge.

***You saw rapid growth in box shipping in the past year. But, then, most ports did. This is a function of a then red hot economy, and, in part, the rush to ‘beat the tariffs.’ What’s your projection for 2019’s JAXPORT box traffic, why and what role will U.S. trade policy play in that outcome?***

One of the cornerstones of strength in JAXPORT is our diversification. We have built a business model that allows us to best weather the storm when the economy throws us a curve ball. We cannot predict the future, but we have a business model that considers contingency planning to offset disruptions.

***Your harbor deepening project is well underway. Tell us where we are on that journey, how much more work needs to be done, and what it will mean for the port once completed. Will you be able to receive ‘full and down’ 20K+ TEU boxships when done?***

Congress authorized a 13-mile deepening project for Jacksonville, which we have always supported. We have divided this into four phases. Currently we are focused on funding the initial three phases to 11 miles so we can expedite the acceptance of more cargo aboard the larger container ships. It is not entirely accurate to put forth exact sizes as weight and air draft certainly play a factor. Once the deepening project is complete and we are at 47 feet, we will be able to handle 13,000 plus TEU vessels.

***LNG powered vessels have arrived. And, for East Coast operations at least, JAXPORT is at the heart of that conversation, especially considering that you have two port customers employing two separate means of bunkering. That implies flexibility for the next LNG adopter. How important is the LNG bunker variable and where do you go from here?***

We are watching this closely. We have much to positively capitalize on with the success of LNG in Jacksonville. As an organization, we are further assessing what this means for our region and for JAXPORT. Certainly, I believe Jacksonville’s maritime community has positioned itself as innovative and willing to use advances in technology to everyone’s benefit and I expect to see more of this kind of creative thinking in the future.

***JAXPORT is known for many things; among them, the robust RO/RO trade in this port. What’s fueling that, what’s next and are there plans to expand that footprint?***

As one of the nation’s busiest vehicle handling ports, Ro-Ro helps define us. Our reputation, our location and connections plus the depth and skill of our labor continue to fuel our growth in this area. We recognize the need for additional space. To offer this to the industry properly, we are carefully assessing

what optimal expansion plans look like. We are doing this with feedback from our tenants and customers, with support from a robust business model that can drive growth and prosperity.

**You recently welcomed the first port call from a ZIM Integrated Shipping Services Ltd. (ZIM) vessel. The 10,070-TEU (container) Tianjin vessel made its maiden call to the port's Blount Island Marine Terminal in mid-October. This is a new liner port call, yes? What will be the frequency going forward?**

This is weekly service for our 2M partners, by which ZIM is the vessel operator. We look to further build the frequency of transpacific services with all of our partners.

**Jacksonville as a cruise port and a tourism destination is growing. You compete with the world's third busiest cruise port right up the highway – Port Canaveral. What is your best selling point and what's the "cruise Business" plan for the next five years?**

People love Jacksonville for cruise because of ease of accessibility. We are a "drive-to" market (4 to 6 hours) which creates an easy and cost effective environment for families to vacation. We believe in our business model of diversification and we are always exploring new opportunities to expand our cruise business.

**Your web site says (briefly) "95 percent of passengers surveyed said they would choose Jacksonville for their next cruise departure." What are the most compelling reasons for that?**

To name just a few: the accessibility of our JAXPORT Cruise Terminal, the ease of getting in and out of the area, the great customer service offered by our embarkation team and the fun they have aboard our homeported Carnival Cruise Line vessel.

**JAXPORT is one of only 17 US Strategic Ports on-call to move military cargo for national defense (and the only**

**one in Florida). What's the criteria for that? In other words, why JAXPORT?**

This is a combination of the military presence in Jacksonville and our commercial footprint. Because of the size of our commercial operations, we have the scale and bandwidth to handle the needs of military cargo moves. Additionally our 14 Ro-Ro services also contribute to the ease of military moves.

**What is the export / import mix for cargo right now at the port? Do you import more than you export at this time? How much of your TOTAL trade is with Puerto Rico? What's the ultimate goal for that split?**

In total tonnage, we are nearly 50/50 with 52% exports and 48% imports. Puerto Rico accounted for 58 percent of our overall business last year. We are pleased with such a healthy balance.

**Jacksonville is the No. 1 container port complex in Florida moving more than one million containers last year. That's not surprising given the projections for growth in commerce, that it is the epicenter of U.S. mainland / Puerto Rico trade, and the expected explosion general population in the Southeast USA over the next decade? What's the long term goal?**

To demonstrate our accessibility globally and within the southeast region through our growing intermodal infrastructure and ease of operations dockside.

**Tell us one thing about JAXPORT that we should know, but isn't necessarily well known outside the gates of the port?**

We access the world with connectivity to 140 ports. We are diversified and serve breakbulk, containers and ro-ro. We have two class 1 railway services and three interstates that can take you anywhere north, west or south. We are an economic engine for Florida and we are very proud to contribute to the vibrancy of our community.



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### FLNG Projects Tracked

There are numerous FLNG and FSRU projects in the planning stage. Not all will move to development. To sort the likely from the unlikely we developed a methodology to rate projects based on specific "success drivers".

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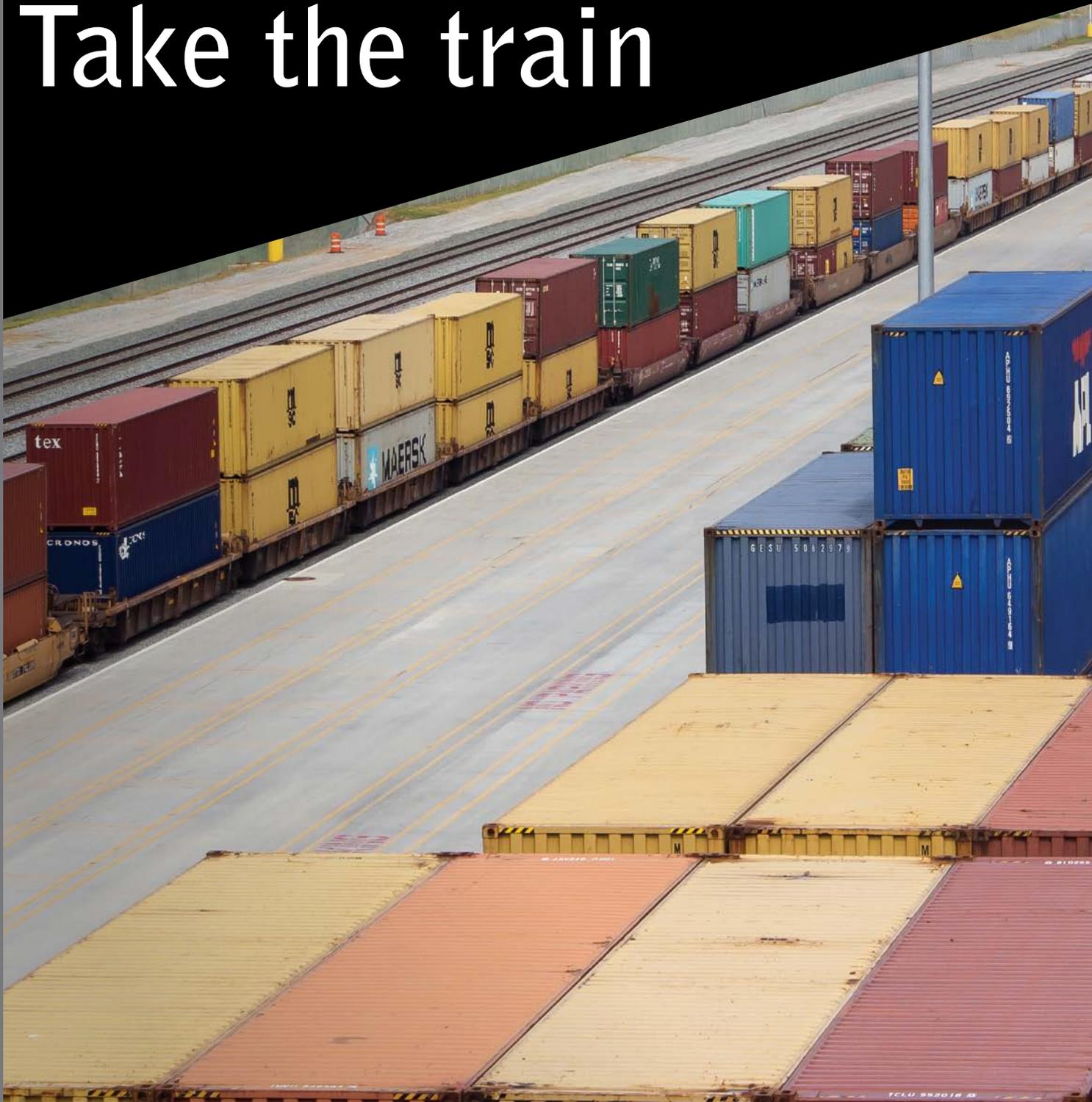


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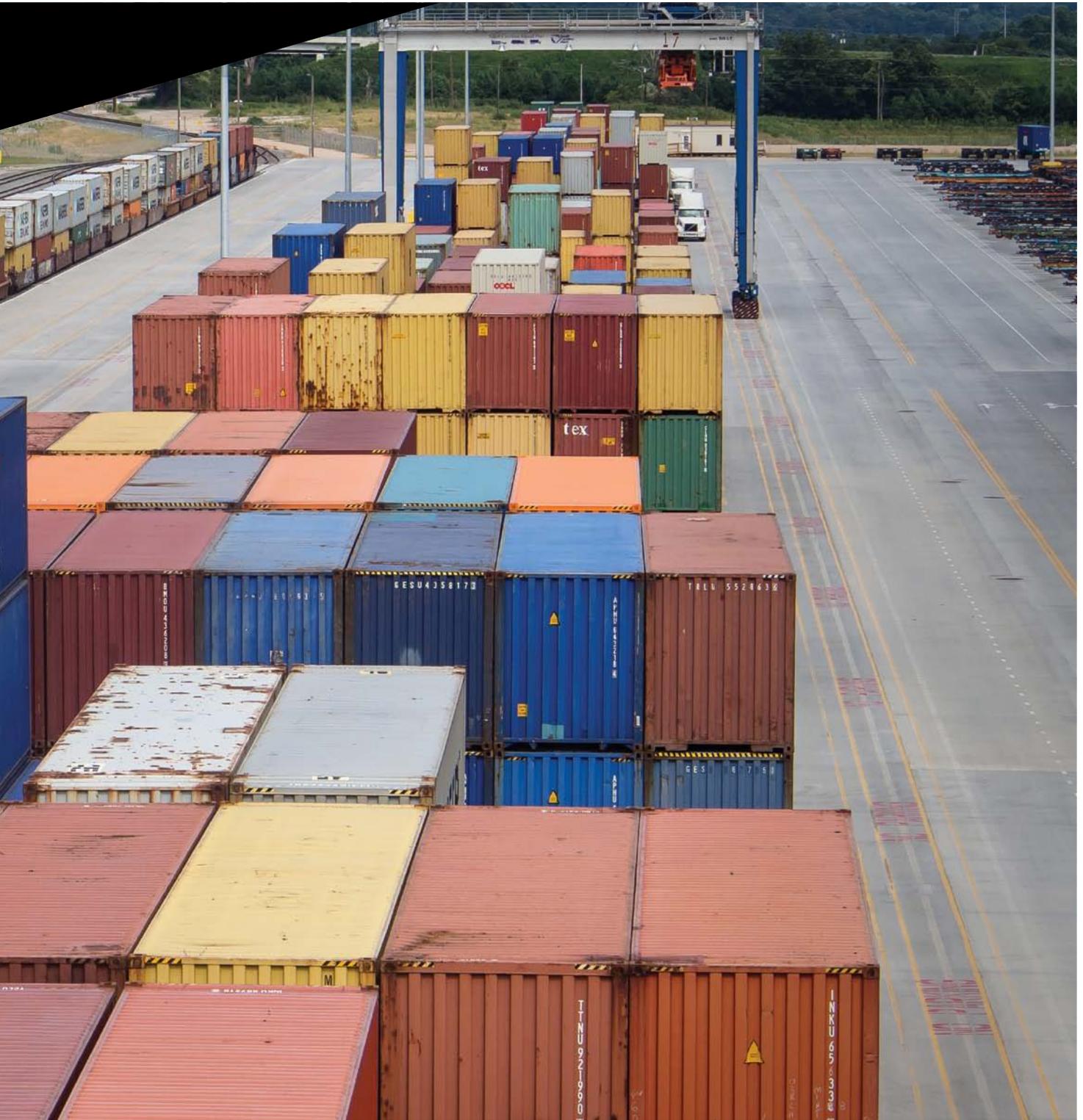
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# INLAND PORT DEVELOPMENT: Take the train



CREDIT: South Carolina Port Authority



The intermodal equation for any deep draft port is incomplete without its inland component. It's definitely a work in progress.

By Rick Eyerdam

**T**here are inland ports in the truest sense: major lakefront and riverfront cities such as Chicago and St. Louis, including even Duluth and Tulsa, with vast distribution areas, wildly varying cargo, roads, trains and waterways to serve them.

And, then, there are inland ports, dry ports that have vast distribution areas, containerized cargo delivered from true oceanfront ports, a network of highways and, most importantly, at least one Tier 1 railroad that directly links them to the rest of the nation. It is here where the nation's intermodal equation and the infrastructure to more efficiently move freight is coming together. And, not a moment too soon.

### NORTH FLORIDA MEGA PORT, ALMOST

Allison Magrath is the Senior Land Planner at Kimley-Horn in Gainesville, Florida. She was Industrial Development Manager - Real Estate for Plum Creek Paper Company from 2011 to 2016 that owned hundreds of acres of the forest on US 90 east of Lake City Florida. With nothing in place beyond a marketing campaign, Magrath spent six years negotiating land swaps with the state and federal government and securing, finally, state funds to pay for a railroad crossing of Highway 90.

While she struggled, the property was marketed as the Plum Creek Inland Port, which turned into the Plum Creek Intermodal Site. Three years ago the woodland was sold to Weyerhaeuser, which made it the Weyerhaeuser North Florida Mega Industrial Park.

The Mega Industrial Park in November received \$3.1 million for the long sought rail spur through the forest and into the Weyerhaeuser land. With the sale from Plum Creek to Weyerhaeuser, Magrath was terminated. She now works with the Appalachian Regional Port, which has a CSX rail connection and is developed by the Georgia Ports Authority connected with the Port of Savannah, she said.

"There is less competing and a more united front in states such as Georgia," as compared to Florida, Magrath said. Weyerhaeuser/ Plum Creek "was such a massive piece of property, 2600 acres, that needed a lot of due diligence to get it going," she said. "And you can't really get it going, effectively establish a true inland port that's moving cargo until you have the rail access. Getting the rail spur through the forest was a challenge in itself. And then working through the process with DOT and CSX to get an at-grade rail crossing was very time consuming process. And then finding funding to get the rail spur in the ground before you have an end user that wants to actually operate a business out of there has been a challenge. Now all of those pieces are falling into place and it just takes time."

Asked for her insight about the development of inland ports she said, "Access to rail and proximity to an interstate, those things are really the number one factors in my mind for an in-



land port. Without having those pieces in place you are going to have these kinds of time delays Weyerhaeuser has seen with this project. And building a relationship with your surrounding ports is critical."

She added, "I believe in the project or I would not have spent so much time on it myself ... It is a little bit of a challenge to convince somebody to be the first person to locate out there. But once they get the rail over there, I think it starts to be a completely different conversation."

### AMERICA'S GATEWAY, SORT OF ...

Tracy Whirls is the executive director of the Glades County Economic Development Council, Inc. and she has followed the development of the South Florida Inland site back even to when she was a reporter for the local paper. She has seen the site, along US 27 just west of Moore Haven, Florida go from the South Florida Inland Port to Americas Gateway, which prom-



The CSX intermodal terminal with Florida's Gateway park in the background.

nects to CSX in Sebring, Florida. She says that the rail line belongs to U.S. Sugar Company while Americas Gateway is developed in a large part by a rival regional landowner, the Duda Brothers. But she says that as soon as Americas Gateway secures a tenant, she can convince the sugar company to let her company use the rail line to connect with CSX. Will it work? "The odds of US Sugar building a rail line for a major competitor is anybody's guess, she said.

But Whirls added, "We have had many conversations with CSX and they continue to be interested in the project. But the actual railroad that serves the site and continues around Lake Okeechobee is a short line railroad called the South Central Florida Express, which is wholly owned subsidiary of U. S. Sugar Corporation.

"We haven't been pushing the inland port in the last couple of years," Whirls said. "But the Cushmen and Wakefield broker (for the property) out of Orlando has been marketing it more just as an industrial park."

#### FLORIDA'S GATEWAY INLAND PARK, EMPTY

A few miles to the north is the Central Florida Intermodal Logistics Center in Winter Haven, Florida that is marketed "as a state-of-the-art centralized transportation and distribution hub for Tampa, Orlando, and South Florida." The 318-acre CSX-affiliate Evansville Western Railway terminal near by is able to process up to 300,000 shipping containers per year. Connected to the facility is 930 acres that will house warehouse distribution centers, light industrial facilities, and offices.

One warehouse has been constructed for years. It contains 407,400 square feet of empty space. The CSX intermodal yard is booming, just down the road. But there is not one tenant, despite this assertion from the marketer. "It is a State-of-the-art inland port providing full intermodal capabilities for both domestic and international import and export of goods to Florida, the United States, Central and South America that is located in the heart of Florida's I-4, Highway 27 and SR 60 corridor between Orlando and Tampa."

To improve the marketing effort, the inland park was recently renamed Florida's Gateway. And according to the marketers, "it has unmatched access to CSX Winter Haven Intermodal and connectivity to 18 million people within a half day's drive. Its high-tech, clean, environmentally-friendly design makes Florida's Gateway one of the nation's Top 10 Inland Ports and one of the most technologically advanced facilities of its kind in the country.

ises "1.2 million square feet of shovel ready available property."

The Duda family donated 15 acres to Glades County to create the easements for the infrastructure; the Florida Department of Transportation funded more than \$700,000 in improvements to U.S. 27; and Glades County secured nearly \$1.5 million in state infrastructure grants to tie surrounding parcels together.

"This has been a pioneering public-private partnership between local, state and private property owners ending a stalemate in economic development in Florida," said Whirls. "Private property owners and developers are reluctant to invest millions of dollars in infrastructure on a greenfield site in advance of proven market demand, and companies won't consider greenfield sites unless they are shovel ready."

But Americas Gateway has two problems. It has no buildings except the recently built Loves Truck stop. And it has no connection to a Tier 1 railroad. It does have the short line railroad, the South Central Express that runs near by and con-



*This has been a pioneering public-private partnership between local, state and private property owners ending a stalemate in economic development in Florida. Private property owners and developers are reluctant to invest millions of dollars in infrastructure on a greenfield site in advance of proven market demand, and companies won't consider greenfield sites unless they are shovel ready.*

**– Tracy Whirls, Executive Director, Glades County Economic Development Council**



▶ The BNSF Logistics Park Kansas City, in Edgerton, Kansas.

### THE MISSING FACTOR

Three huge properties with decades of time and effort expended in their development and they still lack that one critical component. Florida's Gateway in Winter Haven has a direct link to the CSX rail line but it lacks a tenant. Americas Gateway, one county over in More Haven has a truck stop of some size but also has no commercial tenants, and no connection to a Tier 1 railroad. Weyerhaeuser North Florida Mega Industrial Park has a rail connection coming, but remains a vast untapped wilderness.

Beyond the inevitable reach of state wide port authorities, proposed inland ports are often adrift in a sea cluttered with regional politics, competing financial interests, and lacking one key factor; be it lack for a rail line, lack of a port partner, or lack of an anchor tenant.

### TAKE THE TRAIN

In North America each of the seven Class I railroads have

a development, real estate and land division. Norfolk Southern offers detailed specifications, supply-chain analysis, industrial park planning and prospective design work for the 2,000 industrial sites along its network. Last year, according to Norfolk Southern the line helped 75 companies in locating or expanding in 17 states, representing an investment of \$1.1 billion, the creation of nearly 2,000 new jobs and the generation of more than 147,000 carloads annually.

Only two of the seven Class I railroads, have developed their own shovel-ready site certification programs. Most of the sites have some railroad ownership, which eliminates one of the major hurdles.

Other relatively new and notable inland ports must include the ports operated by the Georgia Ports Authority (GPA), the latest of which, Appalachian Regional Port (ARP), is situated in northwest Georgia near I-75 and U.S. 411. ARP is served by CSX, which provides a direct, 388-mile route to and from



CREDIT: BNSF Logistic Park



*... you can't really get it going, effectively establish a true inland port that's moving cargo until you have the rail access. Getting the rail spur through the forest was a challenge in itself. And then working through the process with DOT and CSX to get an at-grade rail crossing was very time consuming process. And then finding funding to get the rail spur in the ground before you have an end user that wants to actually operate a business out of there has been a challenge. Now all of those pieces are falling into place and it just takes time.*

**– Allison Magrath, Senior Land Planner at Kimley-Horn in Gainesville, Florida**

the Port of Savannah's Garden City Terminal. GPA said ARP is expected to remove 50,000 trucks and 15 million truck miles from local highways each year.

The South Carolina Ports Authority (SCPA) owns and operates Inland Port Greer, which opened in October 2013, and Inland Port Dillon, which opened this April. Situated in Greer, SC, along I-85, Inland Port Greer is 212 miles inland from Charleston and about halfway between Atlanta and Charlotte, NC. For its part, the port of Wilmington, NC has rail access to Charlotte, dubbed appropriately enough, "The Queen City Express." Norfolk Southern provides rail service between the Port of Charleston and Inland Port Greer in both directions.

In Dillon, SC, at Inland Port Dillon, which is in close proximity to I-95 and U.S. 501, CSX, provides rail service in both directions between the inland port and the Port of Charleston. SCPA said in April that Inland Port Dillon was expected to convert 45,000 container movements from truck to rail in the

first year of operation.

Although many inland ports exist within a couple of hundred miles of prominent seaports, some inland ports exist in areas farther away from the coast. The Midwest Inland Port, which is about 160 miles southwest of Chicago in Decatur, Ill., allows shippers to avoid Chicago's congestion and tolls. Midwest Inland Port features an intermodal ramp; direct access to CSX, Canadian National and Norfolk Southern; toll-free access to Interstates 72, 55, 74 and 57 and U.S. 51; and an airport.

These ports have several things in common, they have strong local and statewide support, and they are, in most cases, inland ports located in states where all inland ports and seaports are under statewide control. Georgia, South Carolina and Virginia are prime and current examples.

Last November, BNSF announced that three new properties had been awarded the company's Certified Site designation. The sites, located in Minot, North Dakota; Avard, Oklahoma;

and Sioux Falls, South Dakota, "have already been scouted by BNSF and evaluated for their shovel-readiness," said the railroad, noting that the analysis (including an evaluation of environmental and geotechnical standards, available utilities, site availability and existing and projected infrastructure) could save an end user six to nine months of construction time.

The International Inland Port of Dallas (IIPOD) is an intermodal and logistics district that encompasses 7,500 acres and five municipalities. The City of Dallas Office of Economic Development noted that the Dallas-Fort Worth area is at the confluence of three major Class I railroad networks — Union Pacific, BNSF and Kansas City Southern — and that the Dallas-Fort Worth International Airport is the nation's ninth-largest cargo airport and the only airport with the capacity to double operations in its existing footprint. IIPOD is served by three major interstates (I-35 E, I-20 and I-45) and a Union Pacific intermodal terminal. Major manufacturing tenants at IIPOD include American Textile, Pioneer Frozen Foods, Niagara Bottling and Serta Dormae.

All 13 BNSF Certified Sites are a part of BNSF's Premier Parks, Sites and Transload program, which addresses increasing demand for customer sites by developing various types

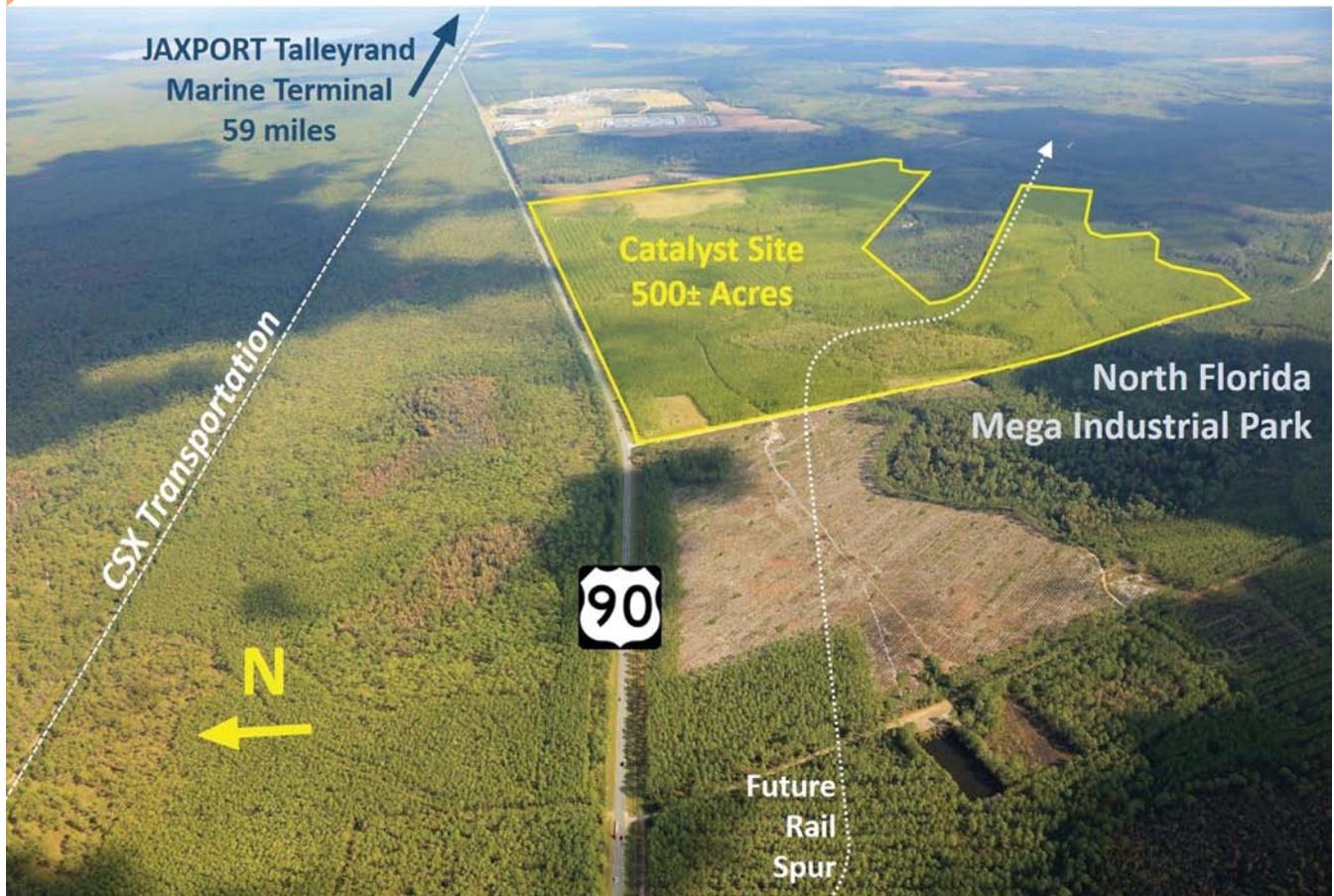
of facilities across BNSF's network. That network includes a family of logistics parks such as Logistics Park Kansas City, in Edgerton, Kansas, where last year Spectrum Brands consolidated its operations from two distribution centers to one center that brought 300 additional jobs to the park. The project was part of \$7.7 billion in investments by BNSF customers in 2017, expected to generate 3,500 new jobs in all.

Other BNSF Certified Sites include Ardmore, Oklahoma; Avard, Oklahoma; Gallup, New Mexico; Great Falls, Montana; Greenville, Illinois; Los Lunas, New Mexico; Middletown, Iowa; Minot, North Dakota; Newton, Kansas; Shafter, California; Shelby, Montana; Sioux Falls, South Dakota and Temple, Texas.

The other Class I shovel-ready certification program belongs to CSX. To receive a CSX Select Site designation, the location must meet a rigorous list of criteria, including infrastructure and utility availability, environmental reviews, appropriate zoning and entitlement, rail serviceability and proximity to highways or interstates.

The portfolio of Select Sites includes the 723-acre Cecil Commerce Center Mega Site in CSX's hometown of Jacksonville, Florida; the 1,551-acre Glendale Mega Site in Kentucky;

► The Weyerhaeuser Mega Port site in North Florida showing the planned improvements.



CREDIT: Weyerhaeuser MegaPort

the 1,354-acre Kingsboro Industrial Sites in Rocky Mount, North Carolina; the 1,175-acre White Hawk Commerce Park in Florence, South Carolina; and the 2,055-acre I-26 Mega Site in Newberry, South Carolina.

The South Alabama Mega Site is certified by the Economic Development Partnership of Alabama's Advantage Site program and is the third site in the state to be designated a CSX Select Site.

"This site is strategically located between Mobile and Pensacola on CSX's main line, connecting the site to major consumer markets from the Gulf to the Midwest, and even international markets through the Port of Mobile," said Clark Robertson, vice president of business development and e-business for CSX. "Earning Select Site status means this site will be pivotal in the region's growth, as companies seize the opportunity to swiftly set up operations and leverage the efficiency of freight rail.

CSX select sites include Belfast Commerce Centre in Richmond Hill, Georgia; Callaway South Industrial Park in LaGrange, Georgia; Cecil Commerce Center Mega Site in Jacksonville, Florida; Eastwood Commerce Center, in Lemoyne,

Ohio; Glendale Mega Site, in Glendale, Kentucky; the I-26 Mega Site, in Newberry, South Carolina; Inland Logistics Port @ Kingsbury, in Kingsbury, Indiana; John Kelsey Business and Technology Park, in Greenville, Illinois; Kentucky Transpark - Lot 6 in Bowling Green, Kentucky; Kingsboro Industrial Sites, in Rocky Mount, North Carolina.

### INTERMODAL LOGISTICS 101

At a recent Hong Kong maritime logistics event, a delegation from Canada gave a detailed, joint presentation on how to build the most efficient supply chain possible. One by one, subject matter experts from rail, ocean shipping, trucking, terminal operations and port authorities, got up to speak – all with one collective voice. The message was a simple one: "Any and all transport modes are only as good as the mode immediately behind and/or in front of mode now in use."

That's good advice; for any port stakeholder – inland, deep draft or anything in between. With gathering momentum, U.S.-based ports, shippers and ocean liners are all beginning to come on board. When they do, of course, they'll need to first "take the train."

▶ A photo of the Love's truck stop, the only current tenant at America's Gateway Industrial Center.



CREDIT: Americas Gateway

	<p><b>The Author Rick Eyerdam</b> is a Miami-based, national award-winning journalist and editor. He is a former editor of Florida Shipper Magazine and has served as an adjunct professor of communications at Florida International University. Eyerdam graduated from Florida State University with a double major in English Literature and Government. His articles have appeared in myriad maritime publications.</p>
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# Cruising:

## *Small is Beautiful*

By Barry Parker

CREDIT: PONANT - STIRLING DESIGN INTERNATIONAL



## Le Commandant Charcot

Cruise shipping, at the intersection of maritime and hospitality industries, continues to be vibrant. The Cruise Lines International Association (CLIA), the industry's major trade association, forecasts that the ocean cruise segment will draw 30 million passengers in 2019, up from 28.2 million in 2018. At the start of the decade, in 2010, the comparable count was 19.1 million passengers. CLIA members will have 272 vessels operating in 2019- with 18 ocean going vessels set to begin service. The new ships run the gamut from giant behemoths like MSC Grandiosa (the first of the Meraviglia Plus class, 6,200 passengers, under construction at Fincantieri), Royal Caribbean's Spectrum of the Seas (a 4,200 passenger vessel being built at Meyer Werft, for the Asian market) down to smaller expedition vessels like Ponant's Le Bougainville (capacity of just 184 passengers).

### Bigger is not always Better

CLIA, which works closely with travel agents and member company marketing teams, has identified some key trends, one of which suggests that bigger is not always better. Among their findings: "Travelers are setting sights on destinations that were previously out of reach some only accessible now by cruise ship from the Galapagos Islands to Antarctica." They also note that: "Travelers want to see the world in a conscious, mindful way. The cruise industry is more conscientious than ever, working to local destinations to local cultures, landmarks and minimize environmental footprints."

Beyond the environmental footprint, the placement of larger cruise vessels in markets such as the Galapagos, actually can do passengers a disservice. *Maritime Logistics Professional* magazine Editor Joe Keefe, while not necessarily an experienced cruise veteran, nevertheless took such a trip in the not too distant past. What he had to say was illuminating.

"You need a smaller, nimble platform in the Galapagos. Our vessel had berths for just 49 passengers, supported by maybe 35 crew. About 225 feet long, it was a stable platform, fast enough to get us where we needed to go, typically at night while everyone was sleeping. Once on site at the next day's adventure, four 'pangas' could quickly load and disembark all the passengers and guides – sometimes in as little as ten minutes. That's something the bigger platforms struggled with. Beyond this, the shallow draft hull could go places that the larger cruise ships could not. We saw a lot; more than a bigger ship could have afforded and in a quicker time frame. It wasn't necessarily luxurious, but it was everything they promised us, and more."

Professor Andrew Coggins, a Marketing Professor at Pace University, agrees. "The Expedition Market is a mix of owner/

*“Another way of defining the market is that they offer unique experiences, with emphasis on unique, focusing on the natural and cultural environments by visiting environmentally sensitive areas. They capitalize on their small size and shallow draft and low passenger numbers to go where the big ships can’t.”*

– Professor Andrew Coggins, Marketing Professor at Pace University



operators and tour operators who charter their ships. The ships range from 30 years plus to brand new in age. They can be relatively spartan to very luxurious. They can be yacht-like small ships or former-Russian icebreakers. Passenger capacity is in the 100 to 200 passenger range.” He adds quickly, “Another way of defining the market is that they offer unique experiences, with emphasis on unique, focusing on the natural and cultural environments by visiting environmentally sensitive areas. They capitalize on their small size and shallow draft and low passenger numbers to go where the big ships can’t.”

### Expedition Cruising: leading edge technologies

Not surprisingly, “expedition cruising” in smaller ships, with destinations such as Antarctica, the Fjords of Norway, and islands in the Pacific, is a sector attracting travelers, but is at the same time, also showcasing the leading edge of technological innovation for passenger vessels. The expedition sector, where the vessels are described as “yachts”, speaks to the identified trends, and has seen tremendous growth. Lin Humphrey, Ph.D. a Professor of Marketing at Florida International University (FIU) whose career has included a stint at Carnival Corp, told *MLPro*, “I am bullish on this segment of the market,” pointing to earlier forays into the marketplace by Celebrity Cruises (founded by the Greek Chandris family, and part of Royal Caribbean since the late 1990s) with its Xpedition offerings. He added, “They were willing to take a risk with their audience and offer a unique product to a more discerning traveler.” These early efforts paved the way for today’s entrants.

The French operator Ponant, a powerhouse in this segment mentioned by Dr. Humphrey, is vying for the lead in Polar expedition vessels. Its Polar Code 2 (or “PC2” with ice breaking capabilities) designated Le Commandant Charcot, to be delivered from Vard’s Tulcea yard in 2021, will feature LNG propulsion with the ability to switch over to battery power. In discussing this vessel, Mrs. Edie Rodriguez, Ponant’s Americas Brand Chairman, explained to *MLPro*, “... when

we launch the world’s first luxury exploration yacht going to the North Pole and utilizing eco friendly LNG, we will bunker in Kirkenes, Norway. It all comes down to proper and prudent planning and communications in advance.”

### Sustainability: the new normal

Passengers are increasingly sensitive to cruise operators’ sustainability practices. Edie Rodriguez told *MLPro*, “At Ponant we vet each location that we go to prior, during and after our visits. Our goal is to always be as eco friendly on and off of our vessels, to our oceans, and respectful to the places that we visit. Hopefully, we leave each place just as it was before we arrived, yet better via contributing to their economic and environmental state in a myriad of positive ways.”

Though new rules restricting the sulfur content in fuels don’t kick in until January 1, 2020, Ponant’s transition to low sulfur gasoil (marine diesel) has begun a year earlier, in January 2019. Such actions do not go unnoticed by demanding customers. Ms. Rodriguez explained: “I think that sustainability is important for most of today’s global wanderlust travelers and some make decisions based on a company’s initiatives as to doing business with those companies, not just regarding travel companies. At Ponant and our parent company and sister companies we take sustainability as a priority and an important issue. We all are very proud of our records regarding Sustainability and Corporate Social Responsibility (CSR) in general.”

Dr. Humphrey, from FIU, acknowledged that the cruise industry has sometimes come under fire from environmental groups. But he stressed that: “...we’ve also seen positive press with proactive communication around on-board efforts, like Royal Caribbean’s Save the Waves and Virgin Voyages’ commitment to eliminating single use plastics on the ships. Many consumers may only hear about these initiatives when stories run on the news, and the industry can continue to improve their communication on environmental protection.” Pointing to fueling alternative, a hot topic across the maritime universe, he suggested: “There is an opportunity to tell a compelling

*“At Ponant, we vet each location that we go to prior, during and after our visits. Our goal is to always be as eco friendly on and off of our vessels, to our oceans, and respectful to the places that we visit. Hopefully, we leave each place just as it was before we arrived, yet better via contributing to their economic and environmental state in a myriad of positive ways.”*

– Mrs. Edie Rodriguez, Ponant’s Americas Brand Chairman



story with the scrubbers and LNG-powered vessels, which overcomes many of the objections some may have about industry impact on the environment.”

A niche player in the small vessel luxury segment, Crystal Cruises (owned by Genting Hong Kong – which also has an ownership stake in Asia-specialist Star Cruises, and recently sold out its shares in the holding company for Norwegian Cruise Lines), is entering the expedition segment, building on the success of its Crystal Esprit, marketed as a yacht- with 62 passenger capacity. Crystal, originally a subsidiary of the Japanese giant NYK (where it operated in the smaller luxury ship segment), will be launching its 20,000 gt ultra luxe Crystal Endeavor, a 200 passenger vessel, with a PC 6 ice class designation (Polar Code, Category “B”) now under construction at MV Werften.

Along the coast of Norway (and niches such as Iceland), Hurtigruten is a market leader. The operator has been at the forefront of technological innovations; its hybrid powered Roald Amundsen, with a passenger count of 530, is set to deliver from the Kleven yard- Ulsteinvik, early in 2019. A sister vessel, Fridtjof Nansen, is expected to come online later in 2019; in January, 2019, a third vessel- with 2021 deliver, was ordered. According to the operator, “The new ships are designed by Rolls-Royce, in collaboration with the recognized Norwegian yacht designer Espen Øino.” The ice strengthened vessels are able to run in fully electric mode, on state of the art battery power, for short periods of time.

### The Logistics of Cargo and Cruising

Unlike vessels in the fleets of Crystal and Ponant, the Hurtigruten vessels are not positioned for luxury travelers. If there is an intersection between cruise shipping and cargo logistics, it could likely be found along Norway’s coast, between Bergen and Kirkenes. As described by travel site Cruise Critic, reviewing the vessel Richard With ( 11,205 gt, with capacity for 590 passengers, built 1993 and refurbished 2018 , named after Hurtigruten’s founder), “...Like the rest of the fleet, it is a working

ship which makes port calls around the clock, picking up and delivering short-hop passengers – often plus their car or bikes – and loading and unloading goods.” The site review of the Midnatsol (capacity of 1000 passengers, built 2003), offered that: “Hurtigruten ships also carry cargo, calling at villages large and small, docking only as long as necessary to load and offload passengers and cargo, sometimes in as little as 15 minutes. And, unlike the long, drawn out docking procedure we’re used to on conventional ships, the Midnatsol zips in and out of port in a flash, aided by triple bow thrusters and a state-of-the-art pod.” Notably, six of its existing vessels are being retrofitted to run on LNG, battery power, and biogas (derived from fish oil).

Logistics is of paramount importance throughout cruise ship operations. At Ponant, top management is heavily involved. Edie Rodriguez (who held a senior position at Crystal previously), explained, “We source in a proactive manner for fuel, food and wine, etc., as well. Logistically we do the best possible by providing the best that is available around the world to provide freshness as frequently as possible. Having stated this, while there are minor challenges in some very remote destinations, we don’t really get complaints about this and it is not an issue for us.” When asked about situations where itineraries must be changed- because of extreme weather, for example, she answered: “Our ships are small so there is not a lot of storage space available, but we do keep as much as possible on board for these types of scenarios. We also have relationships around the world so that many variations of back ups are available as expeditiously as possible.” FIU’s Dr. Humphrey added, “Logistics for the cruise lines depends on the offering and the scale of the operations. Visit any major US cruise port on a weekend and you see the stevedores loading in supplies for the week, and this is the ship’s only supply efforts for the week. When you get into some of the more unique and upscale offerings (think: small), then you see sourcing locally during the voyage.”

Smaller is clearly beautiful. Ponant’s Rodriguez, reviewing the sector overall, told *MLPro*, “The world is bullish on the luxury travel spending sector, as am I. At a recent luxury travel

conference, The Agency Group cited that their businesses grew in the luxury cruise sector the most of any other travel sector, at 18% YOY increases.” In the realm of smaller cruise ships, two new entrants- decidedly in the luxury domain, have attracted considerable attention. Ritz Carlton Yacht Collection, funded by Oaktree Capital (an investor in other shipping sectors), will begin operations in 2020 after the first of three luxury yachts -Ritz Carlton Azora, with 298 passenger capacity, is delivered from Barreras Yard (in Spain). Another new entrant, Virgin Voyages (also with Private Equity backing from Bain Capital) is building three ships, will also begin sailing in 2020 when its Scarlet Lady (currently under construction in Genoa, at Fincantieri) debuts. Two other vessels are set to join the trio (all with passenger capacity of 2,700) in the following years.

Closer to home in the United States, American River Cruises is a leader in the domestic marketplace, with itineraries up and down the Mississippi River and its tributaries, New England and the Pacific Northwest. This Connecticut based operator’s American Song was delivered in late 2018, with its American Harmony due to come into service in summer, 2019. These Modern Riverboats, built at sister company Chesapeake Shipbuilding (well known for its Vane Brothers tugboat newbuilds) feature a patent-pending bow ramp for loading and unloading passengers.

The river cruising sector is a close cousin to the expedition sector. Prominent names in this part of the market include

AMA Waterways, Viking River Cruises Avalon and also the newest entrant; Crystal Cruises. Viking, with its “longships” a mainstay on European (and Asian) rivers, has transitioned into the luxury cruise segment with six recent newbuilds of 930 passenger capacity, as well as ambitious plans to build as many as 10 additional sisters at Fincantieri. Crystal’s new fleet of five river boats are frequently sighted on European waterways.

The logistics of supplying fresh food and the desire for custom travel experience comes full circle here. FIU’s Dr. Humphrey notes, “With offerings like Crystal’s River Cruises, that port-to-table fresh offering becomes an integrated part of the local experience.”

Indeed, this is a fast growing segment with 26 ships due for delivery through 2021, ranging in passenger capacity from 100 to 300 with the majority 180-200 lower berths. In spite of the large number of ships, their total capacity is less than just one of the new mega-ships. And, the ultimate impact of this aspect of cruise travel has yet to be fully realized.

### The Author **Barry Parker**



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](http://www.conconnect.com)

Hondius, the world’s first-registered Polar Class 6 ship.



CREDIT: Oceanwide Expeditions



Hilton Hotel, Stamford, CT, USA  
Tuesday-Thursday, 2-4 April 2019

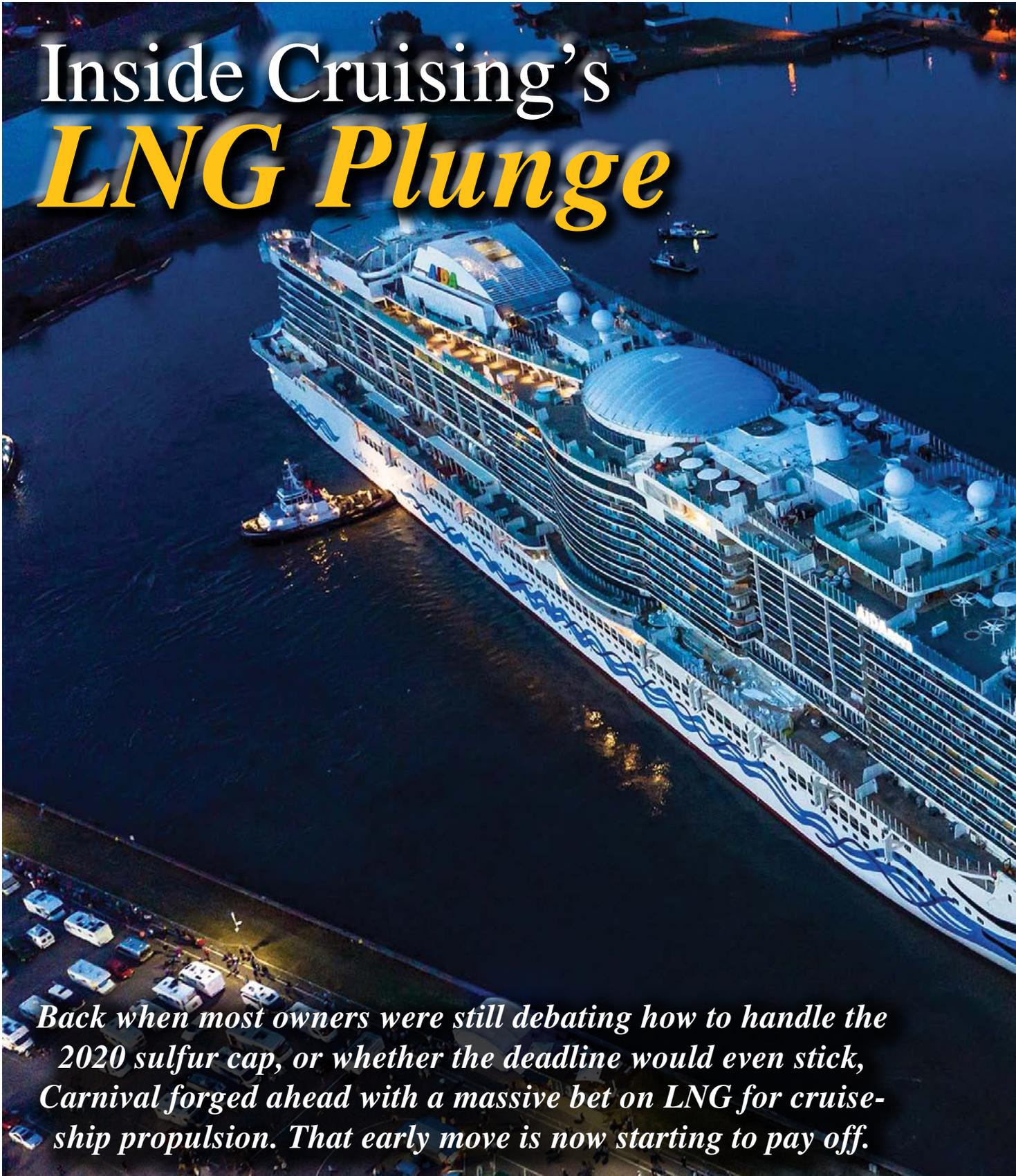
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# Inside Cruising's *LNG Plunge*



*Back when most owners were still debating how to handle the 2020 sulfur cap, or whether the deadline would even stick, Carnival forged ahead with a massive bet on LNG for cruise-ship propulsion. That early move is now starting to pay off.*

By Greg Miller



CREDIT: Carnival Corporation



CREDIT: Carnival Corporation

# AIDAnova,

the first cruise ship to ever be powered at sea by LNG, set sail on its maiden voyage from Tenerife in the Canary Islands on December 19, 2018. Speaking with *Maritime Logistics Professional* six weeks later, Carnival Corporation senior vice-president of maritime affairs Tom Strang gave his early verdict: LNG works.

“It’s good news. From the LNG perspective and a bunkering perspective, it has gone really well. The LNG plant is behaving at least as well as expected, if not better,” he reported.

The ship’s four 16-cylinder MaK M46 dual-fuel engines can

run on either LNG or marine gas oil (MGO). “We decided to go down the dual-fuel approach so that in the event there was unavailability of LNG or an issue with the gas plant or any other reason, we could switch over to MGO, but the intention is to always stick to LNG,” he said. “I’ve heard back from the chief engineer and so far, we’ve had no significant operational time on MGO. There may be times when the engine switches over momentarily to MGO for different reasons, but it’s not something that’s happening on a regular basis.”



AIDAnova LNG Engines Onboard

CREDIT: Carnival Corporation



### *Dipping a Toe in the Water*

Carnival Corporation first dipped its toes into the LNG power pool in 2016-17, with the debuts of the AIDAprima and AIDAprera, built by Japan's Mitsubishi. Only one of the four engines on each of these vessels is a MaK M46 dual-fuel engine, and LNG is only used as a power source when the ships are moored at the pier.

The use of LNG for power at sea was pioneered via a multi-brand platform order for 84,000 gross-ton (gt) sister ships,

known internally as 'Project XL'. The initial agreement was announced in March 2015 with builder Meyer Werft. Nine orders were ultimately placed at that yard and its Finnish sibling, Meyer Turku: three for Germany's AIDA (the AIDAnova, plus newbuilds for deliveries in 2021 and 2023); two for Italy's Costa Crociere (Costa Smeralda later this year and another newbuild in 2021); two for UK-based P&O Cruises (Iona in 2020 and another in 2022); and two for America's Carnival Cruise Lines (Mardi Gras in 2020 and another in 2022).

Last July, Carnival Corporation topped off its LNG-powered orders at another shipyard; inking deals with Italy's Fincantieri for two 175,000 gt newbuildings for US brand Princess Cruises, set for deliveries in 2023 and 2025.

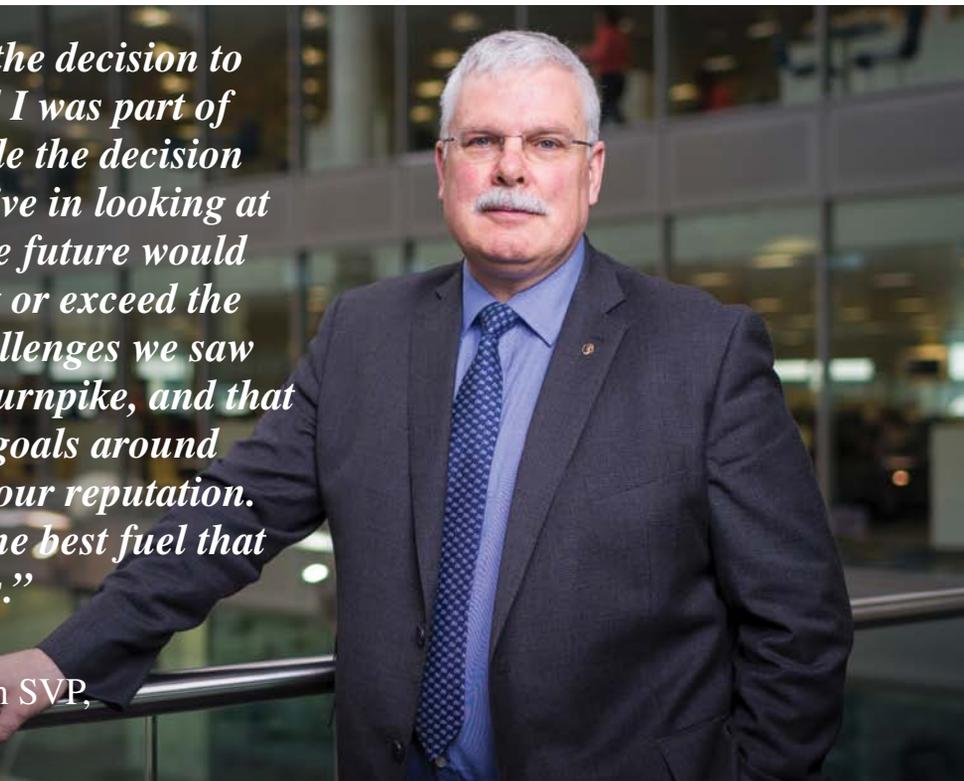
Strang confirmed that all Project XL ships will feature the same MaK engines and LNG equipment configuration installed aboard AIDAnova. "It's a platform design, where everything in the technical spaces will be essentially the same [across all brands]. The basic system of the four-engine layout, the size of the engines, the gas tank arrangements – that's all going to be the same – although obviously, if we see opportunities to improve systems and run them more efficiently, we'll make changes."

Asked about the more recent Princess orders at Fincantieri, he said that those ships could use a different LNG system and implied that they probably would. "We very rarely put all our eggs in one basket and in that regard, it makes sense to have capabilities from other manufacturers and system designers," he said.

Carnival Corporation does have a number of existing orders for non-LNG-powered newbuildings, for brands Costa, Princess, Carnival Cruise Lines, Seabourn, Holland America, and Cunard. Strang pointed out that in many of these cases, orders arose from multi-brand platform contracts at Fincantieri that

*“When we made the decision to go this route – and I was part of the group that made the decision – we were very active in looking at what the fuel of the future would be that would meet or exceed the environmental challenges we saw coming down the turnpike, and that would ensure our goals around sustainability and our reputation. LNG was clearly the best fuel that ticked all the boxes.”*

– Tom Strang,  
Carnival Corporation SVP,  
Maritime Affairs



preceded Project XL. “It would be very difficult to introduce LNG on an existing platform,” he noted. Other existing orders, such as those for Seabourn, are non-LNG due to their itineraries. “On some itineraries for smaller ships and more bespoke destinations, it would be very challenging to ensure a robust, reliable, and adequate LNG supply,” he explained.

Strang conceded that an LNG system does take up more space than a non-LNG system, but he maintained that the issue is manageable on larger cruise vessels. “On a purely technical basis, yes, it takes more space. It depends on what type of tank system you employ. We use C-type tanks that take roughly 1.8 times the volume for an equivalent amount of heavy fuel oil [HFO] or MGO to propel you the same distance with the same energy content. But with these very large ships that we’re building of 180,000 gt or more, you can be very clever and work together with the shipyards, which are very good at coming up with an optimum design that allows for the impact on the carrying capacity to be minimized.” He added that ships using LNG and MGO do not need a bulky scrubber system installed to meet emissions standards, allowing for that space to be saved.

### ***Bunkering: the final hurdle conquered***

The largest challenge to the use of LNG for cruise propulsion is refueling: can sufficient bunkering services be created in the necessary locations? The good news is that Carnival Corporation’s LNG plunge has spurred other cruise lines to dive in as

well. The more cruise companies that use LNG, the higher the guaranteed future demand, and the easier it is to finance the necessary investments in bunkering and related supply chains.

Other cruise lines placing orders for LNG-powered cruise vessels include Royal Caribbean (two 200,000 gt ships for deliveries in 2022 and 2024 from Meyer Turku); Disney (four 140,000 gt vessels for deliveries in 2021-23 from Meyer Werft); TUI Cruises (two 161,000 gt ships at Fincantieri, for deliveries in 2024 and 2026); Ponant (one 30,000 gt ship from Romania’s VARD for delivery in 2021); and MSC (one 183,500 gt newbuild at France’s Chantiers de l’Atlantique for delivery in 2023, plus two 205,700 gt ships from the same yard for deliveries in 2022 and 2024, and options for two additional 205,700 gt ships for deliveries in 2025 and 2026). Altogether, LNG-powered ships now account for around 25% of all cruise newbuildings on order, measured by capacity.

Asked how beneficial it is for Carnival from a bunkering perspective that LNG is being widely embraced across the cruise industry, Strang said, “It clearly does help us enormously, because you can see the demand profile [for LNG] beginning to build. In my mind, the tipping point has been reached. We at Carnival have been at the leading edge of this, and we’ve done a lot of the heavy lifting, but we expect there to be further benefits, particularly around 2022-23 when most of these other [cruise lines’] vessels will begin to enter service and you’ll see the demand requirement increasing significantly.”

# The Swell of the Year is Building

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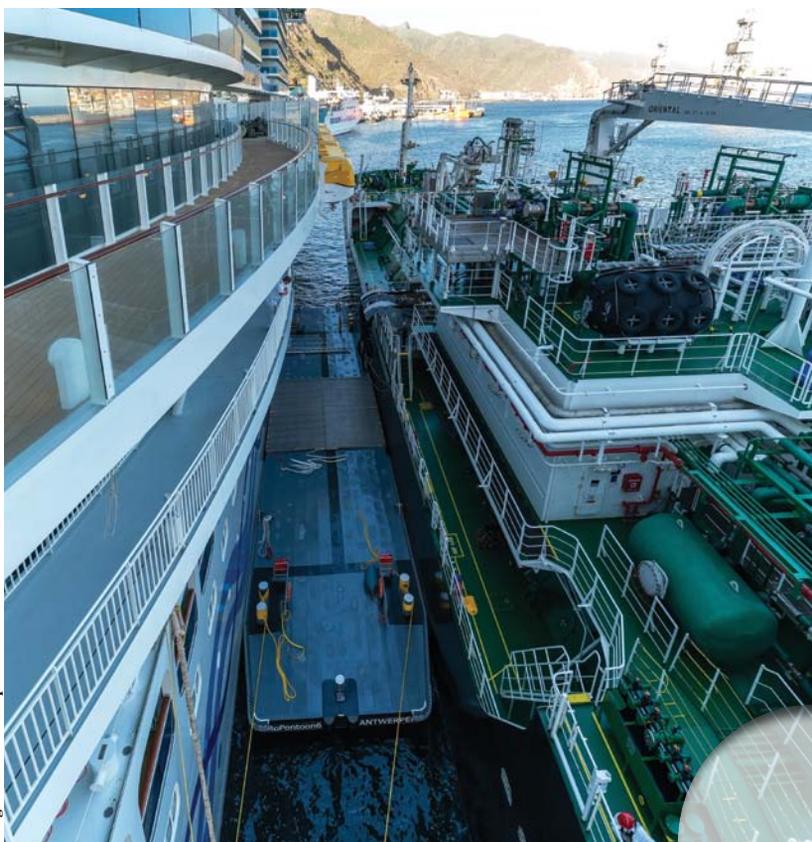


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Images: Carnival Corporation



Carnival Corporation has a strategic partnership with Shell for its own LNG supply needs and is continuing to expand its global bunkering footprint. “We now have ship-to-ship bunkering in Eemshaven, Rotterdam, and Tenerife,” said Strang. “We’re awaiting final approvals from Barcelona, and we’re working with Port Canaveral and Port Miami to get approvals there. AID-Anova operates in the Canary Islands in the winter and shifts to the Western Mediterranean in April. Costa Smeralda will be delivered in October and will operate year-round in the Western Mediterranean, bunkering in Barcelona, and we also have approval to bunker in Marseille if we need to. Before P&O’s Iona delivers, we’re working with the port of Southampton to develop their LNG bunkering capability. And when the Carnival Cruise Lines ships deliver, starting with the Mardi Gras in 2020, we’ll be ready with LNG supply in Port Canaveral.”

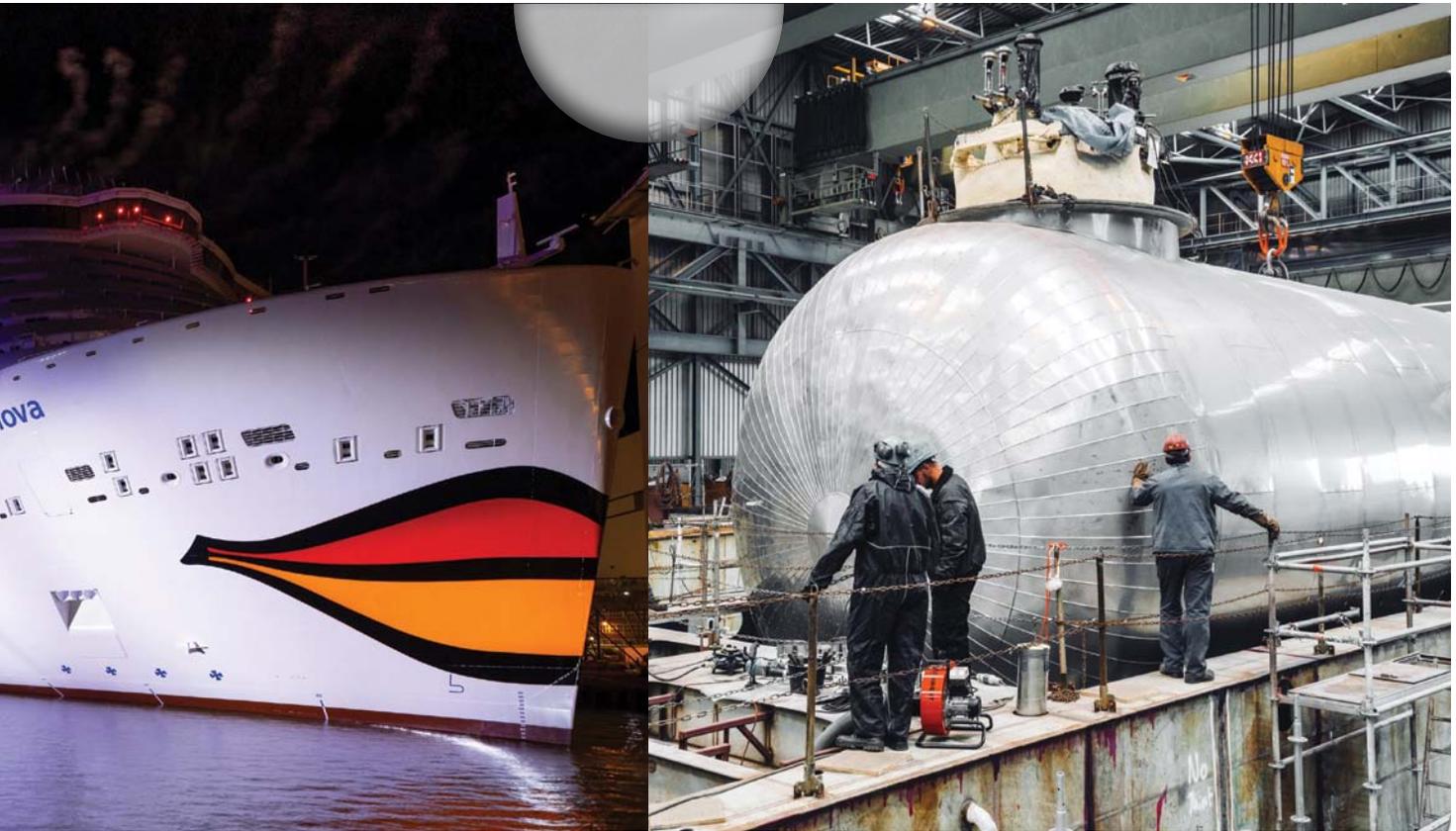
Refueling of cruise ships with LNG differs from refueling with HFO or MGO, for several reasons. First, it requires a fixed location for each itinerary. “Typically, we may bunker LNG every 10 days,” said Strang. “With conventional fuels you can bunker in many, many ports. With LNG you have to develop a supply chain and get specific approvals, so must you bunker in fixed locations. And because everything has to come together at the right time at the right date [at these fixed locations], it’s very important that you choose your partners very carefully and partner with people you can work closely with who are very

reliable and who really understand their side of the business.”

Another difference: more time is needed to fill the tanks. “It is taking longer. We envisage that over time we’ll be able to condense that down a bit, but even so, it would still take longer than bunkering with traditional HFO because of the nature of these vessels and the volume of LNG you have going onboard.”

Compared to HFO and MGO refueling, there are also differences in terms of the location of bunkering operations and by extension, safety concerns of port authorities. “One of the unique challenges within the cruise industry is that you’re often going into port right in the center of cities. You’re doing bunkering in locations where perhaps they have not done it previously. So, safety is always the first priority at all times.

“Let’s be clear: LNG is very safe,” Strang underscored. “LNG-fueled vessels have been operating for 50-plus years and have an excellent safety record, and you could argue that LNG is safer than conventional fuels, which could be considered more volatile. There have been port authorities that have had an initial reaction to LNG bunkering of: ‘Oh, not in my port’. But after we’ve explained it to them and brought in the professionals and demonstrated the level of safety and care that’s being taken, we have not had any issues [with port authorities refusing LNG bunkering]. And clearly, with the environmental advantages you have from clean emissions in the port, it’s a win-win for both sides.”



### Considering Cost

In any debate on the pros and cons of LNG power for the maritime sector, another key variable, beyond bunkering availability, is cost. When the International Maritime Organization's 0.5% sulfur fuel cap enters force on January 1, 2020, how will bunkering with LNG compare price-wise to other options such as MGO or ultra-low sulfur fuel, or HFO and scrubbers?

Carnival's choice of LNG power in early 2015 significantly pre-dates many of the decisions to do so in commercial shipping. Belief that the IMO 2020 date would be pushed back was rampant within shipping circles well beyond 2015. Consequently, many non-passenger-ship owners held off on decisions.

According to Strang, "When we made the decision to go this route – and I was part of the group that made the decision – we were very active in looking at what the fuel of the future would be that would meet or exceed the environmental challenges we saw coming down the turnpike, and that would ensure our goals around sustainability and our reputation. LNG was clearly the best fuel that ticked all the boxes.

"At that time, I don't think we were looking at it on a price basis," he recalled. "We were looking at it much more in terms of: How is this going to future-proof our vessels?" He agreed that there was general skepticism about whether the 2020 deadline would stick, noting, "There were people back then who were talking about a 2025 scenario, but I think many of

us in the industry recognized that 2020 was going to be more likely. At Carnival, we took the decision to prepare for that.

"The cost components [in 2015] were completely different than they are today, but I would say that LNG has remained much less volatile than some of the other fuels. I'm not making any cost projections, particularly with 2020 coming up, but I do believe LNG is going to be competitive with other compliant fuels, that it will give us a hedge against a fluctuation in fuel costs over time, and that we're also going to have advantages with LNG when it comes to maintenance intervals, cleanliness, and other aspects."

And when additional orders are placed for the next generations of larger ships for Carnival Corporation, LNG appears to be in pole position for the power supply. "We're always looking at alternatives, but LNG seems the best solution," Strang affirmed.

#### The Author **Greg Miller**



is an award-winning journalist and editor. Most recently, he served as the managing editor of Fairplay magazine. Prior to his 14 years at Fairplay, he was the senior editor of Cruise Industry News and the editor in chief of the Virgin Islands Business Journal. He is a graduate of Cornell University.



CREDIT: Hurtigruten

# CRUISE BUILDING:



CREDIT: Carnival Cruise Lines



CREDIT: Virgin Cruises

# *GROWING, CLEANER AND NOT ALWAYS BIGGER*



CREDIT: Silver Sea Cruises LTD

*2019 will be the biggest year ever for new ship introductions.*

*By Rick Eyerdam*

**T**he ships are coming. Cruise Lines International Association (CLIA) suggests that in the coming year 18 new ships are on order for CLIA cruise lines. The next few years will see the arrival of new cruise giants at PortMiami and Port Canaveral. But first they will need giant terminals.

### THE GLOBAL IMPACT OF CRUISE LINES

CLIA estimates 30 million travelers will cruise next year, up six percent from 28.2 million in 2018; and 35 percent of that 28.2 million - 9.87 million- will land in the Caribbean.

The reason is obvious: where regular jobs are few, a common thread among Caribbean cruise destinations, cruise lines mean jobs and a steady income. The cruise industry currently sustains 1,108,676 jobs around the world, equaling \$45.6 billion in wages and salaries and \$134 billion total output worldwide in 2017, according to CLIA research.

Perhaps the largest headwinds for ocean vessels will be preparing for the IMO's strictest pollution prevention measures. By January of 2020 all ocean-going vessels must achieve an exhaust that contains .50% sulfur dioxide though alterna-

tive fuels such as LNG or by adding scrubbers. More than 70,000 ships will be affected by the regulation. But strict limits of 1.0% on sulphur (SOx) emissions are already in place in Emission Control Areas (ECAs) in Europe, America and the Caribbean around Puerto Rico and the US Virgin Islands and have been since 2015, with little fanfare. New control areas are being established in ports and coastal areas in China.

### CANAVERAL LEADS LNG CRUISING

Port Canaveral will be the second world port and the first in North America to host an LNG propelled cruise ship, which will also be the largest in the world, for a year or two. In December of 2018, the Canaveral Port Authority Board of Commissioners approved the issuance of bonds to provide up to \$117 million to finance the port's Cruise Terminal 3 to host the Mardi Gras and other Carnival ships.

"Our record of performance, and Carnival's renewed commitment to our port with the new long-term operating agreement, are the foundation of sound planning and pillars of financial success," said Port CEO Capt. John Murray.

The two-story 185,000-square-foot terminal and adjacent

Designed from the ground up for swift and adaptive polar exploration, Hondius is the world's first-registered Polar Class 6 ship and one of the most advanced vessels on the market.



CREDIT: Oceanwide Expeditions

1,800-vehicle parking garage and surrounding areas was set at a cost of \$150 million. Carnival agreed to contribute up to \$50 million as part of a 25-year operating agreement with the line that began Sept. 1, 2018.

It is the largest project in the port's history, according to port officials. Murray said Carnival would pay the \$50 million to Port Canaveral through a special fee, called a "capital cost recovery charge." The port will charge Carnival for every passenger getting on or off a Carnival ship at Port Canaveral until the \$50 million total is reached.

Murray said the fee is likely to be about \$2.74 per passenger boarding or departing a Carnival ship at the port. The port will assess Carnival the fee, but it is not likely to actually show up on passenger ticket charges. Notably, a LNG bunker barge sailing from Georgia will fuel the Mardi Gras.

When complete, the 1,130-foot-long, 180,000-ton vessel will overshadow the lines' largest ships, Carnival Vista and Horizon, which are 133,500 gross tons. Maximum passenger capacity is around 6,500. It is the second of 11 next-generation cruise ships expected from Carnival Corporation between 2018 and 2025 that will generate their power at sea and in port from LNG.

*"Cruising the Caribbean is booming. Destinations including Grand Cayman, Haiti, Honduras and the Dominican Republic have built or are planning new docking facilities. Antigua and Barbados are among those expanding their ports to accommodate still-larger cruise ships. Following a recent port expansion, St. Kitts is expecting almost 1 million cruise visitors for the upcoming season."*

Artist's rendering of the MSC custom built island, the Ocean Cay MSC Marine Reserve.



CREDIT: MSC



“

*Our record of performance, and Carnival's renewed commitment to our port with the new long-term operating agreement, are the foundation of sound planning and pillars of financial success.*

– Capt. John Murray,  
CEO, Port Canaveral

The first LNG powered cruise ship, AIDAnova from Carnival's German subsidiary AIDA Cruises, launched in November 2018. AIDAnova also accommodates 6,500 guests.

#### **PORTMIAMI**

PortMiami will host both the 6,800 passenger Symphony of the Seas from Royal Caribbean and in two years, an unnamed 7,000-passenger ship from MSC; plus Richard Branson's adults only Scarlet Lady in 2023. And, this too, will all require new terminals.

In December 2018, Branson won approval from Miami-Dade County for Virgin Cruise Terminal for a new 100,000-square-foot terminal would be located on the northwest side of the Miami port. Cost of the terminal is estimated at \$150 million, according to the cruise line. Branson also said that he had gotten approval to sail into Havana from Miami and that he will soon be announcing the purchase of an island.

“We've got a beautiful island which we'll soon to be announce where people will be going in the Bahamas so it's very convenient,” he told reporters.

The Miami-Dade Board of Commissioners approved Branson's 100,000-square-foot terminal, the Virgin Voyages Terminal, will be located on the northwest side of PortMiami. Construction will begin in 2019 with completion expected by November 2021 in time for the 2,700 passenger Scarlet Lady. A second ship, also under construction, would debut in Miami for the 2021-2022 season.

The two-story glass terminal's rooftop is designed by architect Architectonica to resemble a palm tree grove with rooftop pockets that allow natural light to flow into the building. At night, the company's Virgin Voyages red logo will be illuminated along with shafts of light flashing against the sky and Biscayne Bay.

The Miami-Dade County Commission also approved a

memorandum of understanding with MSC to build cruise Terminal AAA at the port. MSC already occupies Terminal F at PortMiami, a terminal reconditioned in time to accommodate the line's new flagship, the MSC Seaside, as well as the MSC Divina.

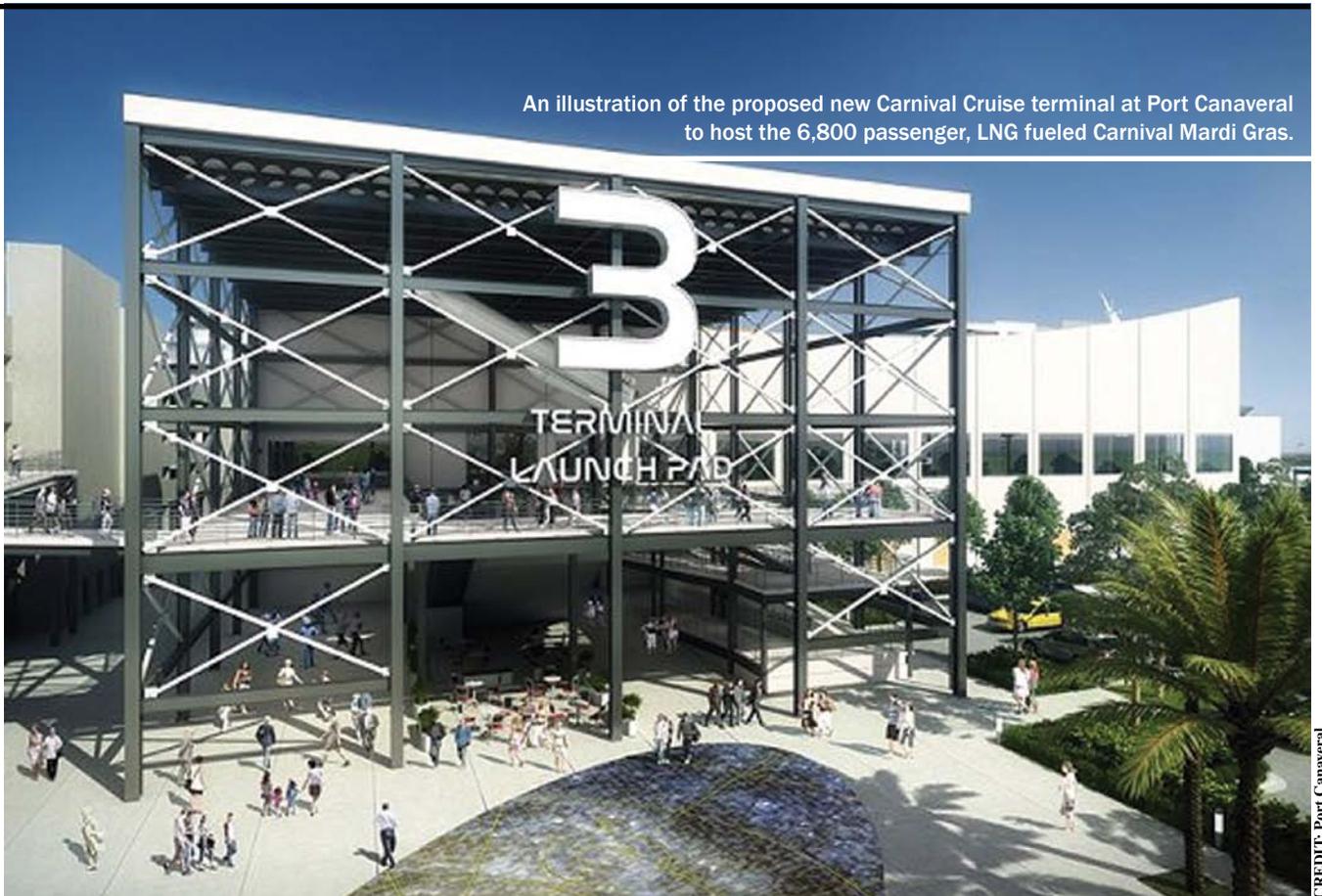
The completion of the Terminal F was celebrated with an official ribbon cutting ceremony on Thursday, December 7, 2017 attended by Mayor Carlos Gimenez, Juan Kuryla, PPM director & CEO of Port of Miami, Rick Sasso, chairman of MSC Cruises USA, Roberto Fusaro, president of MSC Cruises USA and members of the Miami-Dade Board of County Commissioners. With that done, MSC began negotiations for a completely new terminal to host their as yet named, 7,000-guest cruise ship, which would then be the largest in the world.

The terminal will sit east of the other two new terminals already in construction from Royal Caribbean Cruises and Norwegian Cruise Line Holdings.

Royal Caribbean's Terminal A will be completed this fall to bring its new Symphony of the Seas, the world's largest cruise ship, to Miami. At maximum occupancy, Symphony can carry 6,680 guests. The \$250 million terminal is a partnership between Miami-based Royal Caribbean and Miami-Dade County. The cruise line funded construction; and the county provided around \$15 million in infrastructure support. Royal Caribbean will pay the county \$9.5 million per year to rent the land.

Norwegian's new \$100 million Terminal B will be completed in fall 2019 to coincide with the launch of its newest ship, the Norwegian Encore, which carries 3,998 passengers at double occupancy.

With 22 cruise lines berthing 55 ships at PortMiami, millions of passengers travel through the South Florida port every year with an emphasis on cruises to the Bahamas, the



Caribbean, Mexico and other destinations, according to port officials. The Cruise Capital experienced an increase of 4.7 percent in cruise visitors with a total of 5,592,000 passengers during the 12-month period ending September 30, 2018, according to a press release.

PortMiami officials attribute growth to expanded business opportunities, according to a statement. In 2018 Royal Caribbean International added sailings to the Empress of the Seas and welcomed the newly renovated Mariner of the Seas. Oceania Cruises and Disney Cruise Line extended their winter seasons. The port also welcomed three new cruise lines: Viking Ocean Cruises, Victory Cruise Lines, and Seabourn. Additionally, it welcomed Carnival Cruise Line's Carnival Magic and the new Carnival Horizon.

MSC Opera will sail two different 7-night itineraries from Havana, offering two days and one night in the Cuban capital, the first itinerary will take guests from Havana to Belize City, before heading for the beaches of Isla de Roatan in Honduras, Costa Maya and Cozumel in Mexico. The second itinerary spends two and half days and two nights in Havana and then moves on to Montego Bay, Jamaica, Georgetown, Cayman Islands and also Cozumel.

MSC Meraviglia will offer two different itineraries out of PortMiami in the West Caribbean and MSC Seaside; will continue to sail 7 nights from Miami to Western Caribbean or Eastern Caribbean.

MSC Divina will return from the Mediterranean in November 2019 offering an 11-night cruise to Jamaica, Colombia, Panama, Costa Rica, Mexico and the Ocean Cay MSC Marine Reserve. A 10-night cruise will include Antigua and Barbuda, St. Kitts and Nevis, St. Maarten, Tortola in the British Virgin Islands and Ocean Cay MSC Marine Reserve.

MSC Preziosa will sail from two embarkation ports in the French Antilles: Fort de France in Martinique and Pointe-a-Pitre in Guadeloupe. The two 7-night-7 ports itineraries can also be combined in a 14-night cruise, visiting the British Virgin Islands (Tortola), St Maarten, Dominica, St Kitts & Nevis, Antigua and Barbuda and Saint Lucia, Barbados, Trinidad and Tobago, Grenada as well as Saint Vincent & The Grenadines.

Based year-round in Cuba, MSC Armonia will give guests two and half days and two nights in Havana from Saturdays to Mondays. The itinerary includes Ocean Cay MSC Marine Reserve, Montego Bay, Jamaica and Georgetown, Cayman Islands.

Slated to open in late 2017, now expected by winter, the Ocean Cay MSC Marine Reserve is a private island exclusively for MSC Cruises guests. Located in the Bahamas, Ocean Cay will offer 40 acres of beaches, split into six unique areas, each with its own distinctive atmosphere. MSC Seaside, MSC Meraviglia, MSC Divina and MSC Armonia will all call at the island where the ships will berth at a specially built pier.

### GRAND CARIBBEAN DESTINATIONS

Cruising the Caribbean is booming. Destinations including Grand Cayman, Haiti, Honduras and the Dominican Republic have built or are planning new docking facilities. Antigua and Barbados are among those expanding their ports to accommodate still-larger cruise ships. Following a recent port expansion, St. Kitts is expecting almost 1 million cruise visitors for the upcoming season.

In addition to the unnamed island to be purchased by Virgin Cruises, the following Cruise Lines have Private Islands for their guests:

- *Castaway Cay, Bahamas - Disney Cruise Line.*
- *Half Moon Cay, Bahamas - Holland America Line.*
- *Great Stirrup Cay, Bahamas - Norwegian Cruise Line.*

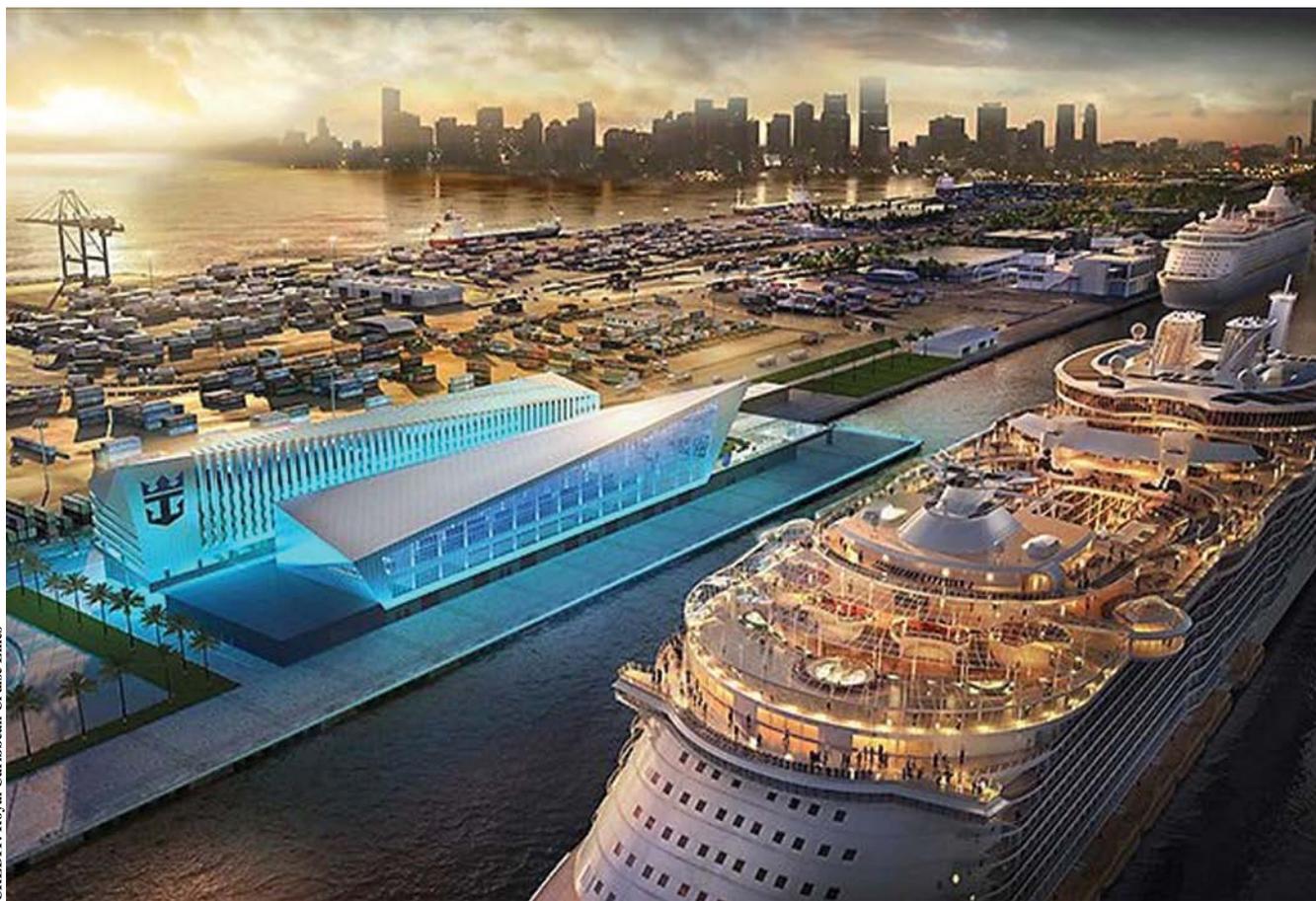
- *Princess Cays, Bahamas - Princess Cruises.*
- *Coco Cay, Bahamas - Royal Caribbean.*
- *Labadee, Hispaniola - Royal Caribbean.*
- *Ocean Cay - MSC Cruises*

### UPGRADES, ACQUISITIONS AND NEW BUILDS

On July of 2018 the ultra-luxury and expedition cruise leader Silversea Cruises joined Royal Caribbean Cruises Ltd (RCL's) portfolio of top brands and announced Project Invictus, "to further enhance product and ships."

Regulators green-lighted Royal Caribbean's purchase of a 66.7% equity stake in Silversea Cruises, based on an enterprise value of approximately \$2 billion. Manfredi Lefebvre d'Ovidio will remain Executive Chairman of Silversea and retain a 33.3 percent stake. According to RCL, "The investment unites two leading players in the cruise industry and fills out RCL's portfolio of cruise brands across all key market segments."

"We are proud to officially welcome Silversea's industry-leading team to the RCL family," said Richard D. Fain, Chairman and CEO of Royal Caribbean Cruises Ltd. "This is a dynamite combination and we can't wait to work with Manfredi,



CREDIT: Royal Caribbean Cruise Lines

Roberto and the entire team as together we take Silversea to the next level.”

That next level is Project Invictus, a multi-year initiative to take Silversea’s ultra-luxury offerings to the next level from product upgrades to a magnified ship revitalization programs. Those already include ships for only 296 to 540 guests; all ocean-view suites (all with butler service), and almost all with private verandas and personal service where gratuities are included in your fare, and tips are not expected.

With Silversea joining the RCL lineup alongside Royal Caribbean International, Celebrity Cruises, Azamara Club Cruises, TUI Cruises and Pullmantur Cruceros, the Royal Caribbean Cruises Ltd. fleet now numbers 59 ships with an additional 15 on order.

The inclusion of the expedition ships Silver Explorer, Silver Galapagos, Silver Discoverer, and with Silver Cloud recently joining the Expedition fleet and two ships on order plus one option, means that Silversea’s itineraries encompass all seven continents and feature worldwide luxury cruises to the Mediterranean, Caribbean, both polar regions and hundreds of fascinating destinations in between, according to the company.

Starting in 2019 over 20 ships with nearly 4,500 berths will be introduced offering expedition cruises. Ponant will be first during the summer with two ships in its four-ship Explorer class, while Hurtigruten’s Roald Amundsen due late in 2018 and equipped with an auxiliary electric engine will be the industry’s first hybrid electric vessel.

Oceanwide Expeditions embarked on its expeditionary journey in 1993, originating in a university research program in the northern Netherlands. Employing a former oceanographic vessel, this program became the first in the world to provide civilian voyages to the Arctic island of Spitsbergen. These original routes still form the core of some of their most popular voyages.

Unlike many polar providers who charter Polar rated ships. Oceanwide owns and operates the majority of its vessels, all of which comply with the highest safety standards. These include the m/v Plancius (116 passengers), m/v Ortelius (116 passengers), and s/v Rembrandt van Rijn (33 passengers). They also manage a historic schooner, s/v Noorderlicht (20 passengers).

Oceanwide Expeditions enters the luxury expedition market later this year with the launch of m/v Hondius (174 passengers). Designed from the ground up for swift and adaptive polar exploration, Hondius is the world’s first-registered Polar Class 6 ship and one of the most advanced vessels on the market. The passenger capacity certificate for Hondius is 196 persons. One deck consists of a large observation lounge and separate lecture room, which are reserved for a wide variety of interactive workshops, exhibitions, and performances par-

ticular to Hondius.

Though designed in stylish mid-century modern décor, the company says this vessel holds true to Oceanwide’s distinctive cozy and informal atmosphere according to company literature. “It is our philosophy to keep sea time short so that we can focus instead on fast, effective access to shore and near-shore activities,” according to company literature. A 20-day trip around the Falkland Islands, South Georgia and Antarctica will cost at least \$11,000 and you must bring your own snowsuit.

Norwegian Cruise Line expects to spend five-years and \$400 million modernizing all its current ships starting in 2019.

## CHINA STIRS

Royal Caribbean Cruises said during an earnings call recently that sailings in China had “performed very well” — better than expected — in the second quarter. Chief Financial Officer Jason Liberty said the market was booked “nicely ahead” in volume and rate for the rest of 2018 and into next year. A new ship, Spectrum of the Seas, will enter the market in June. Norwegian Cruise Line, announced plans to move its built-for-China ship to North America. Tensions between China and South Korea reduced the demand because several popular ports were off limits. But tension between the Trump administration and China had little effect with 2.4 million cruise passengers coming from mainland China in 2017. Much of the progress has come from better relationships and better training for China-based travel agents.

## ACTIVE AND EXCITING YEAR AHEAD

Looking ahead again, a total of 272 CLIA-member cruise ships are projected to be in operation by June 2019. Beyond this, two other lists expect 24 new ships to debut in 2019. Whatever the final count, all stakeholders believe that 2019 will be the biggest year ever for new ship introductions. And it will certainly be the biggest year ever for the small, lucrative expedition class ships. And, that’s good news for operators, shipyards, equipment OEM’s and, of course, the customers, too.



**The Author** Rick Eyerdam

is an award winning journalist and editor. Formerly, he was Editor of Florida Shipper Magazine. Additionally, he was Executive Director of the Miami River Marine Group and Captain of the Port of the Miami River. He is a graduate of Florida State University with majors in English and Government. His articles have appeared in myriad shipping magazines and newspapers since 1970.

# Prioritizing Consistent, Reliable Ballast Compliance

By Dr. Stelios Kyriacou

**A**s the Ballast Water Management Convention (BWMC) deadline for compliance approaches, the market is visibly gearing up to address the snowballing demand across the board. Ballast water treatment system (BWTS) manufacturers are sizing up the competition as ship owners weigh up their immediate needs, against a sustainable future for their vessels. With the conversation reaching a crescendo, now more than ever it is vital that manufacturers are transparent about their provisions and focus on how best to meet the needs of the customer. Shipowners and operators need to aim for long-term consistent and reliable compliance, and not be drawn into making decisions based only on equipment price.

## MANAGING DEMAND

In this uncertain environment, and with the sudden plethora of U.S. Coast Guard ballast water treatment system approvals (and more apparently to come), it is important that owners do not leave it until the last minute to start thinking about compliance options. Indeed, the option to delay is becoming a much less likely option, especially with a wide range of manufacturers, treatment system types and system capacities now available.

It is understandable that some ship owners have decided to complete their IOPP renewal ahead of schedule to postpone the installation of a system. However, without a clear plan of action to address the issue at the end of those five years, they are likely to be dealing with exactly the same problems. The difference will be that all the “get out of jail free” cards will have been used up, and by that point they will likely be held responsible for both IMO and USCG requirements without any flexibility on extensions.

Reviewing survey dates and the impact of IOPP deharmonization indicates an expected significant increase in demand for equipment and installations in 2021-2022. Owners that will find themselves requiring a system during that time should be exploring technology and suitability options for their vessels now. BWTS manufacturers, class societies and dockyards are likely to be operating at full capacity during that same 2021-2022 period, meaning long waiting lists for project deliveries that will impact the commercial returns of their assets. Establishing a strong relationship with BWTS manufacturers of choice now will put owners in a stronger position as compliance becomes unavoidable.



**SOLUTIONS FOR LARGE VESSELS**

The industry is now widely in agreement that for larger vessels with expansive ballast tanks and high pumping rates, slip stream electrochlorination systems are the clear BWTS of choice. Introducing the chemical treatment into the ballast line, as opposed to treating the entire volume of water, serves as a more flexible and efficient footprint to alternative methods on the market.

Treating in this instance means that only 0.5% to 1% of the water entering the ballast line needs to be channeled into the treatment system. This is ideal for vessels with high-pumping rates and large volume ballast tanks as the hypochlorite used to treat the water is created in the slipstream and is then introduced to the full flow of ballast water. Ballasting or deballasting can therefore be completed at normal speeds with no need to reduce the flow rate of water. Tank flows ranging from 400 to 12,500 cubic meters per hour can be treated with a single system with multiple systems able to be installed together to treat larger capacities.

It is not just the effectiveness of the treatment that owners and operators need to consider. Systems designed with flexible installation features bring cost savings and reduce engineering, project delivery time, logistical management and enable efficient installation. An electrochlorination system made up

of multiple sub-assemblies designed to fit through most hatch doors, allowing quick and easy retrofit installations, presents a more streamlined process. This also allows a flexible footprint to minimise machinery space usage whilst enabling optimised use of dead space onboard.

**MAINTENANCE**

As many ship-owners and industry experts are acutely aware, it is not only system choice and installation that pose dilemmas.

In a sector where crews are already overburdened and tasked with activities that many are ill equipped to perform, shipowners and operators are understandably nervous about potentially increasing the workload through their choice of BWTS. It is not just a matter of type that best suits the vessel and its operating pattern that owners need to consider. The operational and maintenance requirements of each solution and the potential impact on crew and day-to-day operations will also play a part in the decision making.

This is brought keenly into focus when exploring the factor of long-term compliance. Over time, mineral deposits of calcium and magnesium can accumulate on the cathodes. This fouling reduces levels of chlorine produced, compromising



**Marine Safety Center  
BWMS Type Approval Status**



<i>Under Review</i>						
Application Received	Manufacturer (Country)	Model	Independent Laboratory	System Type	Capacity	Certificate Issued* (Amended)
16 Mar 2018	Alfa Laval (Sweden)	PureBallast 3	DNV GL	Filtration + Ultraviolet	150 – 3,000 m <sup>3</sup> /h	23 Dec 2016 (21 Dec 2017)
22 Mar 2018	Optimarin (Norway)	OBS/OBS Ex	DNV GL	Filtration + Ultraviolet	167 – 3,000 m <sup>3</sup> /h	02 Dec 2016 (03 Nov 2017)
30 Aug 2018	NK BMS Co., Ltd. (Republic of Korea)	NK-O3 BlueBallast II	Lloyd’s Register	Ozone	200 – 8,000 m <sup>3</sup> /h	Pending
27 Sep 2018	NK BMS Co., Ltd. (Republic of Korea)	NK-O3 Blue-Ballast II Plus	Lloyd’s Register	Ozone	200 – 8,000 m <sup>3</sup> /h	Pending
18 Oct 2018	DESMI Ocean Guard A/S (Denmark)	CompactClean	Lloyd’s Register	Filtration + Ultraviolet	135 – 3,000 m <sup>3</sup> /h	Pending
19 Oct 2018	Wärtsilä Water Systems, Ltd. (UK)	Aquarius UV	DNV GL	Filtration + Ultraviolet	50 – 1,000 m <sup>3</sup> /h	Pending
19 Oct 2018	Cathelco Ltd. (UK)	Evolution	Lloyd’s Register	Filtration + Ultraviolet	34 – 1,500 m <sup>3</sup> /h	Pending
23 Oct 2018	Techcross, Inc. (Republic of Korea)	Electro-Cleen	Korean Register	Electrolysis	150 – 12,000 m <sup>3</sup> /h	05 Jun 2018 (Pending)
27 Nov 2018	Semb-Eco Pte, Ltd. (Singapore)	LUV U1	Lloyd’s Register	Filtration + Ultraviolet	500 m <sup>3</sup> /h	Pending
04 Dec 2018	ERMA FIRST (Greece)	Erma First FIT	Lloyd’s Register	Filtration + Electrolysis	100 – 3,740 m <sup>3</sup> /h	18 Oct 2017 (25 Sep 2018)
11 Dec 2018	JFE Engineering Corporation (Japan)	BallastAce	Control Union	Filtration + Chemical Injection	500 – 3,500 m <sup>3</sup> /h	13 Nov 2018 (Pending)
12 Dec 2018	Wärtsilä Water Systems, Ltd. (UK)	Aquarius EC	DNV GL	Filtration + Electrolysis	250 – 4,000 m <sup>3</sup> /h	30 Aug 2018 (Pending)

\*Some manufacturers have requested multiple amendments to their Type Approval Certificates. The first date is the date when the original certificate was issued, and the date in parentheses is the date of the current amendment. Copies of Type Approval Certificates can be found at <http://www.dco.uscg.mil/msc/Ballast-Water/TACs/>, or by visiting the USCG Approved Equipment List at: <http://cgmix.uscg.mil/Equipment/Default.aspx>.

Revised 01 February 2018

## BALLAST WATER TREATMENT

the efficacy of the system and therefore not reaching the required standard for treatment dose, rendering the vessel non-compliant. Electrode pack fouling reduces the power efficiency of the electrolysis process. The power demand increases, and the biocide generation is inhibited by fouling; in effect the BWTS uses power for no benefit.

On these typical electrochlorination systems, crews need to be specifically trained to clean the electrodes regularly every 8-10 months using an acid, most commonly hydrochloric. Additional training and personal protection equipment will also need to be supplied to ensure the safe handling of hazardous and extremely corrosive substances. However, leveraging their knowledge and experience of 'in situ' biocide electrolytic disinfection solutions, De Nora has developed a proprietary self-cleaning system for the electrodes rendering this type of maintenance obsolete.

De Nora BALPURE allows the polarity of the electrodes to be reversed. This means that the deposits are stripped from the cathodes because they become anodes and repel the build-up through the same process in which it accumulated. This is done in a fully automatic manner by the system, eliminating the need for crew intervention and ensuring that an effective and efficient BWTS is self-maintained.

### COMPETITIVE CONFLICTS

Despite attempts across the ballast sector to highlight the importance of shipowners make the right choice for their businesses, their operating routes and their ship types, competition among suppliers is growing as compliance deadlines loom. The rumblings of a 'price war' between technology manufacturers, driven by the demands of CAPEX-sensitive owners, continues



## *Marine Safety Center BWMS Type Approval Status*



<i>Approved</i>						
Application Received	Manufacturer (Country)	Model	Independent Laboratory	System Type	Capacity	Certificate Issued* (Amended)
20 Sep 2016	Optimarin (Norway)	OBS/OBS Ex	DNV GL	Filtration + Ultraviolet	167 – 3,000 m <sup>3</sup> /h	02 Dec 2016 (03 Nov 2017)
21 Sep 2016	Alfa Laval (Sweden)	PureBallast 3	DNV GL	Filtration + Ultraviolet	150 – 3,000 m <sup>3</sup> /h	23 Dec 2016 (21 Dec 2017)
23 Sep 2016	TeamTec OceanSaver AS (Norway)	OceanSaver MK II	DNV GL	Filtration + Electrodialysis	200 – 7,200 m <sup>3</sup> /h	23 Dec 2016 (18 Oct 2017)
24 Jan 2017	Sunrui (China)	BalClor	DNV GL	Filtration + Electrolysis	50 – 8,500 m <sup>3</sup> /h	06 Jun 2017 (05 Jan 2018)
31 Mar 2017	Ecochlor, Inc. (USA)	Ecochlor BWTS	DNV GL	Filtration + Chemical Injection	500 – 16,200 m <sup>3</sup> /h	10 Aug 2017 (26 Apr 2018)
02 May 2017	ERMA FIRST (Greece)	Erma First FIT	Lloyd's Register	Filtration + Electrolysis	100 – 3,740 m <sup>3</sup> /h	18 Oct 2017 (25 Sep 2018)
31 Oct 2017	Techcross, Inc. (Republic of Korea)	Electro-Clean	Korean Register	Electrolysis	150 – 12,000 m <sup>3</sup> /h	05 Jun 2018
28 Sep 2017	Samsung Heavy Industries Co., Ltd (Republic of Korea)	Purimar	Korean Register	Filtration + Electrolysis	250 – 10,000 m <sup>3</sup> /h	15 Jun 2018 (20 Jul 2018)
12 Mar 2018	BIO-UV Group (France)	BIO-SEA B	DNV GL	Filtration + Ultraviolet	55 – 1,400 m <sup>3</sup> /h	20 Jun 2018
09 Apr 2018	Wärtsilä Water Systems, Ltd. (UK)	Aquarius EC	DNV GL	Filtration + Electrolysis	250 – 4,000 m <sup>3</sup> /h	30 Aug 2018
31 May 2018	Hyundai Heavy Industries Co., Ltd. (Republic of Korea)	HiBallast	DNV GL	Filtration + Electrolysis	75 – 10,000 m <sup>3</sup> /h	26 Oct 2018
09 May 2018	Headway Technology Co., Ltd. (People's Republic of China)	OceanGuard	DNV GL	Filtration + Electrolysis	65 – 5,200 m <sup>3</sup> /h	06 Nov 2018
29 Mar 2018	JFE Engineering Corporation (Japan)	BallastAce	Control Union	Filtration + Chemical Injection	500 – 3,500 m <sup>3</sup> /h	13 Nov 2018
30 Mar 2018	Panasia Co., Ltd. (Republic of Korea)	GloEn-Patrol	DNV GL	Filtration + Ultraviolet	50 – 6,000 m <sup>3</sup> /h	14 Dec 2018
03 Mar 2018	De Nora (USA)	BALPURE	Lloyd's Register	Filtration + Electrolysis	400 – 8,570 m <sup>3</sup> /h	19 Dec 2018
20 Jul 2018	Envirocleanse, LLC (USA)	inTank BWTS	DNV GL	Electrolysis + Chemical Injection	Up to 200,000 m <sup>3</sup>	01 Feb 2019

\*Some manufacturers have requested multiple amendments to their Type Approval Certificates. The first date is the date when the original certificate was issued, and the date in parentheses is the date of the current amendment. Copies of Type Approval Certificates can be found at <http://www.dco.uscg.mil/mssc/Ballast-Water/TACs/>, or by visiting the USCG Approved Equipment List at: <http://cgmix.uscg.mil/Equipment/Default.aspx>.

Revised 01 February 2019

*“Despite attempts across the ballast sector to highlight the importance of shipowners make the right choice for their businesses, their operating routes and their ship types, competition among suppliers is growing as compliance deadlines loom. The rumblings of a ‘price war’ between technology manufacturers, driven by the demands of CAPEX-sensitive owners, continues to reverberate across the sector. The reality is that although the message from manufacturers and suppliers is all about finding the right system, the incoming questions aren’t about applicability or maintenance requirements – they are about price.”*

to reverberate across the sector. The reality is that although the message from manufacturers and suppliers is all about finding the right system, the incoming questions aren’t about applicability or maintenance requirements – they are about price.

A price-driven mindset undoubtedly leads to predatory pricing. Such predatory pricing is already perceptible in ship-building countries, where domestic suppliers dominate the newbuild market at the expense of foreign makers.

But these costs are often cut at the expense of the ship owners that both perceive them as a benefit and are driving them. Manufacturers offset price reductions by offering owners less aftercare and fewer additional services, and there’s a risk that increased commoditization will encourage a ‘fit and forget’ mentality amongst suppliers.

In the retrofit case, if owners are investing in ballast water treatment, it’s clear they’re expecting a further ten or more years of operation for those ships. The risk of incurring future costs in order to extend the lifecycle of a cut-price system that needs extensive maintenance, repair, or in extreme cases replacement, needs to be factored in to the decision-making process. A low-cost ballast water treatment system with meager operational availability would be a poor decision, especially when compared to a system that is a good fit to the ship’s operational profile with enhanced availability and reliability, but coming at a higher upfront cost.

When the initial enthusiasm over securing the best up-front deal fades, the stark reality is that crippling future costs in the medium to long term look set to take the shine out of any deal. A price war means a race to the bottom. Manufacturers will turn to the lowest priced specification to maintain profit margins, and that means compromise – either on durability or efficiency or, in some cases, both. That means more spend on maintenance and spare parts, greater energy expenditure and higher fuel costs for owners in the long-run.

Reputable BWTS manufacturers should be assessed on their capacity, financial stability, commitment to the market and

long-term record of customer service. Ruthless undercutting at this stage will only lead to more future uncertainty.

### A CONSIDERED APPROACH

With so many internal, external, long-term, short-term, cost, benefit and certification considerations it’s no wonder that many owners are still to decide on what system to install or supplier to work with. But we think the solution is simple, find a partner, not a price. Having recently been awarded United States Coastguard (USCG) Type-Approval for our BALPURE ballast water treatment system, we are confident that when it comes down to the wire, De Nora has the experience, totalling 95 years of knowledge and testing in electrolytic disinfection, to wear the mantle of experts in our field.

Whatever a ship operator might decide, they should find an OEM willing to take the time to offer practical, unbiased information to ship owners in a sector crying out for transparency. Owners should find a BWTS supplier that is willing to talk to them with honesty and not sales patter, provide them with expert advice rather than adverts, and one that is as committed to their clients’ long-term compliance as their short-term orderbook, offering guarantees and service agreements.

#### The Author



#### Dr. Stelios Kyriacou

is a ballast water management system expert committed to delivering the best possible long-term solutions for ship owners. Since 2009, he has managed the research, development, and certification of industry-leading ballast water management systems. With a PhD in Engineering Mechanics from Cranfield University, he has lent his expertise in ballast water and maritime issues to the International Maritime Organization’s (IMO’s) Marine Environmental Protection Committee (MEPC), Ballast Water Working Group, IMarEST Ballast Water Expert Group and to UK Government and European committees on maritime strategy, innovation and regulation. Currently, Stelios is the General Manager of De Nora’s BALPURE ballast water management system (BWMS) business unit.

# PORT SECURITY:

If you've seen one port, you've seen one port

*ARES Security Corporation's sophisticated AVERT C-2 platform integrates hundreds of disparate sensors and information sources to keep first responders aware of their immediate environment in real-time. In today's dangerous and digital business environment, that also comes 'just in time.'*

By Joseph Keefe

**R**etired U.S. Coast Guard Commandant ADM James Loy is widely credited with coining the now familiar phrase, "If you've seen one port, you've seen one port." In the choppy wake of the 9/11 terrorist attacks, it had suddenly dawned on lawmakers and maritime security stakeholders everywhere that the nation's ports were also at great risk, with little being done in a substantial way to prevent a similar tragedy on the water. Out of those concerns came the challenge of achieving what the U.S. Coast Guard refers to as 'Maritime Domain Awareness.' Before that could happen, that concept had to be first defined, and then addressed in an orderly fashion.

The first, hurried effort to create robust domestic port security predictably involved throwing large sums of money at the problem. Indeed, U.S port authorities and marine terminals have for almost two decades funded security infrastructure, in large part, via federal port security grants. The collective weight of these enhancements left security personnel to decipher multiple streams of new information. Moreover, it quickly became apparent that simply collecting and displaying huge quantities of data was not enough and, in some cases, actually exacerbated the situation.

Amidst hundreds of millions of dollars in security hardware and technology, countless security responders, stakeholders and partners remained in an information vacuum. The dozens of data sources created by the new security measures, by and large, also remained stovepiped. In response, a new tool –



CommandBridge – the Mariner Group's flagship technology, emerged to sort it all out. Then the Mariner Group CEO, Steve Dryden told the ports simply, "You bought what you bought – we bring it all together." Using sophisticated technology and modeling tools, that's just what CommandBridge did. That technology – significantly improved – is still in use today.

## THE AVERT C2 STORY

In 2013, ARES Security acquired a majority ownership interest in The Mariner Group, the developers of CommandBridge, and fully acquired the company in 2016. Today, Ben Eazzetta is the CEO of ARES Security Corporation, interim CEO of Confluence Security Group, and a sitting board member for numerous private companies. Eazzetta graduated from Georgia Tech with a bachelor's degree in nuclear engineering and master's degree in mechanical engineering. Together with about 50 dedicated technical personnel, Eazzetta's ARES group is redefining the way the nation's ports, nuclear facilities and other high profile businesses approach security, define risks, and ultimately control both tasks.

The CommandBridge software solution – now called AVERT C2 – has been around for almost a decade. The solution is currently deployed in one-third of the nation's top tier seaports but is also utilized in other critical infrastructure and public safety sites. For example, ARES recently signed a statewide contract



for Florida to unite seaports within the state with state and local government agencies. An ARES spokesperson explained, “Historically, the state of Florida has sustained multiple natural disasters and has identified gaps within the information sharing process during these events. The FSTED Council selected CommandBridge to fill those gaps by strengthening the level of maritime domain awareness, cyber resilience, and communications during natural and manmade events.”

In a nutshell, the platform will include integration with The Maritime and Port Security Information Sharing and Analysis Organization’s (MPS-ISAO) critical cybersecurity alerts. Florida seaports will benefit from the MPS-ISAO’s Cybersecurity Service which advances maritime cyber resilience through the sharing of cyber threat intelligence and coordinated response. The unified solution will be shared with up to 14 Florida ports as well as 10 other state and regional agencies to streamline communications and operations during regional or state-wide events in order to help responders make quick, informed decisions for improved responses.

Over time, the system has evolved in many ways, not the least of which is that AVERT C2 is an entirely new version of the software. The primary evolutions of the software have been focused on regional sharing capabilities and mobile support for operators outside the command center. For collaboration, AVERT C2 now has the ability for organizations to cre-

ate sharing policies that model MOUs they currently have in place to share information. For example, the sharing of blue force positions to specific partners only during multi-agency events can be easily configured to automatically shut off at the completion of the event. Additionally, by building mobile first user interfaces, field personnel using mobile devices have the same software as operators using PCs in the command center.

### FIELD TESTED & PROVEN

ARES Security recently participated in a ‘DHS Next Generation First Responder Exercise’ to Evaluate New Technologies. ARES Security Corporation partnered with the U.S. Department of Homeland Security (DHS) Science and Technology Directorate and other technology innovators to integrate and evaluate advanced first responder technologies. Using their situational awareness platform AVERT C2, the cutting-edge successor of the CommandBridge software, ARES Security integrated over 100 disparate sensors that included biometric, location, HAZMAT, and environmental data streams. During the exercise, which took place in December 2018 at the Port of Houston, AVERT C2 served as the focal point to aggregate, distribute, process and manage information from the first responder’s sensors to improve their safety, response times, and effectiveness. 13 public safety agencies from the Houston area participated in the exercise with the objective of testing leading edge technologies in live HAZMAT, rescue, recovery, and security events.

The situation was based on a HAZMAT scenario. The event started with a Mayday and corresponding alert from a multi-gas and particulate matter detector which was reported in AVERT C2. From that gas alert, the operator could escalate the alert into an event that is preloaded with the organization’s standard operating procedure for responding to HAZMAT emergencies, relevant contact sheets, and any other relevant lists. The operator could then establish the Event view within AVERT C2, marking off important locations and quarantined areas and setting up watch rules that would alert to any incoming traffic that needs to be intercepted.

All responders all had tracking devices which appeared as icons overlaid onto the map view, which allowed Command to keep up with their locations and their vitals in real time. When a victim was located, the responders would place a VitalTag on their chest or finger so Command could then also track the victims’ location and vitals which helps to prioritize care. Throughout the event the various sensors would send alerts into AVERT C2 noting that a victim is in shock when their heart rate spiked, or a responder is in too dangerous of an area if the gas readings were too high. In the end it was very useful to show how AVERT C2 could help connect various organizations and sensors into a singular view to enhance collaboration efforts.

“The DHS Next Generation First Responder exercise proved to be beneficial to all parties involved,” said ARES Security’s

“Using their situational awareness platform AVERT C2, the cutting-edge successor of the CommandBridge software, ARES Security integrated over 100 disparate sensors that included biometric, location, HAZMAT, and environmental data streams. During the exercise, which took place in December 2018 at the Port of Houston, AVERT C2 served as the focal point to aggregate, distribute, process and manage information from the first responder’s sensors to improve their safety, response times, and effectiveness.”

CEO, Ben Eazzetta. “The DHS team, the First Responder participants and our technology partners were able to create a real-world test bed for the newest technology innovations that will prove to save lives and resources in the near future.”

AVERT C2 kept first responders aware of their immediate environment in real-time, and also connected and informed on both team and individual status and current situations to aid in overall coordination and effectiveness of life-saving events.

By layering teams and technologies, individual team leaders and coordinators were able to see the big picture and remove clutter from their view to more effectively direct their organization in concert with the overall first responder team. The NGFR exercise allowed ARES to ‘stress test’ its platform in an environment with more users and more technologies than they would normally be able to assemble in a lab or working with a lone organization.

And, as was shown during the recent drill scenario, local security managers customize the AVERT C2 platform ‘on the fly’ to adjust to changing parameters. With proper user permissions Security Managers and other users can build custom on-the-fly rules for virtually any object in the system. For example, a rule can be built in seconds to notify stakeholders if a moving track or tracks (vehicles, vessels, people, etc) enters a security zone or camera field of view. Additionally, sharing policies for any data in the system can be created in advance and modified on the fly at any time. For example, if active data sharing that was preconfigured from one organization to another is comprised due to changing mission circumstances the sharing can be immediately stopped with one click.

## ELIMINATING STOVEPIPES IN A CYBER SECURE ENVIRONMENT

AVERT C2 is a web-based system but the data is typically hosted at the customer’s site, in their network, so it doesn’t require them to change their cyber practices/policies. The platform is capable of pulling in alerts from third party cyber anomaly-detecting tools and then creating an event profile based on that alert. Also according to ARES, the legacy CommandBridge had similar capabilities and is currently pulling in cyber informational alerts from MPS-ISA0 for the state of Florida.

With AVERT C2, first responders have access to advanced technology and next generation solutions. AVERT integrates all of those systems to eliminate data stovepipes in local security efforts. For example, a large problem that ARES noticed

in multiple industries is managing ‘data security’ versus ‘data sharing.’ Although responding agencies utilize these new technologies, not all of them are sharing that pertinent information with their partners due to data security constraints. When responding to emergencies time is the most critical factor and sharing that situational data can save other responders a lot of time which in turn can save lives.

AVERT C2 makes it very easy to create sharing permissions that reflect the current memorandums of understanding (MOU) in place, so when an event is created within the platform, the appropriate data is automatically shared with the appropriate personnel. This enables responders to not only share information throughout an emergency, but now responders can get a complete understanding of the event and even view cameras or other applicable information while in route to the scene.

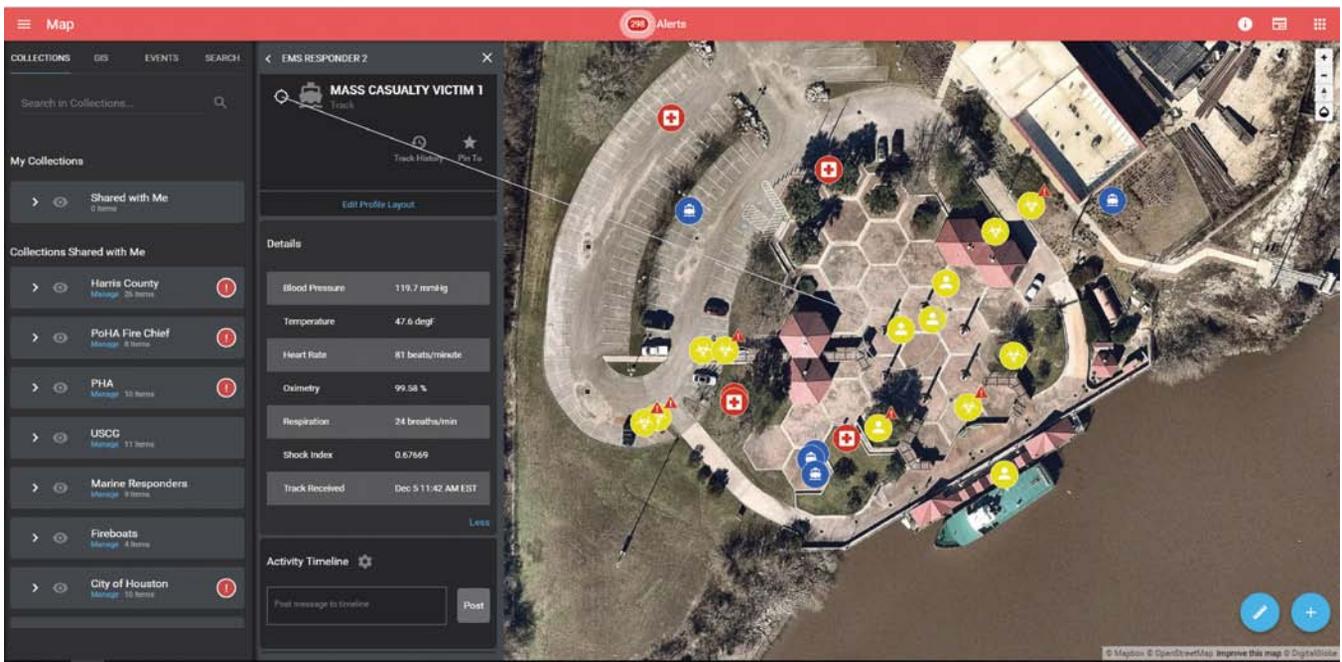
Fences, cameras, radar, sonar, AIS, fences, cameras, radiation detection portals or monitors – some or all with separate control and access systems – were and are all needed. Most of this equipment, for the majority of maritime facilities, was purchased one at a time, without regard to any other acquisitions. In a world where coordinated terrorist attacks more than likely involve doing something to get your attention in one area while the main event is happening elsewhere, it simply isn’t possible to monitor 50 different data feeds, all operating separately from one another. With AVERT C2, you won’t have to.

## FORCE MULTIPLIER

The term “force multiplier” is frequently used on the waterfront in many contexts. In short, AVERT C2 helps automate detection and response capabilities. For an example the system can autonomously alert to abnormal activities. So, rather than having patrol forces constantly monitoring certain areas, whether physically out on the water or in command, the command can view the area or send a unit out when activity is detected. Leveraging the AVERT C2 technology and hardware, organizations can maintain or reduce headcount in their security teams. But, insists the ARES team, this doesn’t necessarily mean getting rid of people, but instead using those human resources more effectively.

## BEFORE THE RESPONSE: ASSESSING THE RISK

Business leaders with risk management responsibility need a tool that can help validate the effectiveness of a proposed security solution, before they actually invest in that solution.



That tool should provide a way to rapidly conduct “what if” analysis related to the various threat profiles that your business is exposed to. That same tool should facilitate the clear communication of the value proposition associated with a specific planned maritime risk management initiative.

AVERT can build a 3D model of a facility or entire site and allows the client to run thousands of simulations (terrorist attacks, natural disasters, insider threats, etc.) against it. This allows them to quantify the effectiveness of their entire security, down to a single camera and is accredited by the Dept. of Defense and Energy and has a DHS SAFETY Act Certification.

ARES uses AVERT models and scenarios in two of its training solutions; AVERT Virtual Tabletop and AVERT Virtual Training. Virtual Tabletop provides decision makers and security forces an exercise environment to evaluate the effectiveness of new or existing policies, procedures and tactics. By removing the limitations and guesswork involved in regular tabletop drills, the firm has created a virtual training environment that goes well beyond the capabilities of normal exercises.

Using the Virtual Tabletop, security personnel can run and control detailed simulations while commanding a virtual blue force against adversaries and see the real-time impacts of their decisions displayed on the common operating picture. As a simulation runs, trainees are provided with limited information in which they must make decisions or position their forces based on adversary advances. The trainee’s decisions will update the agents and objectives within the simulation which changes the simulations’ outcome. ARES also uses the models for Virtual Training, which allows users to walk through their facility or replay the detailed simulations in high fidelity.

If you and your team are not so equipped, then it may be time to investigate decision support tools.

The AVERT tool, used as an effective decision support

system, has paid for itself many times over in some recent implementations. For example, a major U.S. port recently used AVERT to validate the design basis of a planned security upgrade, eventually resulting in a successful maritime security grant award of \$5.5 million. Separately, a private power generation firm recently used the AVERT tool to reduce their annual security assessment budget by as much as 30 percent.

### IN USE: YESTERDAY, TODAY – AND TOMORROW

The footprint of the AVERT solutions suite in ports is deep, but is not limited to the maritime sphere. Already in use by fully 67% of all nuclear facilities in North America, the firm has its sights on many other targets. The AVERT software has become the new industry standard for performing quantitative risk assessments. Significantly, the solution is the only completely-off-the-shelf vulnerability assessment software certified by the SAFETY Act. Able to be set up locally in one-off requirements, the system is especially valuable for special events such as high profile bowl games or professional sports championships.

Real port security doesn’t just involve what’s inside the fence. For port authorities and terminals that were previously focused inward from the perimeter, cooperation with outside law enforcement, first responders, and real collaborative situational awareness hasn’t come easily. But, it is here now.

Command-and-control centers and watch-standers need sharply focused relevant information. They also need a system that will sift through millions of bytes of data to find the one or two bits that allow them to make sense of the larger picture – and to help anticipate the future. If so-called situational awareness is the key to staying safe, then the security challenge facing America’s port authorities has never been more daunting. If that’s the problem, then AVERT C2 is probably the ideal solution.

[www.arescorporation.com](http://www.arescorporation.com)

# STATE OF FREIGHT IV: Securing & Enhancing America's Ports and Supply Chain

CREDIT: Port of Savannah

*The American Association of Port Authorities and its membership look ahead at the challenges and opportunities facing the Port Security Grant Program.*

In its annual “State of Freight” series, AAPA has highlighted the transportation infrastructure needs of U.S. ports, state transportation agencies and multimodal projects. In this final report in the State of Freight series, AAPA turns to the vital role that security infrastructure plays in moving goods.

In 2002, Congress created the Port Security Grant Program (PSGP) as part of the direct response to the tragic terrorist attacks of 9/11. According to the Federal Emergency Management Agency (FEMA), the PSGP has funded 8,096 projects and invested more than \$2.78 billion in America’s ports in the past 16 years. More than a decade and a half since the PSGP began, it remains a top priority for the American Association of Port Authorities (AAPA).

Significantly, AAPA members reported they will need another \$2.62 billion to maintain and at times upgrade their security apparatus over the next 10 years. AAPA members also identified \$1.27 billion in future security investments to address cybersecurity, active shooter, drone mitigation, resiliency

or other evolving security threats. In total, a sustained investment of \$3.89 billion (\$4 billion) will be needed between 2019 and 2028. About 95% percent of AAPA’s U.S. corporate members responded directly to this survey.

## **New Threats, Evolving Security Approaches**

Since 9/11, the U.S. population has increased by 15 percent with a pronounced shift to metropolitan areas where residents live in densely populated urban areas, including near port authority facilities that support both freight and passenger activity. Between 2001 and 2017, container volumes increased by 71 percent, total foreign trade in short tons increased by 37 percent, and passenger traffic at U.S. cruise ports increased by 98 percent. The majority of AAPA member ports say that their security costs increase proportionally to the growth in their ports’ freight or cruise volumes. And, yet, currently, the federal government invests just \$100 million annually in the PSGP to protect one quarter of the nation’s Gross Domestic Product that moves through America’s ports.

## AAPA Recommendations

- *Fund the PSGP at a minimum of \$400 million annually.*
- *Keep the administration of the Port Security Grant Program in FEMA.*
- *Designate within the Notice of Funding Opportunity that a minimum of 50 percent of the PSGP allocation be awarded to projects submitted by public port authorities and law enforcement and emergency response agencies directly responsible for the day-to-day safety and security of the port complex.*
- *Focus funding on the latest and emerging threats to our ports, to include cybersecurity, active shooter and drones.*
- *Conduct in coordination with each COTP an updated port wide risk assessment.*
- *Mandate that the local Grant Field Review Teams (GFRT) have equal representation of all stakeholder groups including local port authorities and representatives of the container, petrochemical, ferry, cruise or other impacted sectors as appropriate.*
- *Protocols should be established so that a member of the GFRT cannot vote or comment on their own grant application.*

## The Importance of the Port Security Grant Program

According to AAPA, ports are essential economic engines whose cargo activity support over 23 million American jobs and accounts for over a quarter of the U.S. economy. In 2014, U.S. seaports generated nearly \$4.6 trillion in total economic activity.

A port authority's operating model varies from port to port. Some ports own and operate cargo terminals, while others lease their equipment and pier space to private operators. Others engage in a combination or hybrid of both activities. Additionally, the types of cargo that move through ports vary widely. Containers, automobiles, energy commodities, break bulk and passengers are a few examples. All port business models have varying security needs; however, the one constant at every port is the commitment to security to ensure the safe movement of all types of cargo and people.

From a security perspective, ports are a place of commerce, business centers within the global supply chain. Ports have multiple access points that make security challenging – be it ship, truck, rail, visitor/employee entrances and increasingly the business networks that are vulnerable to cyberattacks – these access points must be secured. Because of the central role ports play within the supply chain, any disruption or security vulnerability is magnified and has the potential to put in motion a cascading economic disruption that impacts the supply chain and the national economy.

## AAPA Survey: Sustainable Funding for PSGP Needed

AAPA members identified \$4 billion in port security funding needs for U.S. port authorities alone over the next 10 years, which comes to \$400 million annually. But the \$4 billion in port authority needs is just a small slice of the total potential funding need. AAPA represents 79 U.S. ports, and while these port areas are the major freight and passenger access points for the country, there are 281 other ports of varying sizes throughout the country that are also eligible to utilize the PSGP. Within those 361 ports, there are over 3,500 MTSA regulated facilities that continue to have security challenges, such as cybersecurity and other evolving threats, and need funding assistance to properly mitigate the risks.

Furthermore, according to FEMA, over the past 10 years only approximately 25 percent of annual PSGP funding went directly to port authorities. Public sector first responders such as police, fire and emergency management services account for 60 percent of the annual program funding. This means that more is being spent on response capabilities than on awareness, prevention and protection measures. This survey makes the case that after more than a decade, the focus and resources need to revert to public port authorities.

The \$4 billion identified by AAPA members is an important starting point for the PSGP, but it does not represent the total need for the program.

## How the PSGP Works

For several years, PSGP funding has been utilized to address security needs outlined in a port's Strategic Risk Management Plan (SRMP). Initially, these plans were blueprints for ports to follow, but they have not been updated in more than a decade. Meanwhile, the threats have evolved. Furthermore, port security project funding goes through a rigorous local review and national risk evaluation process. Ultimately, each local Captain of the Port (COTP) and their staff provide the final recommendation for their maritime region's project priorities before they are submitted to FEMA. FEMA relies on COTPs to verify PSGP maritime security needs and to rank their region's projects. Primarily, FEMA follows the guidance of the COTP, but as resources have dwindled, FEMA has been unable to fund all COTP-recommended projects.

The framework for a collaborative process is in place. The peer review process has been a keystone in FEMA's administering of the PSGP, which coordinates ports, their partners and the localized input of the 43 Area Maritime Security Committees that feed into the 41 COTP zones. However, the State of Freight IV Port Security Grant Program Report and follow-up conversations with port security grant applicants found that while the level of collaboration, information sharing, and project management is significant and continues throughout the year, ports are not receiving sufficient port security funding.

# Port Security

## Suggested PSGP Improvements

AAPA members have advocated that port security grants should be awarded through a port-centric lens. The program veered away from a port-centric approach in the 2007 supplemental bill, which expanded the pool of eligible port applicants to all entities covered by an Area Maritime Security Plan (AMSP).

According to a Government Accountability Office (GAO) report, FEMA implemented key changes to the grant program in the fiscal year 2007 and 2007 supplemental grant rounds to promote enhanced regional collaboration. For instance, in fiscal year 2007, FEMA introduced a tiered structure to the grant program whereby each port area was placed into a funding group based on risk.

In the supplemental 2007 grant round, FEMA also transitioned the second highest risk funding group to this collaborative process. The remaining funding groups retained the competitive structure and competed for funding within their funding group. FEMA made two additional changes in the 2007 supplemental funding round to promote regional collaboration. First, FEMA required all Risk Group I and II port areas to select a fiduciary agent to coordinate the grant process in the port area. Second, FEMA required all Risk Group I and II port areas to develop a Port-Wide Risk Mitigation Plan.

Since 2007, FEMA has focused funding on anything in a port-wide risk mitigation plan. AAPA believes there is a need to focus funding on the original intent of the PSGP which was focused on the maritime security plans. Prioritizing funding for port authority facilities will achieve this goal. AAPA recommends that a minimum of 50 percent of the annual PSGP funding be designated within the Notice of Funding Opportunity to be awarded to projects submitted by public port authorities. This process would direct the focus and resources back on public port authorities and be an impetus for increased partnership opportunities between port authorities and maritime stakeholders.

## Key Areas of Concern

**Cybersecurity:** 85 percent of AAPA U.S. member ports say they anticipate direct cyber or physical threats to their ports to

increase over the next 10 years. Conversely, 10 years ago, cybersecurity, active shooter, drones, increasing energy exports or other soft targets were not highly anticipated threats facing ports and the supply chain. For example, the 2017 APM Maersk cyberattack illustrated how an incident can start outside the U.S. and have a cascading impact on our ports and terminal operations across the globe. At the Port of Los Angeles, the Cybersecurity Operations Center, which was funded by \$2.4 million in PSGP grants, prevents 15-20 million cyber threats on the port's business network each month. However, several survey respondents reported that applications for similar cybersecurity programs in other ports have been denied PSGP funding. 78 percent of ports anticipate using future port security grant funding on cybersecurity, and 90 percent report that future PSGP funding would be used for upgrading technology, such as cameras and other surveillance tools.

**Soft Targets:** So-called 'soft targets' such as the vulnerability of an active shooter "keep port security staff up at night," said multiple port security directors. In recent years, we have seen active shooters in airports and other infrastructure transfer hubs. Eighty-six percent of ports would use future PSGP funding to enhance physical security, and 65 percent would invest PSGP funding for training to better prepare port and local first responders to respond effectively to soft target threats such as an active shooter, emergence of high capability drone interception technology and an increased need for waterside security to protect energy transfer stations.

**Mobile Security:** As the supply chain becomes more integrated, this level of connectivity is likely to expand the direct supply chain outside the gate and increase the need to have mobile security resources. The State of Freight III report noted that 36 percent of ports have direct connections with an inland port. Massport has used PSGP funding with an eye toward securing a growing and expanding supply chain. With the purchase of a portable X-ray system, the port can scan trucks and cars, address bomb threats inside the gate, at terminals and transfer hubs outside the port.

**Drones:** While the ground security of ports and the supply



CREDIT: AAPA

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## Port Security

chain have been the focus of much of the security of the PSGP, drones are now raising a level of concern. For example, after having implemented a drone permitting requirement in 2017, the Port of Long Beach is experiencing a pronounced increase in the use of drones for commercial activities. As a result, the port is exploring technologies to effectively monitor drone activity over its complex and to identify unmanned aerial vehicles that may pose a safety and security risk.

**Energy Security:** Securing energy commodities continues to be an increasing concern for ports as surging natural gas exports and higher crude oil shipments will help the United States achieve the status of energy exporter for the first time since 1953. Port Tampa Bay received PSGP funding to purchase a rapid deployable small boat intrusion barrier system to protect a critical petroleum transfer facility. Additionally, small boat attacks against vessels carrying hazardous materials are of major concern to the U.S. Coast Guard and ports. Vessels at berth are especially vulnerable. The Tampa complex serves five different fuel storage facilities critical to the distribution of refined petroleum products in the central Florida region. Upon notification of an impending threat, or the receipt of relevant intelligence regarding a threat against this or similar facilities, the barrier system can be deployed almost immediately, thus securing the vessel in the facility. This innovative system can take less than an hour.

**Interoperability:** Traditionally, a project that has maintained continuity among port security partners has been interoperable communication equipment. “Without this equipment we are out there alone,” said one port security director. Ports such as Port Fourchon rely on the PSGP so that they can upgrade their interoperable communication capabilities to communicate with their local, regional and state law enforcement partners along the Gulf Coast.

**Maritime domain Awareness:** Port-wide maritime domain awareness consists of security operating systems that connect

and integrate video feeds, radar, weather and law enforcement data into a single platform. These operating platforms provide the baseline for port security and communications systems in and around maritime facilities. With new technology coming online, increasing cyber threats and more integrated communication systems, upgrades in many ports must be made. Funding for upgrading these systems must be a priority.

### A Growing Supply Chain Increases Port Security Concerns

Increasingly, when freight infrastructure investment is planned, supply chain security is also involved. In 2016, the Fixing America’s Surface Transportation (FAST) Act created a funded freight program, which includes ports as eligible recipients. Ports are now firmly recognized as part of the surface transportation, logistics and distribution network. Equally important, the FAST Act required states to complete state freight plans to continue to receive their freight formula funding. The results have been impressive. To date, 90 percent of the states have submitted multimodal state freight plans to the U.S. Department of Transportation. Assuming multiple roles, the nation relies on the PSGP to protect ports, communities and growing value of the supply chain. As America’s freight network is built out and the supply chain becomes more integrated and operational, ports are often the first – and sometimes the last – line of defense.

Keeping ports secure and the supply chain moving also requires a renewed commitment from the federal government regarding the funding levels and strategic direction of the PSGP. AAPA member port authorities identified \$3.89 billion in needs in the next ten years to maintain and upgrade their facilities and ensure that they are well-equipped to address new security challenges. Providing adequate funding and re-focusing the PSGP to become more port-centric, the federal government can demonstrate its commitment to the security aspect of the nation’s supply chain.



CREDIT: Port of Tampa Bay

# EDITORIAL CALENDAR

## JANUARY/FEBRUARY

### Cruise Ports Annual

- Carriers: Cruise Shipping
- Ports: Global Cruise Port Logistics
- IT: Breakbulk Tech Feature Load and Stress Measurement Instrumentation
- Tech: Port Security Training
- Product: Passenger and Cargo Gantries



## MARCH/ APRIL

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- Carriers: Top 25 Container Ports
- Energy Ports: The Logistics of Fuel 2020
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- Product: Container Handling Equipment Forklifts & Trucks



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- IT: SATCOM Solutions, Pricing and Trends
- Tech: Port Security Technology
- Product: Terminal Operating Software



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### Breakbulk Issue

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- Tech: The Zero Emissions Port
- Product: Storage Tank Cleaning & Maintenance Equipment



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- IT: Automated Cargo Handling Equipment
- Tech: Passenger Terminal Design and Operation
- Product: Ballast Water Treatment Systems



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# IMB PIRACY REPORT 2018:

Piracy increased on the world's seas in 2018, with a marked rise in attacks against ships and crews around West Africa, the International Chamber of Commerce's International Maritime Bureau's (IMB) latest annual piracy report reveals. Worldwide, the IMB Piracy Reporting Centre (PRC) recorded 201 incidents of maritime piracy and armed robbery in 2018, up from 180 in 2017. Table 1 depicts some of the global piracy hotspots.

## Reliable global anti-piracy support

Since 1991, IMB's 24-hour manned Piracy Reporting Centre has provided the maritime industry, governments and response agencies with timely and transparent data on piracy and armed robbery incidents – received directly from the Master of the vessel or its owners. The IMB PRC's prompt forwarding of reports and liaison with response agencies, its broadcasts to shipping via Inmarsat Safety Net Services and email alerts to CSOs, all provided free of charge, has helped the response against piracy and armed robbery and the security of seafarers, globally.

## Gulf of Guinea

The Gulf of Guinea in particular, says IMB, remains increasingly dangerous for seafarers. Reports of attacks in waters between the Ivory Coast and the Democratic Republic of Congo more than doubled in 2018, accounting for all six hijackings worldwide, 13 of the 18 ships fired upon, 130 of the 141 hostages taken globally, and 78 of 83 seafarers kidnapped for ransom. The region saw a significant new spike in violence in the last quarter of 2018. Vessels have been boarded by pirates well outside territorial waters, with crew kidnapped and taken into Nigeria where they are held for ransom. "There is an urgent need for increased cooperation and sharing of intelligence between the Gulf of Guinea's littoral states so that effective action can be taken against pirates, both at sea and on-shore where their operations originate and end," an IMB spokesman said. "There has been some improvement in the estimated number of unreported attacks in 2018 but at around 48% there is still a long way to go."

## Nigeria Outlook

In the last three months of 2018, 41 kidnappings were recorded in waters off Nigeria alone. On 27 October 2018, 11 crewmembers were kidnapped from a container vessel 70 nau-

tical miles off Bonny Island, Nigeria. Two days later, Nigerian pirates in a speedboat hijacked a tanker underway 100 nautical miles off Point Noire, Congo. Eight of the 18 crew were kidnapped. These are just two recent examples of how armed criminals are reaching further out to sea and targeting a wider variety of ships: bulk carriers, container vessels and general cargo vessels in addition to local attacks on tankers, oil industry support vessels and fishing vessels.

## Somali Threat

Although no ships were hijacked in the region, pirates fired upon a suezmax tanker in the Gulf of Aden, as well as a product tanker and a capesize bulk carrier more than three hundred miles from the Somali coastline. IMB urges masters to continue to maintain high levels of vigilance when transiting these waters and to follow the latest BMP recommendations. This also highlights the requirement for the continued presence of the European Union and international navies around the Horn of Africa.

## Indonesia Improves, Malaysia Still a Concern

Patrols by the Indonesia Marine Police have seen the number of incidents drop for the third successive year. The majority of the 36 Indonesian reports were low level opportunistic thefts. Six crew, however, were taken hostage and threatened, indicating the need to be vigilant. Attacks off Sabah, eastern Malaysia, continue to be a cause of concern with five crewmembers from two fishing boats reported as kidnapped. Separately four attackers in a speedboat fired on a tug, and the master was shot in the leg.

## Philippines

Ten incidents have been reported from the Philippine islands – down from 22 in 2017. Batangas anchorage accounts for five of these. In one attack, suspected militants fired upon a general cargo ship. The prompt action of the crew and the Philippine Coast Guard ensured the vessel's safety, although a crewmember was injured by gunfire. The alerts broadcast by the PRC on behalf of the Philippine authorities provide valuable information to Masters and Chief Security Officers (CSO), helping deter militant attacks.

IMB continues to urge shipmasters and owners and other maritime interests to report all actual, attempted and suspected piracy and armed robbery incidents to the IMB PRC. This first

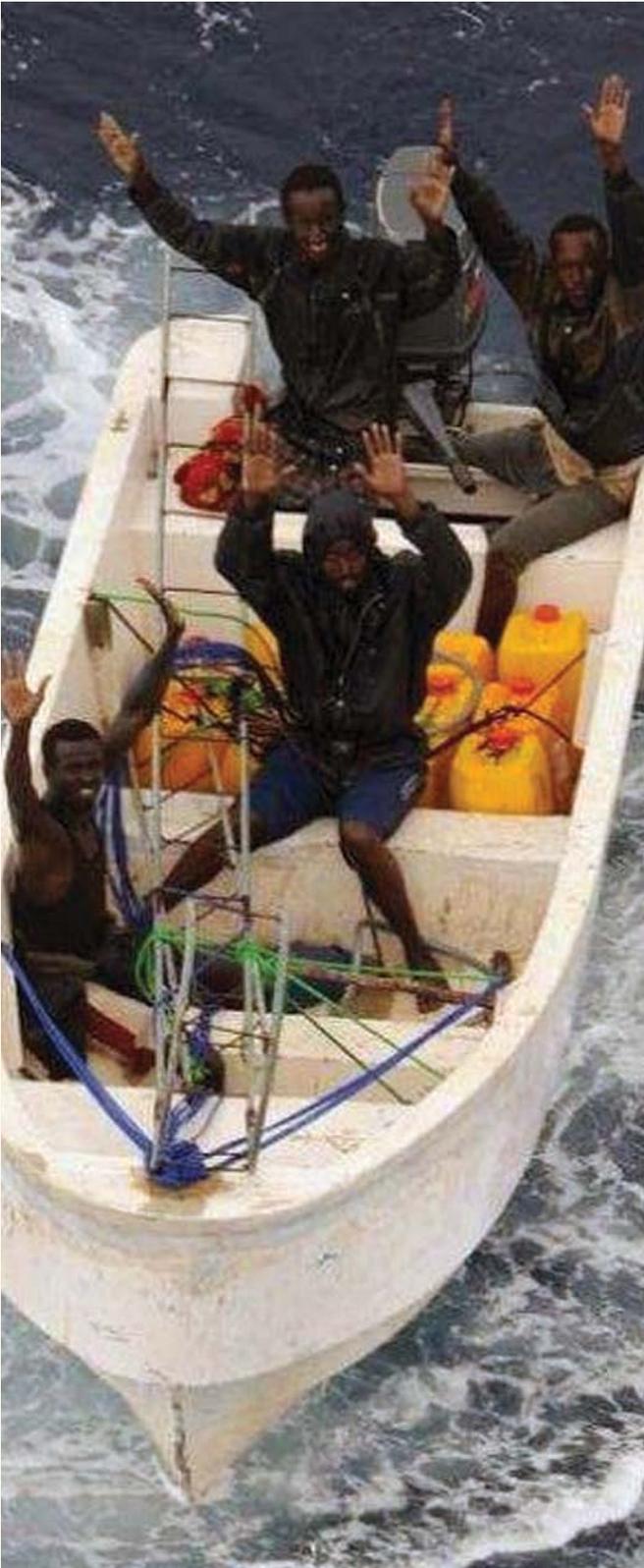
# ATTACKS MULTIPLY IN THE GULF OF GUINEA

step in the response chain is vital to ensuring that adequate resources are allocated by authorities to tackle this crime. As an independent, non-commercial, and apolitical organization, IMB provides transparent statistics, which acts as a catalyst to achieve this goal.

**Table 1:** Locations / Actual and Attempted Attacks, Selected Areas (2013-18)

Location	2013	2014	2015	2016	2017	2018
Indonesia	106	100	108	49	43	36
Malaysia	9	24	13	7	7	11
Philippines	3	6	11	10	22	10
Singapore Straits	9	8	9	2	4	3
Vietnam	9	7	27	9	2	4
Bangladesh	12	21	11	3	11	12
India	14	13	13	14	4	6
Colombia	7	2	5	4	6	1
Venezuela		1	1	5	12	11
Gulf of Aden	6	4		1	3	1
Nigeria	31	18	14	36	33	48
Somalia	7	3		1	5	2
The Congo	3	7	5	6	1	6
<b>Global Totals</b>	<b>264</b>	<b>245</b>	<b>246</b>	<b>191</b>	<b>180</b>	<b>201</b>

Source: IMB



Credit: EUNAVFOR

## PIRACY AND ARMED ROBBERY AGAINST SHIPS

ICC INTERNATIONAL MARITIME BUREAU



# 201 INCIDENTS

WERE REPORTED TO THE IMB PIRACY REPORTING CENTRE IN 2018

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Credit: IMB

## PIRACY AND ARMED ROBBERY AGAINST SHIPS

ICC INTERNATIONAL MARITIME BUREAU



### TYPES OF ATTACKS JANUARY-DECEMBER 2018

143

VESSELS  
BOARDED

6

HIJACKINGS

34

ATTEMPTED  
ATTACKS

18

VESSELS  
FIRED UPON

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## PIRACY AND ARMED ROBBERY AGAINST SHIPS

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### TYPES OF VIOLENCE TO CREW JANUARY-DECEMBER 2018

141

CREW  
TAKEN  
HOSTAGE

83

KIDNAPPED

8

INJURED

9

THREATENED



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## PIRACY AND ARMED ROBBERY AGAINST SHIPS

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### TOTAL INCIDENTS PER REGION JANUARY-DECEMBER 2018



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