

An annual special issue of
PROFESSIONAL MARINER

American **SHIP REVIEW**

2020

SHIP OF THE YEAR: PYXIS
Tier 4 torchbearer for ferries

ASR'S TOP
50
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Complete Coverage

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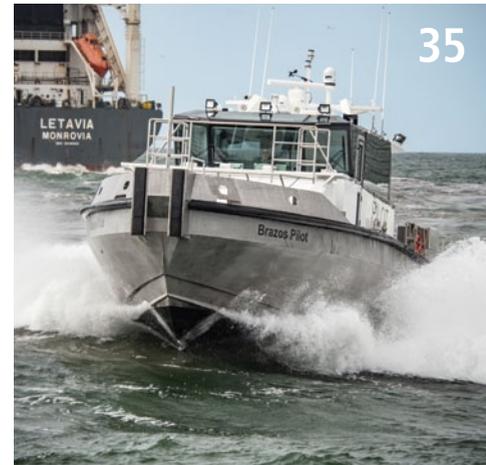
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Cover: With the Bay Bridge in the background, the 143-foot *Pyxis* prepares to depart the ferry terminal on San Francisco's Embarcadero on a May afternoon. The newbuild from Dakota Creek Industries is the first passenger ferry in the United States with Tier 4 emissions controls. MTU engines delivering nearly 7,000 horsepower give the catamaran a 34-knot cruising speed, allowing it to make the commuter run to Vallejo in one hour. Casey Conley photo. Vessel profile, page 12.



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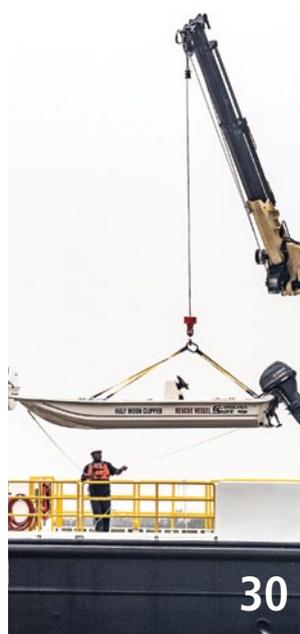
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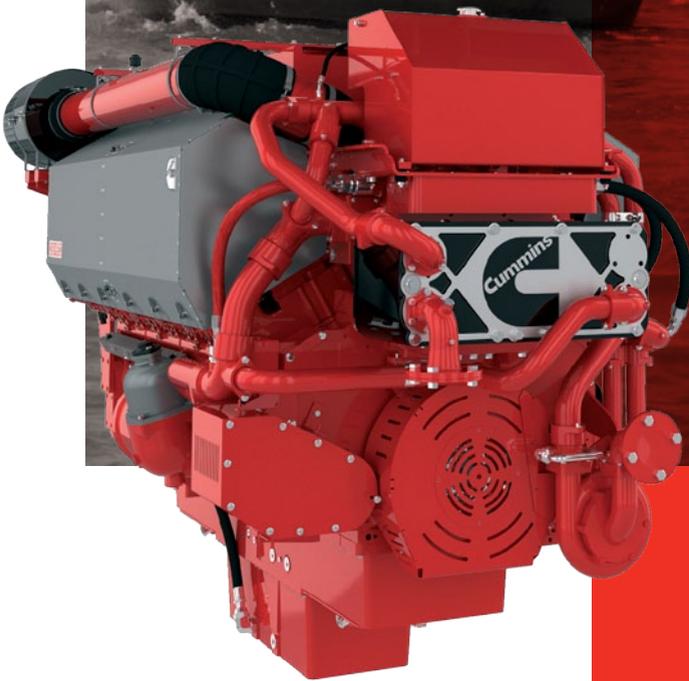
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ALWAYS ON





U.S. Coast Guard photo

OSV stacks keeping Gulf quiet; Jones Act cargo ships gain spotlight

by Rich Miller

One of the most consistent segments of the U.S. shipbuilding market has been the production of fast response cutters for the Coast Guard. Bollinger Shipyards delivered five FRCs in the past year, including USCGC Benjamin Bottoms, above, shown arriving in San Diego in April.

In a familiar refrain, it was tough to find torches burning at Gulf Coast shipyards during the past year. Global oil markets remained lukewarm and demand for new offshore vessels followed suit. For yards able to diversify, ferries and excursion boats provided a welcome avenue to keep moving forward.

Suppressed demand for new offshore supply vessels (OSVs) and crew boats was not limited to North America. According to London-based VesselsValue, only one OSV or crew boat order was placed worldwide in the first six months of 2019 — a workboat for the British operator High Speed Transfers.

“In order to survive the

oil price crash (of 2014) and subsequent downturn in the offshore markets, the industry has instead seen many vessels being sold for scrap and owners consolidating, which has led to

many companies streamlining their fleets in order to reduce their operational costs,” VesselsValue analyst Olivia Watkins said in July.

The Gulf of Mexico led



global regions in the number of OSVs laid up. At midyear, 390 were stacked, representing 38 percent of the fleet, according to VesselsValue. Limited drilling activity offshore exacerbated financial duress for operators, forcing consolidation and premature retirement for many vessels (see Susan Buchanan's Crew/Supply roundup on page 40).

But there also were some hopeful signs for future orders in the sector. According to Global Market Insights, the OSV market is forecast to grow at least 5.5 percent worldwide by 2024, reaching \$66 billion.

"Shifting trends toward eco-friendly hydrocarbons on account of growing environmental concerns will fuel the offshore support vessel market," the research company said in a September report. "Adoption of LNG (liquefied natural gas) by major fleet owners as a fuel subjected to the government norms toward reduction of marine emissions will foster the product penetration."

That assertion is backed by the classification society DNV GL, which recently reported there are 184 LNG-fueled vessels on order worldwide, exceeding the 170 in operation. The primary driver is the International Maritime Organization's 0.5 percent sulfur cap for marine fuels. It goes into



cloud king / SFI

USNS Puerto Rico (EPF 11) is put through its paces during integrated builder's and acceptance trials in August in the Gulf of Mexico. The expeditionary fast transport from Austal USA became the first ship in its class to undergo the combined testing.

Offshore wind generates orders for Jones Act workboats

While the market for new workboats is virtually nil along the Gulf Coast, hope is in the wind for shipbuilders in the mid-Atlantic and the Northeast.

The ball started rolling in 2016 with the delivery of *Atlantic Pioneer*, the first crew transfer vessel (CTV) purpose-built in the United States to support offshore wind farm construction and maintenance. The 70-foot aluminum catamaran, constructed by Blount Boats for the Deepwater Wind project off Block Island, R.I., is based on a CTV design from South Boats IOW of the United Kingdom that is popular across Europe.

The vessels are designed by the U.K.-based BMT Group, which has a portfolio of nearly 50 CTVs operating in Europe. U.S. Workboats of Hubert, N.C., is building the first vessel, initially for service in Orsted's Coastal Virginia Offshore Wind project. The second CTV will be built by WindServe's affiliate shipyard, Senesco Marine of North Kingstown, R.I., for the Revolution Wind field between Block Island and Martha's Vineyard.

"(The design) is one of the most comfortable and versatile in the industry," Orsted said when the vessel orders were announced.

dimensions were not announced.

"With over 95 years of experience in the maritime industry, we are committed to offering premier offshore wind support services to the East Coast and look forward to contributing to the future of offshore wind growth," said Craig Reinauer, president and CEO of the Reinauer Group. "Thanks to Orsted, this partnership ... will provide new, sustainable jobs for U.S. workers."

The Bureau of Ocean Energy Management clouded the outlook for additional orders of Jones Act CTVs in early August when it called



Courtesy WindServe Marine LLC

According to wind farm developer Orsted, the new crew transfer boats will feature "a high-speed, custom design" from BMT Group of the United Kingdom. U.S. Workboats and Senesco Marine will handle the construction.

As plans have advanced for other wind projects off the East Coast, so has the need for U.S.-flagged vessels to serve them. In May, offshore wind farm developer Orsted entered into a partnership with WindServe Marine LLC, an affiliate of the Reinauer Group, to build a pair of CTVs for Jones Act service.

The developer added that the boats will be classed by DNV GL and will meet "the highest of build standards needed in the offshore wind industry."

The first CTV is scheduled for delivery in early 2020. Construction of the second boat is slated to begin in late 2020, according to Orsted. Vessel

for a delay in the Vineyard Wind project, set to be the largest in the U.S. The agency said it would expand its review of the 800-megawatt Massachusetts project to include a "more robust" analysis of the cumulative effects of other offshore wind farms built in the region.

Rich Miller



Courtesy: Crowley Maritime Corp.

Taino is the second of two LNG-powered con-ros built by VT Halter Marine for Crowley Maritime Corp. The ship made its maiden voyage from Jacksonville, Fla., to Puerto Rico in January.

effect on Jan. 1, 2020, spurring many shipowners to get on board with the upfront costs of investing in cleaner propulsion systems.

Another positive indicator is that

offshore gas and oil development has again become economically competitive with onshore drilling, according to Mark Peterson, investor relations vice president at Oceaneering International. That bodes well for activity in the Gulf of Mexico, although the process of working through the OSV stacks likely will cap new orders in the near future.

“Most researchers expect offshore

activity to increase modestly over the medium term, and we agree,” Peterson told *American Ship Review*. “While that’s helpful to vessel utilization, it isn’t likely to result in a lot of new building, which would require sustained levels of utilization.”

Gulf shipyards whose portfolios aren’t limited to vessels working the petroleum fields continued to deliver newbuilds through mid-2019. A range of orders for ferries, excursion boats, patrol boats and government vessels helped buoy **Eastern Shipbuilding Group, VT Halter Marine, Metal Shark Boats, Gulf Craft** and other yards that have been able to diversify their production. For those that haven’t, short-term prospects aren’t bright.

Big ships, big splash

Some of the biggest industry developments in the past year occurred in a sector that many people don’t associate with American shipbuilding: large cargo ships. **Philly Shipyard** led the way with the delivery of two 850-foot containerships, and work continued at other yards on similar vessels destined for Jones Act service.

Last October, Philly delivered *Daniel K. Inouye* to Matson, following it up in March with the delivery of sister *Kaimana Hila*. Weighing in at more

YEAR AT A GLANCE

August 2019

- Canada announces that it will obtain six new icebreakers under the National Shipbuilding Strategy, opening the door for a third shipyard to join the NSS with Irving and Seaspan.
- Fincantieri Bay Shipbuilding and Interlake

Steamship cut steel for what will be the first U.S.-flagged bulk carrier built in more than 35 years for service on the Great Lakes.

July 2019

- Rep. John Garamendi, D-Calif., and Sen. Roger Wicker, R-Miss., reintroduce the Energizing American Shipbuilding

Act, which would require an increasing percentage of liquefied natural gas (LNG) and crude oil exports to be carried on Jones Act ships.

June 2019

- After more than nine years, Canada receives its first ship under the National Shipbuilding Strategy: *Sir John Franklin*, an

offshore fisheries science vessel built by Seaspan for the Canadian Coast Guard.

- General Dynamics NASSCO and Matson launch *Lurline*, which at 870 feet and 50,000 metric tons will be the largest con-ro ever constructed in the U.S.

May 2019

- The Maritime Administration

designates TOTE as construction manager for a new class of training ships to be built for the nation’s state maritime academies. Responsibilities will include selecting a shipyard to build five national security multi-mission vessels (NSMVs).

- After meeting with Republican lawmakers from

Alaska and shipbuilding states along the Gulf Coast, President Trump reverses course and pledges not to waive the Jones Act to allow foreign-flagged ships to transport LNG among U.S. ports.

April 2019

- Downsizing and consolidation have led to the decline of U.S.

shipbuilding and the U.S. merchant marine, creating “major gaps” in logistics capacity that would hinder the Navy in time of war, the Center for Strategic and Budgetary Assessments reports.

- VT Halter Marine is awarded the contract to build the Coast Guard’s next-generation heavy



Philly Shipyard delivered the 3,600-TEU Kaimana Hila to Matson in March. The Aloha-class containership joined sibling Daniel K. Inouye, delivered by the shipyard in October, on the mainland-to-Hawaii run.

Courtesy Office of Rep. Tully Galbraith

than 51,400 metric tons, the 3,600-TEU newbuilds are the largest containerships ever built in the United States. Both LNG-ready ships cater to Matson's trade between the U.S. mainland and Hawaii.

Unfortunately for Philly, the Aloha-class boxships emptied the shipyard's order book. With nothing else in the pipeline, the builder has laid off nearly all of its workforce.

"Currently, there is no shipbuilding or repair activity at the shipyard, and all production facilities are idle and both graving docks are empty," the company reported at the end of the second quarter. "Today, Philly Shipyard employs approximately 80 people (down from 1,200 at the

beginning of 2018). Philly Shipyard plans to keep a core group of employees to focus on efforts to secure new orders and transition the shipyard into a mix of commercial and government work."

That effort paid dividends in July with a contract from the U.S. Maritime Administration to repair and refit SS *Antares*, an Algol-class vehicle cargo ship owned by MarAd and managed by TOTE Services. The dry-dock overhaul

Captain Ben Moore is the third hybrid catamaran from Derecktor Shipyards. The 65-foot aluminum boat was built for Harbor Harvest, a Connecticut company that aims to relieve traffic congestion by transporting goods across Long Island Sound instead of around it. The vessel has a BAE Systems propulsion package with lithium-ion batteries.

Courtesy Derecktor Shipyards



icebreaker — the polar security cutter — with options for two additional ships that could bring the total value of the deal to nearly \$2 billion.

March 2019

• Philly Shipyard delivers *Kaimana Hila*, the second of two 3,600-TEU containerships, to Pacific operator Matson. With the order book emptied,

the shipyard soon appoints a new chief financial officer to pursue federal contracts.

February 2019

• Congress approves funding to start construction of the nation's first polar security cutter after another year of mechanical breakdowns suffered by *Polar Star*, the Coast

Guard's only operational heavy icebreaker.

January 2019

• Eastern Shipbuilding cuts steel for the nation's first offshore patrol cutter, *Argus*, achieving the milestone despite shipyard damage and work interruptions caused by Hurricane Michael.

• In a sweeping

overhaul, Washington State Ferries — the largest ferry system in the U.S. — unveils a plan to add 16 new vessels to its fleet in the next 20 years.

December 2018

• VT Halter delivers the LNG-powered *Taino* to Crowley Maritime, the operator's second 2,400-TEU con-ro built

for Jones Act service between Florida and Puerto Rico.

• The Canadian Coast Guard gets its first new icebreaker in 25 years, *Captain Molly Kool*, a former anchor-handling tug supply ship converted by Davie Shipbuilding.

November 2018

• The U.S. Senate approves

a Jones Act waiver for *America's Finest*, a \$75 million trawler built by Dakota Creek Industries. The newbuild was in danger of never operating in U.S. waters due to the inclusion of too much foreign-fabricated steel in its hull.

• Bay Ship & Yacht of Alameda, Calif., lays the keel for *Water-Go-Round*,

a hydrogen fuel cell ferry that will be the first of its kind in the country.

October 2018

• Philly Shipyard delivers the 850-foot, 3,600-TEU *Daniel K. Inouye* to Matson for service between the U.S. mainland and Hawaii. The Aloha-class containership is the largest ever built in the U.S.

began in August. Philly also announced in July that it had appointed Brian Leathers, formerly with Austal USA, as chief financial officer. Philly cited Leathers' "deep government contracts experience."

In December, VT Halter delivered *Taino*, the shipyard's second container/roll-on/roll-off ship (con-ro) for Crowley Maritime that features LNG propulsion. The first Commitment-class ship, *El Coqui*, was delivered in July 2018. The Jones Act newbuilds are 720 feet long, 26,500 dwt, and can transport

In addition to a reduced environmental footprint courtesy of LNG, Pasha said energy savings would be achieved with an advanced engine, an optimized hull form, and a high-efficiency rudder and propeller.

"These Jones Act ships being built at Keppel will be among the most modern, fuel-efficient containerships in the world, and are living and breathing proof that we have the know-how and the can-do spirit to keep America a global leader in shipbuilding innovation," said Matt Woodruff,

a fuel-efficient hull form, double-skin fuel tanks and a freshwater ballast system.

Headway for new training ships

Training ships at the nation's maritime academies have been ripe for replacement for decades, with SUNY Maritime's *Empire State VI* the oldest in the fleet at 57 years. Congress has allocated \$600 million for two newbuilds, and in May the program to build five national security multi-mission vessels (NSMVs) gained an overseer: TOTE Services.

Under a contract from MarAd, TOTE will serve as vessel construction manager and will select a U.S. shipyard for the project. That will likely occur by the end of 2019, according to the agency. Delivery of the first ship in the series, for SUNY Maritime, is set for late 2022. Delivery of the second, for Massachusetts Maritime, is expected in 2023. Three more ships will follow for academies in Maine, Texas and California. **Herbert Engineering** of Annapolis, Md., is providing the design.

The NSMVs will have diesel-electric propulsion, two engine rooms (one for operations and the other for teaching) and accommodations for up to 600 cadets and 100 crew, faculty and support staff. Each ship will have eight classrooms, a full training bridge, laboratories and an auditorium.

As a "highly functional national asset" that can support federal disaster relief efforts, the ships also will be equipped with advanced hospital facilities, a helicopter landing pad, a roll-on/roll-off ramp, and the ability to berth up to 1,000 people, MarAd said.

The shipbuilder selected by TOTE clearly will be a big winner, but the project also is important to the overall shipyard industrial base, said Matthew Paxton, president of the Shipbuilders Council of America.

"While our industry cares immensely about America's ability to build large Navy and Coast Guard vessels ... it is equally important that we maintain and promote the construction of large oceangoing commercial vessels," he said.



Courtesy: Fire Island Ferries

The 400-passenger Isle of Fire is the 10th newbuild from Blount Boats of Warren, R.I., for New York's Fire Island Ferries. The shipyard is currently building two other ferries for operators in the Empire State.

up to 2,400 TEUs at a cruising speed of 22 knots. *Taino* completed its maiden voyage from its home port in Jacksonville, Fla., to San Juan, Puerto Rico, in early January.

At **Keppel AmFELS** in Brownsville, Texas, work continued on a pair of LNG-powered containerships for Pasha Hawaii. In May, the keel was laid for the Ohana-class *George III*, and the first steel plates were cut for sister *Janet Marie*. The 774-foot U.S.-flagged ships will operate fully on LNG from their first day in service. They will join Pasha's fleet in the mainland-to-Hawaii trade and are scheduled for delivery in 2020.

chairman of the American Maritime Partnership.

In June, **General Dynamics NASSCO** launched the largest con-ro ever built in the U.S. — the 870-foot *Lurline* — for Matson. It is the first of two Kanaloa-class ships that the San Diego yard is building for the operator's West Coast-to-Hawaii service.

Lurline is 870 feet long and weighs in at more than 50,000 metric tons. Upon delivery in late October it will become the largest ship in Matson's fleet, surpassing *Daniel K. Inouye*. With a top speed of 23 knots, it also will be among the operator's fastest ships.

Built on a 3,500-TEU platform, the con-ro will be able to accommodate 500 vehicles in addition to rolling stock and break-bulk cargo. Green features include EPA Tier 3 dual-fuel engines,



Courtesy VT Halter Marine/Technology Associates Inc.

Icebreakers cometh for US, Canada as Arctic opens wide

by Rich Miller

As *Polar Star*, America's only operational heavy icebreaker, faltered again mechanically on its annual resupply mission to Antarctica last winter, lawmakers were finally voting to do something about it.

In mid-February, Congress approved \$655 million to start construction on the Coast Guard's first polar security cutter, which will replace *Polar Star* upon delivery in 2024. An additional \$20 million was approved to purchase long-lead-time materials for a second heavy icebreaker.

"With the support of the administration and Congress, we plan to build a new fleet of six polar icebreakers — at least three of which must be heavy icebreakers — and we need the first new polar security cutter immediately

to protect America's needs in the Arctic," the Coast Guard said in a prepared statement. "The United States is an Arctic nation with extensive national and global responsibilities. Our role in the Arctic is growing. Diminishing Arctic sea ice is expanding access to the region

and attracting attention from both partner and rival states across the globe."

Polar Star, home-ported in Seattle, has exceeded its planned 30-year life by over a decade and needs heavy maintenance to stay in service, according to the Congressional



U.S. Coast Guard photo

VT Halter Marine will build America's first polar security cutter, above, a 460-foot heavy icebreaker that will be tasked with shoring up the Coast Guard's presence in the Arctic. Technology Associates Inc. of New Orleans is providing the design. At left, the national security cutter Midgett passes Diamond Head on Oahu in August on the way to its home port of Honolulu. Ingalls Shipbuilding delivered two NSCs to the Coast Guard in the past year.



The future USS Minneapolis-St. Paul, the nation's 21st littoral combat ship, is launched into the Menominee River in Marinette, Wis., in June. Fincantieri Marinette Marine builds the Freedom variant of the LCS, designated with odd numerals. Austal USA builds the Independence variant, which is designated with even numerals.

Research Service. The Coast Guard's other heavy icebreaker, *Polar Sea*, isn't operational but is used for parts for *Polar Star*.

In April, the industry plumb to build the new 460-foot ship went to **VT Halter Marine**. The contract includes options for two more polar security cutters that would bring the total value of the deal to \$1.9 billion. As the project got off the ground last year, a VT Halter team won a detail design and construction competition against Bollinger Shipyards and a group comprised of Philly Shipyard and Fincantieri Marinette Marine.

New Orleans-based **Technology Associates Inc.** is designing the ship. The design is based on the research vessel *Polarstern II*, being built for the Alfred Wegener Institute in Bremerhaven, Germany.

With Caterpillar main engines in a diesel-electric system producing more than 42,500 horsepower, the polar security cutter will be capable of breaking through ice up to 8 feet thick. The newbuild will have accommodations for 186 crewmembers and a voyage endurance of 90 days.

Not to be left behind in the

push for more Arctic capability, the government of Canada announced in early August that it would build six new icebreakers and add a third shipyard to the National Shipbuilding Strategy (NSS) to handle the work. That followed news in May that Ottawa was investing \$15.7 billion to renew the Canadian Coast Guard fleet, with up to 16 multipurpose vessels to be built by **Seaspan** and two new Arctic and offshore patrol ships by **Irving Shipbuilding**.

"Demands on the Coast Guard will only grow as the impacts of climate change become more frequent and intense," said Jonathan Wilkinson, minister of Fisheries, Oceans and the Canadian Coast Guard. "By adding the new program icebreakers to the fleet, we are ensuring the women and men (of the Coast Guard) have the equipment they need to deliver icebreaking services in the Arctic, on the St. Lawrence waterway (and the Great Lakes), and on Canada's East Coast."

The bow, center and stern sections of Canada's second Arctic and offshore patrol ship, HMCS Margaret Brooke, are joined at Irving Shipbuilding in Halifax, Nova Scotia, in early May. Two other ships in the series will follow for the Royal Canadian Navy.



Ottawa then launched a competitive process to determine which shipyard to add to the NSS. The early and clear frontrunner was Quebec's **Chantier Davie** shipyard, which in December 2018 delivered the first of three former anchor-handling tug supply (AHTS) ships purchased by Canada to be converted into icebreakers. *CCGS Captain Molly Kool* is the first new icebreaker floated by the Canadian Coast Guard in 25 years.

In late August, however, the Canadian government amended its criteria for a third shipyard after allegations of bias toward Davie concerning size requirements for the new icebreakers. Shipyards were initially required to show they could build vessels at least 24 meters wide (78.7 feet), but that would have disqualified all Ontario-based shipyards — their newbuilds must be 23.8 meters wide or less to traverse the St. Lawrence Seaway.

In a complaint to the Canadian International Trade Tribunal, **Heddle Shipyards** of Hamilton, Ontario, also said the 24-meter requirement didn't make sense. That's because the new icebreakers will measure 20 meters (65.6 feet) at the beam, allowing them to fit through the Seaway to operate in the Great Lakes.

After correcting the "inconsistency," Public Service and Procurement Canada said shipyards will now be required to show they can build vessels that are at least 20 meters wide to be considered for the NSS. The length requirement was also reduced from 130 meters (426.5 feet) to 110 meters (360. 8 feet).

Away from the ice realm, defense-related developments continued at dozens of other North American shipyards in the past year as well. Here are few of the highlights:

- In May, **General Dynamics NASSCO** laid the keel for *USNS John Lewis* (T-AO 205), the Navy's first John Lewis-class fleet replenishment oiler. Delivery is planned in late 2020. The San Diego shipyard also added a contract worth up to \$1.6 billion

to build the sixth and seventh ships in the expeditionary sea base (ESB) program, as well as an option for an eighth ship. Work on the new ESBs is scheduled to begin in the first quarter of 2020, with delivery in mid-2023.

- Alabama-based **Austal USA** continued to produce Independence-variant littoral combat ships for the Navy. The shipyard delivered the trimaran *USS Cincinnati* (LCS 20), christened *USS Kansas City* (LCS 22) and launched *USS Oakland* (LCS 24). Austal also delivered the nation's 10th expeditionary fast transport, *USNS Burlington* (EPF 10), in the fall of 2018, and successfully completed sea trials for *USNS Puerto Rico* (EPF 11) in August.

- **Fincantieri Marinette Marine** also got in the LCS action, delivering two Freedom-variant ships, *USS Billings* (LCS 15) and *USS Indianapolis* (LCS 17). Seven other ships in the monohull series are in various stages of construction at the Wisconsin shipyard.

- After a lull of nearly two years, **Ingalls Shipbuilding** resumed deliveries of Legend-class national security cutters to the Coast Guard. The seventh ship in the series, *Kimball* (WMSL 756), was transferred for service in September 2018, and *Midgett* (WMSL 757) followed in May. The Pascagoula, Miss., shipbuilder also received contracts for NSC 10 and NSC 11 while continuing work on *Stone*, scheduled for delivery in 2020.

- Louisiana-based **Bollinger Shipyards** added to its resume of Sentinel-class fast response cutters (FRCs) with five deliveries in the past year: *Terrell Horne* (WPC 1131), *Benjamin Bottoms* (WPC 1132), *Joseph Doyle* (WPC 1133), *William Hart* (WPC 1134) and *Angela McShan* (WPC 1135).

- In April, the government of Canada awarded a contract to Quebec-based **Ocean Industries** to build four tugboats for the Royal Canadian Navy under the NSS. The newbuilds will replace five Glen-class tugs and two Fire-class rescue boats based in British Columbia and Nova Scotia. •

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Bay Area newcomer carries Tier 4 torch for ferries

Story and photos by Brian Gauvin

The 143-foot *Pyxis* arrives at the Vallejo Ferry Terminal, above, after a commuter run from San Francisco's Embarcadero. The 445-passenger catamaran from Dakota Creek Industries entered service in March. The ferry, shown at right in Vallejo, makes two morning runs and two late-afternoon runs. Its 34-knot service speed allows it to complete each transit in one hour.

With the sun rising, *Pyxis* made its way up the Napa River and docked at the Vallejo Ferry Terminal. In 15 minutes, loaded with commuters, the fast catamaran backed out of its slip and headed for the San Francisco Ferry Building on the Embarcadero, one hour away.

The new ferry, the first of three scheduled to join the Water Emergency Transportation Authority (WETA) fleet by early 2020, has quickly become a familiar sight on the Vallejo-San Francisco run. In addition to boosting capacity on the busy route, *Pyxis* is also carrying another torch: It is the first passenger ferry in the United States with EPA Tier 4 emissions controls. The new-

build's MTU engines, currently undergoing emissions testing, are expected to be Tier 4 certified in the near future.

The 143-foot *Pyxis* was designed by Advanced Multihull Designs (AMD) of Australia and built by Dakota Creek Industries in Anacortes, Wash.

When sisters *Lyra* and *Vela* are delivered, Dakota Creek — no stranger to the Bay Area's busy water transportation system — will have built six fast ferries for WETA. Three more operate in the Golden Gate Ferry fleet.

The region's highways, bridges, buses, trains and fer-



ries are choked with commuters every weekday. The speed and capacity of the new ferries, with each accommodating up to 445 passengers, will help WETA handle a projected 900 percent increase in ridership by 2035. The ferry service expects to add 44 vessels to its fleet by then.

The Vallejo-San Francisco route is WETA's longest and most popular run. *Pyxis* conducts two morning and two late-afternoon commuter transits.

"Vallejo ferry passengers are going to love riding *Pyxis*," Nina Rannells, WETA's executive director, said when the ferry was delivered in March. "Our ridership has doubled since 2012, and we are working to grow our fleet to accommodate this growth. *Pyxis* is perfectly suited for Vallejo service with the highest passenger capacity in our fleet and a 34-knot speed."

The design criteria for the new ferry required it to carry 100 more passengers than previous AMD ferries, maintain a 34-knot service speed to complete the Vallejo run in one hour, and have a pollution control system that would satisfy California's hunger for clean air. *Pyxis* also had to be compatible with existing docks and boarding ramps, and have the same bow servicing system for fuel, sewage, potable water and shore power as the existing fleet.

"There is a lot of redundancy, and the general deck layout in regard to boarding, fire stations and galley locations is the same (as other boats in the fleet)," said Peter Belden, WETA's Vallejo operations manager. "So the day-to-day interactions of the crews is similar for each class of boat. The concept has reduced and streamlined crew training, and we can switch out crewmembers, if necessary, without causing confusion."

Pyxis — named for a small constellation and abbreviated from *Pyxis Nautica*, Latin for "mariner's compass" — is the 11th ferry in WETA's 14-vessel fleet with MTU propulsion. The newbuild is powered by two MTU 16V 4000 M65 engines rated at 3,433 hp each, driving a pair of HamiltonJet waterjets through ZF gears. The propulsion integration was carried out by Pacific Power Group of Kent, Wash. The engines are part of the field testing for MTU's Tier 4 system.

"Our system is based on an airless dosing, whereby we inject urea into the (exhaust) system via a pump," said Jeff Sherman, senior commercial marine sales manager

Protection Agency Tier 4 regulations.

"The system is proven, and current field test engines are showing very positive results both in emissions and maintenance," he said.

Belden said that the SCR units, located at the back



of the engine rooms, provide enough exhaust noise attenuation that WETA was able to eliminate the mufflers normally located in the aft machinery spaces with the gears and waterjets.

"That opens up a lot of extra room and reduces the heat in these spaces," he said. "That also gave us a little less weight in the stern, which is what we wanted, so the boat trims better. These boats are really weight- and trim-sensitive."

Hollie Anthonyysz, Dakota Creek's vice president of programs, said the two MTU engines, with generously sized SCRs, "challenged our design engineering team early on, as the space required careful place-

Capt. Gene Tracy mans the helm, above, and deck hand Christopher Allard keeps watch as *Pyxis* crosses San Pablo Bay on a late-afternoon return trip to San Francisco. At left, Tracy mans the starboard bridge wing as he guides the vessel to its slip at the San Francisco Ferry Terminal.

ment.” The emissions system also required specialized piping and tanks for the diesel exhaust fluid. She said the process of fitting it all together went smoothly because of early planning.

“(Dakota Creek) worked closely with the naval architects and MTU to ensure the proper arrangement was achieved for ease of access and maintainability, as well as proper airflow,



At the heart of Pyxis are a pair of MTU 16V 4000 M65 engines, right, delivering a combined 6,866 horsepower and a top speed of 38 knots. HamiltonJet HT810 water-jets, left, are the boat's “best attribute” and “the cat’s meow,” says Capt. Gene Tracy.



just to name a few things,” Anthonyysz said.” Installing this equipment in a confined space is always challenging, so planning is critical.”

On the bridge, *Pyxis*’ forward-facing windows are raked upward for less glare, better protection from the rain, and more headroom for overhead

control panels. “There is great visibility because of the window design,” said Capt. Gene Tracy, who was at the helm for the afternoon run to Vallejo.

After taking on passengers at the Vallejo terminal, Tracy eased *Pyxis* down the Napa River, into San Pablo

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Bay and pushed on the throttles for the return trip to San Francisco. Deck hand Christopher Allard joined the bridge when the ferry left the Napa River, satisfying a requirement that two people be on watch once a vessel is doing 30 knots or more.

With an ebb current, *Pyxis* made as much as 37 knots with total disregard for the chop. "These catamarans are very stable when it's choppy," Tracy said. "The monohulls are a lot less pleasant for the passengers." The captain also had praise for the HamiltonJet waterjets, which he said were the boat's "best attribute. I believe they are the cat's meow. They allow you great maneuverability."

The passenger lounges, on two

PYXIS

SPECIFICATIONS

OWNER/ OPERATOR: Water Emergency Transportation Authority (WETA) Blue & Gold Fleet, San Francisco, Calif.

DESIGNER/ BUILDER: Advanced Multihull Designs, Sydney, Australia/Dakota Creek Industries, Anacortes, Wash.

DIMENSIONS: L: 143' B: 39.5' D: 5.4'
MISSION: Passenger ferry
CREW SIZE: Four

HULL

- Aluminum catamaran

PROPULSION

- (2) MTU 16V 4000 M65 main engines, 3,433 hp each
- (2) HamiltonJet HT810 waterjets
- ZF Marine 9055 gears
- (2) John Deere 6068AFM85E auxiliary gensets, 155 kW each
- Centa shafting components and couplings
- HamiltonJet steering system
- Maximum speed: 38 knots (lightship)
- Cruising speed: 34 knots (full load)

CAPACITIES

- Passengers: 445
- Fuel: 5,600 gallons
- Potable water: 600 gallons
- Diesel exhaust fluid: 300 gallons
- Displacement: 236.2 metric tons (full load)

NAVIGATION/ COMMUNICATIONS

- Furuno FAR-2127 25-kW radar (primary) with chart radar option

- Furuno FAR-2117 12-kW radar (secondary)
- Airmar DT800 depth sounder
- (3) Icom IC-M605 VHF radios
- Furuno GP170D DGPS
- Furuno FA170 Class A AIS
- Rose Point Navigation Systems electronic charting software
- ESS PA/video systems
- Ritchie Helmsman magnetic compass

ADDITIONAL EQUIPMENT

- Humphree trim system
- MTU Callosum automation system
- International coatings
- Callenberg HVAC
- SurvitecZodiac life rafts
- Kidde FM-200 fire suppression system
- Commercial Fire Protection fire alarm and detection

CLASSIFICATIONS

- U.S. Coast Guard Subchapter K

decks, are well appointed and comfortable, a fact attested to by several commuters who were sprawled and sleeping in their seats. Many other passengers were glued to the expansive windows, taking in the sweeping views of the bay awash in afternoon sunlight. A few braved the stiff wind sweeping the open aft deck.

“From a passenger point of view, the layout of the decks and the amount of seating and comfort, it works,” Allard said. “When we get to 300, the passengers are not rushing to board because they know they can get a seat. And it has great ADA (Americans with Disabilities Act) features. The handicap facilities work very well.”

Another attribute for commuters is the covered deckhouse on the stern with storage for 30 bicycles. The boat’s hull was extended two frames to create the space for it.

Nearing the ferry building in San

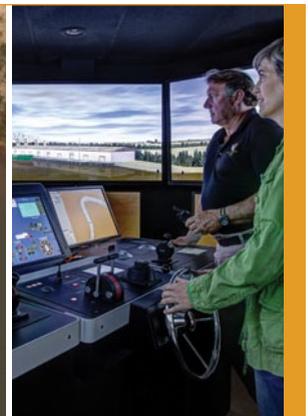
Passengers enjoy spectacular views of the San Francisco skyline from the aft deck as Pyxis makes its way from the Embarcadero terminal.



Francisco, Tracy slowed *Pyxis* and moved out to the starboard bridge wing to ease the ferry into the slip. “When I’m docking, I use the flag on top of the ferry terminal tower to gauge the wind,” he said.

Allard was soon joined by deck

hands Rashonda Simms and John Chiovarou to assist passengers off the ferry. Within 15 minutes, a full load of home-bound commuters was aboard and Tracy was back at the bridge wing, easing *Pyxis* out of the slip for the return run to Vallejo.



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RODANTHE

North Carolina adds capacity, maneuverability with new VSP ferry

by Brian Gauvin

On a blistering June day, a sizable crowd gathered in the shade of an outdoor shelter fronting the Hatteras Ferry Terminal on North Carolina's Outer Banks. Ferries arrived and departed while a new ferry was being christened.

Rodanthe, named for the beach town 35 miles north of Hatteras, is the first new ferry to ply the Hatteras-Ocracoke Island route since 2006. Ferries on the route handle approximately 275,000 vehicles annually. The 183-foot *Rodanthe*, a 40-vehi-



Brian Gauvin photo



Top photo: NCDOT/Left: Brian Gauvin

Capt. James Leland Groce, right, stands amid the Furuno electronics array in Rodanthe's pilot-house. Upgrades from older ferries in the fleet include hands-free communication. At left, Rodanthe awaits its next run at the Hatteras Ferry Terminal. The River-class vessel can accommodate 40 vehicles and up to 300 passengers.

cle, 300-passenger River-class ferry, will replace the 150-foot, 26-vehicle, 149-passenger *Thomas A. Baum*, a Hatteras-class vessel due for retirement sometime before 2021.

The North Carolina Department of Transportation (NCDOT) Ferry Division is the second largest in the U.S. behind Washington state. Four of its routes, including the Hatteras-Ocracoke run, are free, and state subsidies keep tolls low for the other three.

As the need for more vehicle

The 183-foot Rodanthe, opposite page, delivered in March by Bollinger Shipyards, is the eighth ferry in North Carolina's fleet fitted with Voith Schneider propellers. The two VSP units in the newbuild are the first constructed in the United States.

and passenger capacity increases, NCDOT is gradually replacing seven Hatteras-class ferries with River-class ferries.

Constructed at Bollinger Shipyards in Amelia, La., *Rodanthe* is the eighth NCDOT ferry fitted with Voith Schneider propellers (VSP). *Southport*, the first ferry in the fleet equipped with cycloidal drive propulsion, was designed by Schuller & Allan and built at Steiner Shipyard in Bayou La Batre, Ala., in 1996.

Rodanthe, designed by Elliott Bay Design Group (EBDG), is the first in the fleet with cycloidal units constructed in the U.S. at Voith's plant in York, Pa. It is the sixth ferry that

Seattle-based EBDG has designed for North Carolina, including the larger Sound-class vessels *Swan Quarter* and *Sea Level* connecting Ocracoke Island with Swan Quarter on the mainland and Cedar Island.

"The main challenges with respect to Voith Schneider propellers are optimizing the hull to provide good flow conditions for the propellers and structural integration with the vessel,"

said Mike Johnson, project engineer at EBDG.

"Voith has given us great service and reliability," said Jed Dixon, deputy director of operations for North Carolina's Ferry Division. "(VSP-equipped ferries) are highly maneuverable, especially in high wind, and it blows here all of the time. For half of the year, you've got over 20-knot winds."

RODANTHE		SPECIFICATIONS
OWNER/OPERATOR:	North Carolina Department of Transportation Ferry Division, Havelock, N.C.	
DESIGNER/BUILDER:	Elliott Bay Design Group, Seattle, Wash./Bollinger Shipyards, Amelia, La.	
DIMENSIONS:	L: 183' B: 46 D: 4'6"	
MISSION:	Passenger/vehicle ferry	
CREW SIZE:	Six	
HULL	<ul style="list-style-type: none"> <input type="checkbox"/> Steel monohull <input type="checkbox"/> (2) Furuno XN12A/4 antennas <input type="checkbox"/> Furuno SC130 satellite compass 	
PROPULSION	<ul style="list-style-type: none"> <input type="checkbox"/> (2) Caterpillar C18 600-hp main engines <input type="checkbox"/> (2) Voith Schneider size 16 propellers <input type="checkbox"/> Twin Disc MGX-5202SC gears <input type="checkbox"/> (2) Caterpillar auxiliary gensets (C7.1 and C4.4) <input type="checkbox"/> Vessel speed: 12 knots <input type="checkbox"/> (2) Ritchie YB-600 magnetic compasses <input type="checkbox"/> Furuno FA170 AIS <input type="checkbox"/> Shakespeare 396-1-AIS antenna <input type="checkbox"/> (4) Icom M506-11 VHF radios <input type="checkbox"/> (4) Shakespeare 399-1M VHF antennas <input type="checkbox"/> (8) speaker horns 	
CAPACITIES	<ul style="list-style-type: none"> <input type="checkbox"/> Passengers: 300 <input type="checkbox"/> Vehicles: 40 <input type="checkbox"/> Fuel: 3,500 gallons <input type="checkbox"/> Potable water: 1,750 gallons 	
NAVIGATION/COMMUNICATIONS	<ul style="list-style-type: none"> <input type="checkbox"/> (2) Furuno DRS25A radar units <input type="checkbox"/> (4) Furuno TZTL15F touch monitors 	
ADDITIONAL EQUIPMENT	<ul style="list-style-type: none"> <input type="checkbox"/> Hiller Companies onboard fire suppression system <input type="checkbox"/> Goulds fire pumps <input type="checkbox"/> Palfinger RSQ 450 G rescue boat <input type="checkbox"/> Palfinger SCH 12-3.5R hydraulic davit 	
CLASSIFICATIONS	<ul style="list-style-type: none"> <input type="checkbox"/> U.S. Coast Guard Subchapter H 	

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Before Hurricane Sandy ripped up the Atlantic coast in 2012, the trip from Hatteras to Ocracoke Island took 40 minutes via a channel cutting through Pelican Shoal. The storm filled in the channel and scoured the tips of each land mass, widening the gap from a quarter of a mile to 2.5 miles between the south tip of Cape Hatteras to the north tip of Ocracoke Island. The trip now takes an hour.

The U.S. Army Corps of Engineers was called in to dredge the channel, but the expanded stretch of ocean surging through Hatteras Inlet refilled it in a matter of days.

The longer running time for the route increased the fuel and maintenance bill for the NCDOT while reducing the number of ferry trips per day from 52 to 38. The new reality exacerbated the already existing capacity issue.

“The motivation to build *Rodanthe* was to replace the 25-year-old ferry with one with more capacity to accommodate more cars and more people,” Dixon said. “And we are overhauling the fleet with (EPA) Tier 3 Cat C18 engines.”

Rodanthe is designed to be more seaworthy to keep water flowing under the bow instead of over it and spraying vehicles. Dixon

“The size of the engine room is impressive to me,” says chief engineer Clay Harris, shown with one of the new ferry’s VSP cycloidal drives. Each is driven by a 600-hp Caterpillar C18 diesel, below.

cited the constant buildup of shoals as another challenge that needed to be addressed.

“These new boats have a shallower draft, 4.5 (feet) from 5.6, so the shallower draft gives us a little relief,” he said.

“NCDOT required a 4-foot, 6-inch draft vessel that could carry 40 cars in

In addition to increased vehicle and passenger capacity, *Rodanthe* has several other built-in improvements over the older ferries — improvements that are especially appreciated in inclement weather. These include a deck-level passenger lounge, interior restrooms and new technology.

“I like the technology best,” said

Emergency equipment on *Rodanthe* includes a Palfinger rescue boat deployed by a Palfinger hydraulic davit.



Brian Gauvin photos



ferry master Capt. James Leland Groce. “Hands-free communication allows me to have (better) control of the vessel” when a dispatch is necessary. The public address system also now has recorded safety briefings and announcements, relieving the captain of that distraction while maneuvering at the terminals.

Another new feature is the fire suppression system that can be turned on at each fire station, eliminating the communications time lag created by having the system initiated from the bridge.

“The size of the engine room is impressive to me,” said chief engineer Clay Harris, a veteran of 29 years tending marine machinery. “It’s not as hot as a more cramped space, and there is plenty of room to work on each piece of equipment in there.”

The double-ended ferry has a 600-hp Caterpillar C18 main engine shafted to a Voith Schneider propeller fore and aft. The engines can operate independently in either direction, or

very shallow water, with enough speed to keep schedule,” Johnson said. He added that constraints regarding length and beam, dictated by the existing terminal dimensions, drove the design of *Rodanthe*.

“Significant effort, including CFD (computational fluid dynamics) and model testing at MARIN (Maritime Research Institute Netherlands), went into optimizing the hull to minimize the shallow-water effects,” Johnson said.

together, one pulling and one pushing. The cycloidal units also can propel the ferry at 7 knots sideways.

Elliott Bay has designed three additional ferries, currently under construction, for NCDOT. Progress on the 100-passenger Sound-class catamaran *Ocracoke Express*, under construction at U.S. Workboats in Hubert, N.C., has been hindered by delays at the shipyard.

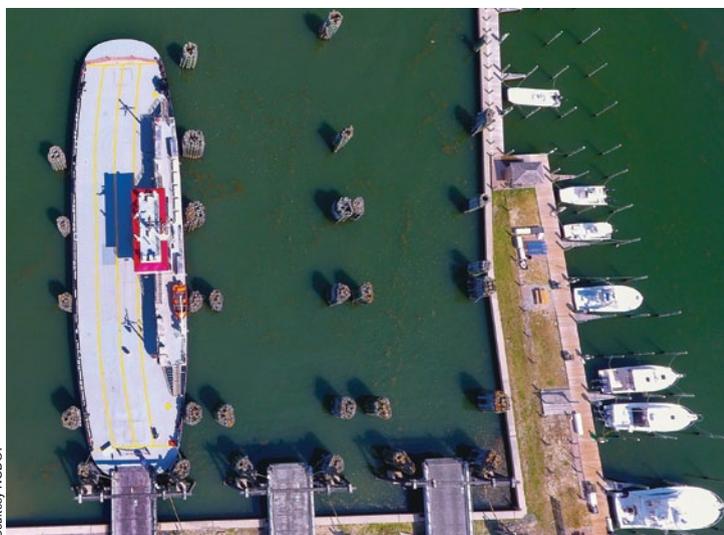
The other two ferries are River-class vessels, but with diesel-electric propulsion and azimuthing stern drives. Tentatively named *Avon* and *Sakvo*, they are under construction at Gulf Island Fabrication in Houma, La., and are scheduled for delivery in 2020.

Elliott Bay's experience in designing z-drive ferries dates back to the 40-year-old *Guemes*, which is still carrying passengers and vehicles across Guemes Channel between Anacortes, Wash., and Guemes Island in Washington's San Juan Islands.

Like VSP propulsion, z-drives provide enhanced maneuverability over a traditional propeller and rudder system, especially at low speeds and against crosswinds or crosscurrents, Johnson said.

"The added maneuverability is especially valuable for the ferry route

An aerial view of the ferry at its berth highlights its double-ended loading capability and four-lane vehicle deck.



Courtesy NCDOT

between Hatteras and Ocracoke, which follows a narrow, winding channel that's subject to shoaling and wind-driven currents," he said.

During the christening of *Rodanthe*, the passenger ferry *Martha's Vineyard Express* — temporarily renamed *Ocracoke Express* — arrived at the terminal and berthed in the adjacent slip to prepare for its own "on the fly" christening. The NCDOT is leasing the vessel from the New Jersey-based ferry company Seastreak until the new *Ocracoke Express* is delivered from US Workboats.

Martha's Vineyard Express carries up to 149 passengers per trip along the

length of Ocracoke Island, directly to the south terminal at Ocracoke Village. By Aug. 5, 22,000 passengers had made the run since the ferry's inaugural transit for the NCDOT on May 20.

Dixon said *Rodanthe* and *Martha's Vineyard Express* are helping to alleviate the pressure caused by increased ridership and the reduced number of daily runs between Hatteras and Ocracoke.

"It's a big step forward to modernize the fleet and also meet the new emission standards," he said. "We will be building (more) new ferries based on funding."

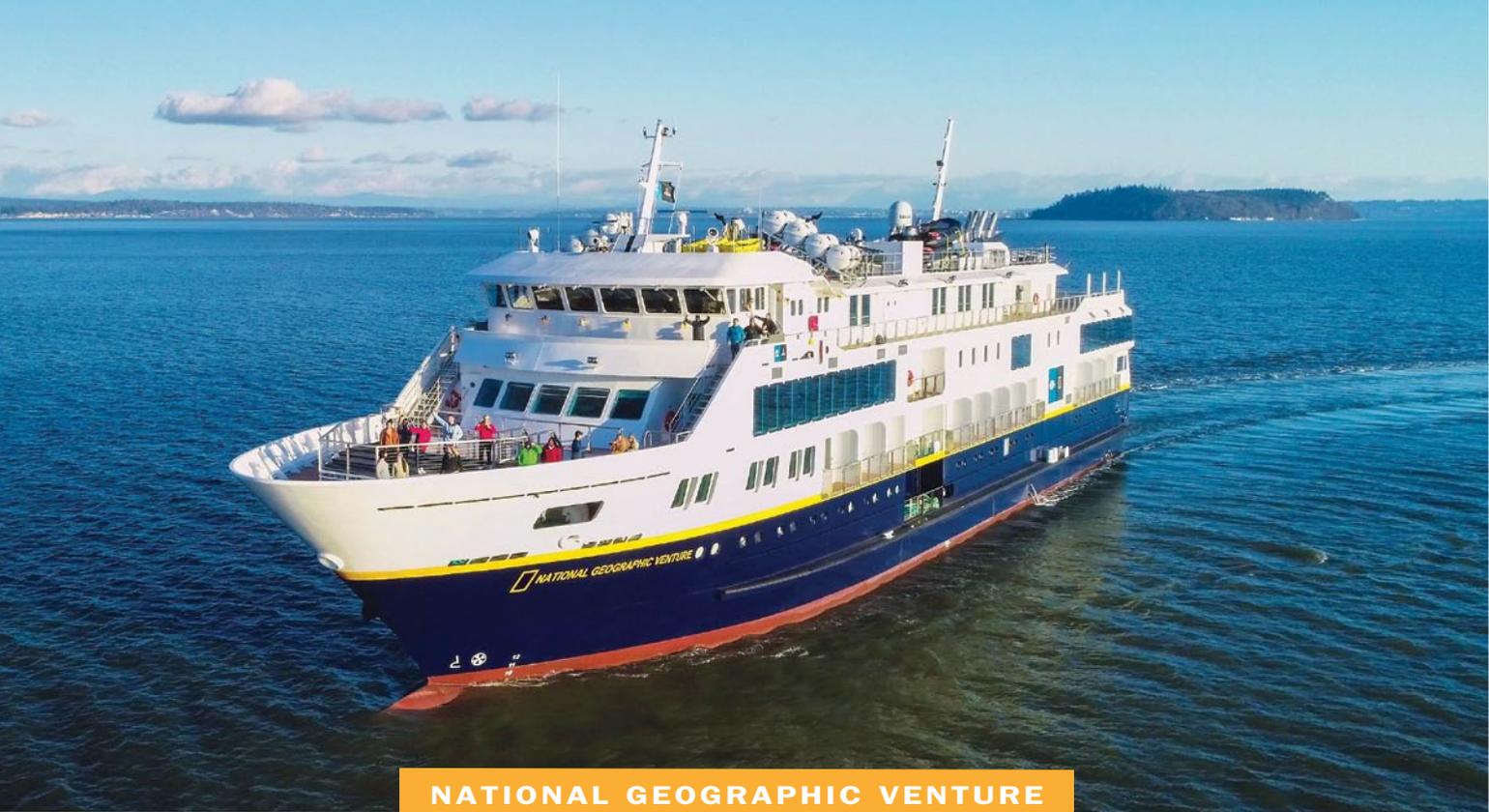
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NATIONAL GEOGRAPHIC VENTURE

Lindblad cruise ship designed to get guests close to nature

by Casey Conley

Some cruise ships are so packed with amenities that guests never want to leave. *National Geographic Venture* is designed and outfitted for passengers to get off the vessel and explore their surroundings.

The 238-foot vessel, delivered in November 2018, is the sister ship to *National Geographic Quest*, delivered in July 2017. Lindblad Expeditions of New York operates the U.S.-flagged, Subchapter K-compliant ships, which

were designed by Seattle-based Jensen Maritime Consultants and built in Washington by Nichols Brothers Boat Builders.

National Geographic Venture has 50 cabins with accommodations for up to 100 passengers, along with a restaurant, lounge, spa and exercise room. There is storage space for 24 kayaks, eight inflatable boats suitable for tours, and eight paddleboards for passengers to explore off the ship.

“The vessel is a platform to get folks into the environment to be close to wild-life and close to the areas we explore,” said Tyler Skarda, Lindblad’s senior vice president for marine operations.” The goal of the vessel is not to sit out at sea and watch shows or operate a casino. ... The goal is to get the people off the vessel and into the environment. It’s to get them into these remote areas.”

Jensen Maritime Consultants began working with Lindblad in 2014 on a design for the company’s new cruise ships. The vessels operate in Alaska and the Pacific Northwest during the warmer months and in Baja California and Central America in the winter. *Quest* and *Venture* are purpose-built to bring guests into shallow ocean coves and narrow passages.

The resulting design is a ship with a 10-foot operating draft. *Venture* has a hard-chined steel hull with a bulbous bow optimized for efficient operations using advanced software and 3D modeling. Those programs created a “virtual vessel” that let Lindblad’s team review all aspects of the design before construction started.

Venture is different in several ways from its earlier sibling. *Venture* has Quantum stabilizers to reduce rolling, and it has an aluminum superstructure above the lounge deck to reduce weight.



National Geographic Venture, above, has a 10-foot draft that allows it to explore shallow coves and narrow ocean passages. The ship sails off Baja California and Central America in the winter months and along the Pacific Northwest and Alaska in the summer. The bridge, left, is brimming with advanced Furuno electronics.

Top photo: Lindblad Expeditions/Left: Maria Barrow

It also has a reconfigured arrangement for tankage and a separate technical water tank.

“A Jones Act boat of this size doesn’t come out all that often, so it was pretty exciting for us,” said Sean Testa, Jensen’s director of engineering. “Getting it under 100 grt (gross registered tonnage) U.S. and 3,000 tons international was a pretty challenging design, as well as fitting 108 passengers. I think we pretty much maximized this hull to keep within these parameters.”

The passenger spaces within the ship are concentrated on four decks. The main deck has 14 cabins split between the port and starboard sides, and the upper deck has 28 more cabins. The lounge deck includes a restaurant, spa and gym space. The uppermost level, the observation deck, has eight suite cabins. Crew spaces are in the forward section of the main level.

Venture has a spacious sundeck and companionway wrapping around the upper deck. Mooring equipment is stored below the main deck, allowing for a completely open bow with a platform for sightseeing, photography or spotting wildlife.

“When we are seeing killer whales in Alaska, we can get all 100 folks on the bow, and just about all of them can have really good photographic access,” Skarda said. “Being able to view off the ship



Florida-based Jamestown Metal Marine Services provided custom interior finishes throughout the ship, including in its comfortable lounge, right. Many of the ship’s well-appointed passenger cabins, below, have balconies and sliding-glass doors to provide outdoor access for guests.



was the point of these public areas on board the vessel.”

Propulsion is provided by twin MTU 16V 4000 Tier 3 engines, each generating 1,600 horsepower. The mains turn 78-inch Wartsila props through Reintjes reduction gears. Electrical power comes from three Volvo Penta gensets. Cruising speed is about 12 knots, and Skarda said fuel performance has exceeded expectations.

Lindblad ships typically have an open bridge policy that lets passengers enter the space at any time during daylight hours. The bridge is equipped with an advanced Furuno navigation suite including radar, AIS and GMDSS. CCTV

cameras installed throughout the ship relay video to displays in the wheelhouse. Lindblad also plans to install a 55-inch touch-screen display in the wheelhouse to let passengers track the voyage and zoom in or out on the display.

Lindblad highlights the adventure aspect of its cruises, but the experience on board is anything but spartan. *Venture* guests experience five-star cuisine sourced locally when possible, and

they have access to two bars. The guest rooms are comfortably appointed; many have balconies and large sliding-glass doors. Jamestown Metal Marine Services of Boca Raton, Fla., developed the custom interior finishes throughout the ship.

Lindblad has made a dedicated push toward reducing its carbon footprint. The company recently announced that

NATIONAL GEOGRAPHIC VENTURE

SPECIFICATIONS

OWNER/OPERATOR: Lindblad Expeditions, New York, N.Y.
DESIGNER/BUILDER: Jensen Maritime Consultants, Seattle, Wash., and Jamestown Metal Marine Services, Boca Raton, Fla. (interior)/Nichols Brothers Boat Builders, Freeland, Wash.

DIMENSIONS: L: 238’ B: 44’ D: 10’

MISSION: Cruise ship

CREW SIZE: 50

HULL

- Steel monohull

PROPULSION

- (2) MTU 16V 4000 Tier 3 main engines, 1,600 hp each
- (2) Reintjes reduction gears
- (2) five-blade Wartsila propellers
- Schottel 300-kW bow thruster
- (2) Volvo Penta D16 MG 477-kW gensets
- Volvo Penta 230-kW genset
- (2) Quantum MAGLift rotor stabilizers
- Cruising speed: 12 knots

CAPACITIES

- Fuel: 52,900 gallons
- Potable water: 30,600 gallons
- Wastewater: 16,400 gallons

NAVIGATION/COMMUNICATIONS

- (2) Furuno MU-231 radars
- Furuno FA170 AIS
- Furuno FM8900S GMDSS
- (2) Furuno MU-190 multipurpose displays
- Sperry NAVIPILOT 4000 autopilot

ACCOMMODATIONS

- 50 guest rooms with space for 100 passengers
- Fitness room and spa
- Lounge and restaurant
- Storage for 24 kayaks, eight inflatable boats, eight paddleboards

CLASSIFICATIONS

- U.S. Coast Guard Subchapter K



Maria Barrow/ photos

A crewmember checks PFDs as the ship is outfitted in Seattle in May for the summer excursion season. “The goal is to get the people off the vessel and into the environment,” says Lindblad’s Tyler Skarda.

it will be carbon-neutral starting in 2019, a designation that includes eight company ships, five leased ships and the company's New York headquarters. This will be achieved through the purchase of carbon offsets.

Lindblad has eliminated single-use plastics on its ships. The vessels also meet strict standards for food preparation and safety to reduce the threat of foodborne illness. Skarda said a key part of the sanitation regimen is the use of an activated saltwater solution that is both effective and biodegradable.

Lindblad's U.S.-flagged fleet is a point of pride within the company. Nichols Brothers built all four of the ships: *Quest* and *Venture*, as well as *Sea Lion* and *Sea Bird*, built in the 1980s for another customer. Those 62-passenger ships were later acquired by Lindblad.

"This has been an exciting and ultimately very rewarding project to have been a part of," said Rob Zavatsky, Nichols Brothers project engineer.

Twin MTU 16V 4000 main engines, right, deliver a combined 3,200 horsepower. To reduce roll, the cruise ship has been fitted with Quantum MAGLift rotor stabilizers, below.



Meria Barrow photos

"Lindblad Expeditions has a vessel they can be proud of, and the team at Nichols has performed incredibly to provide them with this."

Sven-Olof Lindblad, founder, president and CEO of Lindblad Expeditions, thanked the shipyard, contractors and naval architects who worked to produce "one of the most sophisticated ships built in the U.S."

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VIRGINIA

The 93-foot Virginia, designed by JMS Naval Architects and built for the Virginia Institute of Marine Science by Meridien Maritime Repair, offers flexibility in research outfitting, rapid turnaround for frequent use, and affordable operation.

sampling, and has accommodations for eight scientists.

The dynamic positioning (DP) system on *Virginia* makes some of these new efforts possible. The robust A-frame at the stern and J-frame on the starboard side allow for deployment of scientific buoys, plankton nets and sonar.

“No other vessel can provide the deck gear, the geophysical capabilities and the coring capabilities of *Virginia*,” John Wells, VIMS dean and director, said in November shortly after the vessel arrived. “It’s got the flexibility to do almost anything on the water that any of our scientists might want to do to increase understanding, now or in the future.”

JMS Naval Architects of Mystic,



Photos courtesy VIMS

Conn., designed the vessel built by Meridien Maritime Repair of Matane, Quebec. *Virginia* was delivered in September 2018, and it first went to work in early 2019.

VIMS is affiliated with the state-run College of William & Mary and also handles environmental and educational projects on behalf of the Commonwealth of Virginia. Historically, the institute has worked primarily in Chesapeake Bay conducting fisheries research and environmental impact studies. VIMS is a member of the University-National

Purpose-built research boat master of flexibility

by Casey Conley

The Virginia Institute of Marine Science (VIMS) designed its first purpose-built research ship with the present, and the future, in mind.

The 93-foot *Virginia* replaces the converted crew boat *Bay Eagle* as the

institute’s flagship. *Virginia* expands the distance VIMS students and scientists can travel from their home port in Weems, Va., on the Rappahannock River. It also brings myriad new capabilities such as midwater acoustic surveys, seafloor mapping and core



“It is very comfortable, it is very quiet, and for a 93-foot boat there is a lot of room for working,” says Capt. John Olney, shown manning the helm of the new research vessel on the Rappahannock River. Virginia’s stern-mounted A-frame, above right, has an 8,000-pound load capacity for trawling and dredging.

Oceanographic Laboratory System comprised of 60 academic institutions and labs involved in oceanographic research.

VIMS, which dates back to 1938, operates more than two dozen vessels that range from 15 feet to the 93-foot *Virginia*. The 65-foot *Bay Eagle* joined the fleet in 1987 and is set for retirement within the next year or two. VIMS added the 43-foot *Tidewater* in 2013 to focus on surveys of juvenile fish.

Plans for the new vessel came together with extensive input from VIMS scientists, who guided JMS Naval Architects through the design phase. The institute wanted an efficient ship with improved seakeeping and range, and it wanted to stay under 300 gross tons to reduce operating costs. Perhaps most important was the ability for the vessel to adapt to future scientific needs, said Stewart Lamerdin, VIMS' director of marine operations.

"We wanted a platform that was large enough to accommodate the work *Bay Eagle* was doing in addition to expanding capabilities as well," he



Marine technician Joe Cope, left, and graduate student Kristen Sharpe prepare to deploy a plankton net from the aft deck of the research vessel.

V forward sections transitioning into a tunnel stern housing a 77-inch propeller in a Rice thrust nozzle, said JMS President T. Blake Powell. The vessel, he added, has twin skegs outboard of the propeller that provide directional stability and roll dampening.

"The plumb stem bow maximizes the waterline length, which contributes to improved longitudinal stability



Crewmembers aboard Virginia monitor the vessel's plankton net during a tow in October 2018. The deck is outfitted with an A-frame and J-frame for deploying fishing gear and other scientific equipment.

said, noting that the institute is raising money for an advanced sonar suite for the ship.

That work yielded an entirely new design with a striking hull plan that marries form and function. The single-chine, V-bottom hull has deep-

and creates fine forward waterlines for hydrodynamic efficiency," he said. "The bow form also allows the bow thruster to be deeply immersed and as far forward as possible to minimize cavitation, maximize thrust and provide robust dynamic positioning capability."

The aft deck's size is another benefit. It is 37 feet long and 28 feet wide, providing roughly 1,000 square feet of working space for science payloads of 20 long tons. The deck is outfitted with an A-frame and J-frame, as well as hydraulic winches for deploying fishing nets and an electric CTD (conductivity, temperature and depth) winch. *Virginia* also can launch and recover submersible vehicles for advanced underwater research.

"It's definitely a lot of ship in a small package," Powell said. "One of the things that was really important to them was to have dynamic positioning capability. The propulsion arrangement was built to accommodate that as well."

The propulsion package consists of two 660-hp Tier 3 Cummins QSK19-M engines coupled to a

VIRGINIA

SPECIFICATIONS

OWNER/ OPERATOR:	Virginia Institute of Marine Science, Gloucester Point, Va.
DESIGNER/ BUILDER:	JMS Naval Architects, Mystic, Conn./Meridien Maritime Repair, Matane, Quebec
DIMENSIONS:	L: 93' B: 29' D: 9'
MISSION:	Fisheries and oceanographic research vessel
CREW SIZE:	Five

HULL	<ul style="list-style-type: none"> □ Steel monohull □ (2) VHF radios □ SAILOR FleetBroadband □ Beier dynamic positioning system
PROPULSION	<ul style="list-style-type: none"> □ Cummins QSK19-M 660-hp main engine □ Finny gearbox □ Veth bow thruster □ (2) Kohler 99-kW auxiliary gensets □ Cruising speed: 10 knots
DECK EQUIPMENT	<ul style="list-style-type: none"> □ (2) Hawboldt trawl winches □ (2) Hawboldt net winches □ Hawboldt CTD winch □ Toimil knuckle-boom crane
CAPACITIES	<ul style="list-style-type: none"> □ Fuel: 8,700 gallons □ Potable water: 3,000 gallons
NAVIGATION/ COMMUNICATIONS	<ul style="list-style-type: none"> □ (2) Furuno FAR-2127-BB radars □ (2) Furuno TZTL electronic multifunction displays □ Rose Point Navigation Systems electronic charting software on a Dell embedded box PC □ Ritchie compass □ Furuno Class A AIS □ Simrad AP70 autopilot
ADDITIONAL EQUIPMENT	<ul style="list-style-type: none"> □ CO2 onboard fire suppression □ (2) MP Pump fire pumps □ Honeywell Notifier fire alarm system □ Reverse osmosis system for making fresh water
CLASSIFICATIONS	<ul style="list-style-type: none"> □ ABS Load Line certificate □ Letter of designation as an oceanographic research vessel



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Capt. John Olney, who joined VIMS in 2008 and previously operated *Bay Eagle*, said the DP system often exceeds those standards. "If you hold the bow into the wind, she can hold within one foot port, starboard or aft and forward in a 25-knot wind," he said. "That has been really helpful for us."

Specifically, Olney said, the system has made it simpler and faster to take core samples. The effort involves driving a pole into the seafloor to



determine the makeup of the sediment. Prior to *Virginia's* arrival, that required a five-point anchor system to hold position. Too much movement when taking samples, he explained, can damage the equipment.

While it is hard to draw performance comparisons between the 65-foot *Bay Eagle* and the 93-foot *Virginia*, Olney considers the new ship plenty efficient. The two-in/one-out marine gear allows for the

Two Cummins QSK19-M main engines are coupled to a Finnoy two-in/one-out marine gear, allowing Virginia to operate efficiently on one engine while on station or during slow-speed transits.

capability to operate the vessel efficiently on a single propulsion engine when on station or during slow-speed transits. This reduces overall engine hours and improves fuel efficiency, minimizing the vessel's environmental footprint.

"It is very comfortable, it is very

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quiet, and for a 93-foot boat there is a lot of room for working,” Olney said. “It was well thought out. JMS did a great job designing it, and the scientists that participated in the whole process did a really good job thinking about how the boat would best accommodate their needs.”

The vessel itself has a fairly straightforward layout. Forward from the working deck are wet and dry lab spaces together occupying about 500 square feet. There is a galley and lounge on the port side, with a head and pantry/food storage to starboard. Below, the engine room occupies the aft half of the vessel, while four state-rooms and a head are forward. Three cabins have two bunks and one cabin has four. The captain’s quarters are located above the main deck aft of the wheelhouse.

The navigation electronics package consists of an array of equipment from Furuno, Simrad and Rose

Point. *Virginia* also has a SAILOR 500 FleetBroadband satellite communications system with two VHF radios. Eight CCTV cameras installed throughout the ship display in the wheelhouse.

Virginia operates with three crew during voyages of 12 hours or less, and five crewmembers during 24-hour operations. Its at-sea endurance is



The Virginia Institute of Marine Science was founded in 1938 and is affiliated with the College of William & Mary. VIMS operates more than two dozen vessels.

10 days, although that can vary. The cruise speed is 10 knots.

Lamerdin and Olney offered high praise for Meridien Maritime Reparation and JMS, which won contracts for the work based on the state of Virginia’s procurement rules. Each company was selected through a best-value rather than a low-bidder process.

The vessel has met the institute’s high expectations and won approval from scientists. Considering the diverse array of deck gear, the DP system and overall cost-effectiveness, Lamerdin said there aren’t many boats like it on the East Coast.

“It is an all-in-one platform that can function efficiently as a fisheries research vessel for stock assessments, trawling and longlining, and can simply switch over to deploy a buoy with scientific instruments,” he said. “It can also tow plankton nets and hydrographic survey equipment ... and can do that all from the same platform.”

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HALF MOON CLIPPER

Bayou-built crew boat delivers the goods, island style

by Brian Gauvin

Amid the oil industry downturn in the Gulf of Mexico and the corresponding grim economics visited upon aluminum crew boat builders in south Louisiana, Breaux Brothers

Enterprises of Loreauville put a new twist on the market.

“We were contacted by Holland America Line (HAL) to construct a vessel,” said Brannon Breaux, a vice

president of the company founded by his father, Ward Breaux, who is president. The company’s other vice president is Brannon’s brother Vic.

The new vessel would replace a 95-foot, triple-screw Camcraft crew boat originally built for Eastern Shipping Co. in 1975 that subsequently was employed as a ferry in Newfoundland. HAL acquired the vessel in 1997, placed the name *Half Moon Clipper* on the hull, and put the boat into service in the Bahamas.

As with the old boat, the new *Half Moon Clipper* transports crew and workers from Eleuthera’s Princess Cays to HAL’s resort on Half Moon Cay, a run of up to an hour and a



Top photo: Tony Brousseau/Lift; Brian Gauvin

Half Moon Clipper makes quick work of choppy seas, above, during sea trials in February in the Gulf of Mexico. The new-build from Breaux Brothers Enterprises was designed to shuttle supplies for the cruise ship trade in the Bahamas. At left, the crew boat idles in Port Fourchon before heading for its new home in the islands. During trials in the Gulf, “it was like we were riding in a Suburban with only the AC vent noise,” says Brannon Breaux.



Clement Thomas, left, fleet captain in the Bahamas for Holland America Line, gives the new crew boat high marks. "This is really a great design because she handles so well," he says. A key design requirement for Half Moon Clipper was a high-capacity crane, below, for hoisting supplies and small watercraft. Effer Marine filled the bill with a knuckle-boom unit.

Brian Gaudin/Photos

HALF MOON CLIPPER

SPECIFICATIONS

OWNER/ OPERATOR:	Holland America Line, Seattle, Wash.
DESIGNER/ BUILDER:	Breaux Brothers Enterprises, Loreauville, La.
DIMENSIONS:	L: 105' B: 24' D: 5'6"
MISSION:	Crew boat
CREW SIZE:	Four

HULL

- Aluminum monohull

PROPULSION

- (3) Baudouin 8M26.2 P2 800-hp main engines
- (3) ZF 40-by-38-inch propellers
- ZF 2000 gears
- (2) Baudouin 4W105S gensets
- Navitron NT850 steering system

CAPACITIES

- Passengers: 193
- Fuel: 3,538 gallons
- Potable water: 1,000 gallons
- Ballast: 2,176 gallons
- Lube oil: 140 gallons
- Waste oil: 140 gallons

NAVIGATION/ COMMUNICATIONS

- Furuno 64-nm radar system with 6-kW transmitter and 10.4-inch display
- Furuno NavNet TZtouch2 chartplotter
- Dirigo 5-inch magnetic compass
- Koden Class A AIS
- Furuno E-nav software
- Navitron autopilot
- Icom 25-watt VHF/FM marine radio
- Shakespeare VHF antenna

- Orion 19-inch CCTV video surveillance monitor with Speco cameras
- Jotron 60S EPIRB

DECK EQUIPMENT

- Coastal Marine Equipment (CME) 1A24 single-drum winch
- Effer Marine 275M-3S crane
- Manuplas cast fendering
- (4) SurvitecZodiac 50-man inflatable life rafts
- Carolina Skiff rescue boat with 40-hp Yamaha engine
- Norestar Bruce anchor and Fortress fluke spare anchor

ADDITIONAL EQUIPMENT

- CO2 onboard fire suppression
- Consilium fire detection system
- BOSS oily water separator
- Humphrey sewage treatment system
- International coatings
- Sterling's Upholstery passenger seating
- FLEXCO radial tile interior flooring

half. The crew loads, transports and unloads all of the food, beverages and equipment necessary to feed and entertain cruise ship passengers on shore parties. The boat also acts as a supply boat for the ships.

"It's all brought via the *Clipper*, so it's a very important — I would say vital — part of our operation," said Matthew Sams, vice president of Caribbean relations and private island operations for HAL.

The trend toward giant, passenger-packed cruise ships called for a crew boat designed in lockstep with the industry's growth. But dimensional limitations for the vessel due to the size of the Princess Cays marina and the channel leading to the marina at Half Moon Cay presented challenges.

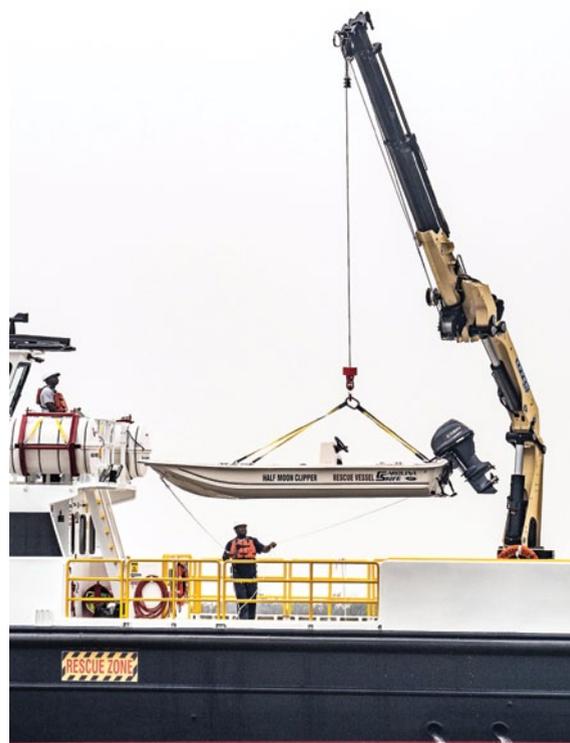
Sams said HAL conducted a worldwide search with numerous brokers to see if they could find an existing boat that could be retrofitted to meet the operator's requirements. "It's not as if these types of vessels are growing on trees," he said.

The search came up empty and it was decided to go with a new purpose-

built vessel. "We spoke to a number of yards and went through the RFQ (request for quotation) process and ended up at Breaux," Sams said. "We looked at their history and their builds and were very pleased with what we saw, and are very pleased to this day."

Aside from quality construction, the new vessel had to meet very particular specifications determined by geography and mission requirements. For starters, the marina at *Half Moon Clipper's* home port of Princess Cays restricted the length of the newbuild to 105 feet. Half Moon Cay presented more problems.

"We were restricted on the design because we had so many constraints getting to the marina at Half Moon Cay," said Larry Bischoff, manager of marine services for Holland America Group. "Our older boat is a triple screw and has operated for 22 years in the islands. So quite a bit of experi-



ence has been gained, leading us to the design of the new boat.”

The quarter-mile channel at Half Moon Cay is carved out of sandstone and has a curve in it. As it happened, 105 feet was determined to be the maximum length for a boat to navigate the corner. “The width of the channel limited us to a safe maximum (beam) of 24 feet and a 6-foot draft,” Bischoff said.

Another design consideration was for *Half Moon Clipper* to have a large aft deck cargo area, equipped with a high-capacity crane for hoisting large bins from a cruise ship to the boat and then to shore. The bins contain



The crew boat has seating for 193 passengers on three levels, above, including the bridge. At left, assistant engineer Quincy Morley kneels with one of the newbuild's three Baudouin 800-hp main engines. The center engine can be shut down to improve fuel economy.

food, beverages, machinery, spare parts and other supplies, all of the provisions and equipment needed to conduct a shore party for cruise ship passengers.

“We wanted to make the vessel comfortable for the crew and employees,” Sams said. That concern led to robust air conditioning, cushioned seating and stability at sea.

Protecting the environment also was a must. “The environment is huge for us, especially the private island (Half Moon Cay) with its gorgeous water,” Sams said. “It would be foolish for us to think of anything but that pristine water. With the run that we do, it’s easy to manage a sealed bilge policy.”

Brannon Breaux traveled to the Bahamas to assess the geography and get a feel for how the new boat would fit into HAL’s operations on the islands. Armed with those impressions and the performance and design features that HAL wanted, the brothers Breaux set to work on the concept and engineering design. Once complete, they passed the drawings and numbers to Mark Pudlo, owner of Seacraft Design in Sturgeon Bay, Wis.

“As with most Breaux Brothers projects, we provided engineering support for what is mostly their design concept,” Pudlo said. “On this one, we developed and drew up the hull and deckhouse structure and performed the stability analysis, while

they developed most of the piping systems and all of the electrical in-house.”

Laying out the access arrangements for passengers on three levels was a challenge, but Pudlo said it worked out well. He added that although *Half Moon Clipper* is a modification of the oil field crew boats Breaux has built, the process and quality control was routine.

“One has to remark on the attention to detail on this boat, though,” Pudlo said, referring to the extra features that were not on the drawings “but which a good boatbuilder just knows to make the boat better.”

The reliability displayed over 22 years of service by the original *Half Moon Clipper*, and the propulsion redundancy inherent in a triple-screw boat, led to HAL’s decision to repeat the power train configuration. The smaller engines also opened up engine room space, and the option to maneuver with the center engine shut down promised better fuel economy.

The new crew boat is powered by three Baudouin 8M26.2 P2 800-hp main engines turning ZF 40-by-38-inch propellers through ZF 2000 reduction gears. The two auxiliary generators are Baudouin 4W105S 100-kW gensets.

Baudouin propulsion provides some advantages for HAL’s operations in the Bahamas, not the least of which is the support provided by south

Florida distributor Motor-Services Hugo Stamp Inc. “We have had a very long relationship with them, and service and support are critical to a remote island operation,” Bischoff said.

He added that simplicity of repair and maintenance of the engines was a key factor in choosing Baudouin, as was the mechanical fuel injection option, which simplifies upkeep in HAL’s island location.

The company’s Bahamas fleet captain, Clement Thomas, piloted the newbuild down Bayou Teche from Breaux Brothers in Loreauville to Port Fourchon during a strong February storm.

“I like the way she handles, especially in heavy weather,” he said. “We got a lot of that last night, a 2- to 3-knot current and headwind of 25 knots. She rode well and made 19 knots.”

Thomas said HAL’s work on the

islands is evolving and the operator needed a larger boat. “This is really a great design because she handles so well,” he said. “And the number of passenger seats has gone from 85 in the old boat to 190. You can’t beat that.”

Being a day boat, what normally would be accommodations space was given over to passenger seating. The aft deck area for supplies and the crane buttress the vessel’s role as a supply boat for cruise ships.

The crew makes the cay-to-cay run an average of five days per week. But from October to April, they often make six or seven runs per week.

“We just came off 21 straight days of making the run,” Thomas said in March. “And for the first time in history, we serviced two Carnival cruise ships in one day. I appreciate that the HAL team had the confidence in us that we could do it. The boat gets a lot of work. Maintenance is a big deal.

In the past seven years, we’ve gone from 155 runs per year to well over 255 runs.”

During sea trials in February in the Gulf of Mexico, *Half Moon Clipper* made 22 knots light boat and 17 to 19 knots loaded in severe storms and 3.5-foot seas.

“She is very solid and very quiet and very smooth,” Brannon Breaux said. “It was like we were riding in a Suburban with only the AC vent noise.” On the delivery voyage to the Bahamas, Breaux said *Half Moon Clipper* took 15-foot seas without any problem.

Bischoff reported that the boat’s first few months in service have been a success. “As designed, she mates up well with the cruise ships, and easily loads and offloads the food and beverage bins with her Effer crane,” he said. “Her delivery to the Bahamas went smooth as silk, and she arrived earlier than planned.”

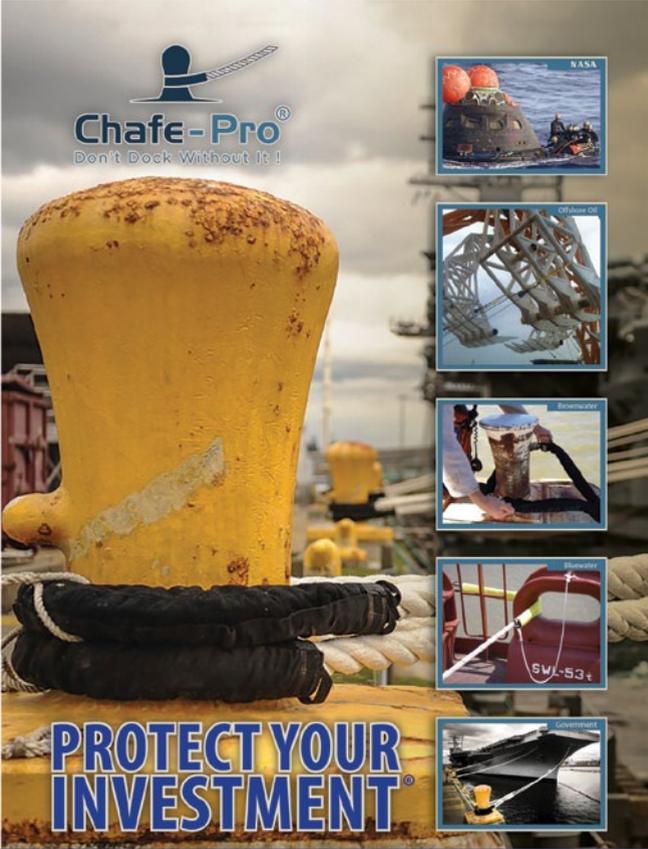
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BRAZOS PILOT

Texas pilots ‘all in’ with bigger, faster, safer launch

Story and photos by Brian Gauvin

On two ride-alongs aboard *Brazos Pilot*, rough sea conditions did not hinder the new pilot boat from making the sea buoy at the entrance to the harbor at Freeport, Texas.

The first trip, in 6- to 8-foot seas on a frosty January day, was to deliver a pilot, Capt. Matthew Krohn, to the containership *Bomar Resolute*. The second ride, in 5- to 6-foot seas on a warm but windy day in late April, was to board Capt. Ross Coviello on the containership *Letavia*.

The 64-by-19-foot *Brazos Pilot* was designed and built to operate in such conditions.

“The boat’s seaworthiness is a big improvement,” said Jack Stanley of the Brazos Pilots Association, the boat’s operator on the January ride.

“It’s a bigger, heavier boat than the previous one and has more freeboard, and the visibility is tremendous.”

Stanley added that in the past they would operate in similar conditions with the 36-year-old *Freeport Pilot*, but the trip would take much longer and be much rougher.

Capt. Billy Burns, president of the pilots association, explained the motivation for acquiring the new Defiant-class vessel, designed and built by Metal Shark Boats at its Franklin, La., shipyard.

“We started with the question, how do we bring oil, car carriers, containers, whatever, into Texas waters safely for the cargo, the mariners and the environment?” he said. “That’s job safety. Then there is the personal safety of the boat operators and pilots.”



Brazos Pilot churns back to port, top, after dropping off a pilot aboard the containership *Letavia* in Freeport, Texas. The 64-foot launch from Metal Shark Boats is a marked upgrade for the Brazos Pilots Association. Above, the boat stays firmly on station as Capt. Ross Coviello climbs the pilot ladder to the main cargo deck of *Letavia*.



The launch's boarding platform is raised three feet from the foredeck to keep the pilots out of spray in heavy weather.

Transferring a pilot with the 45-foot, single-screw *Freeport Pilot*, with less than 400 hp, was accomplished at 6 knots. The 1,606-hp *Brazos Pilot* performs the operation at 10 knots.

The new boat is 19 feet longer, 6 feet wider and three times heavier than *Freeport Pilot*, resulting in improved stability and seaworthiness.

The increase in speed adds a

degree of safety when transferring pilots on and off the larger, faster ships, and a higher gunwale takes on bigger seas. For more safety and comfort, the boarding platform is raised off the foredeck by three feet to get the pilot up out of the spray during transfers.

Burns explained that the platform was fitted at the pivot point of the boat just ahead of the pilothouse, the closest and safest transfer point against a ship's hull.

Brazos Pilot, powered by twin 803-hp C18 Caterpillar mains, Twin Disc gears and five-blade Michigan Wheel propellers, makes 28 knots, but the boat was designed for power, not speed.

"Although nice to have, our real design criterion was the ability of the boat to break powerful suctions that large ships generate near their stern," Burns said. "These suctions are very dangerous to pilot boats, and many pilot boats have been sunk because they lacked the power to break away from the ship."

He also said the boat was designed with features to allow it to operate in heavier seas. The gunwales are raised, the bow flare is deeper and the freeboard is taller than on its predecessor.

"The 64 Defiant Pilot employs a very stout, extensively proven deep-V hull for stable operation in heavy seas," said Carl Wegener, vice president of commercial sales for Metal Shark. "The entire vessel has been thoroughly optimized for pilots, with an emphasis on comfort, convenience, efficiency and safety."

"She has the capability of a big boat to shoulder through the sea," said *Brazos Pilot* operator William Lowery on the April run.

"She cuts through the waves and holds her designed speed in 5- to 7-foot seas," Krohn said. "She's able to take the seas a lot better than the older boat because she is heavier and has a 3-foot-higher deck. She's also a lot drier and quieter. The acoustics

BRAZOS PILOT

SPECIFICATIONS

OWNER/OPERATOR: Brazos Pilots Association, Freeport, Texas

DESIGNER/BUILDER: Metal Shark, Jeanerette, La., and Donald L. Blount and Associates, Chesapeake, Va./Metal Shark

DIMENSIONS: L: 64' B: 19' D: 4.5'

MISSION: Pilot boat

CREW SIZE: Seats six, sleeps two

HULL

- Aluminum monohull

PROPULSION

- (2) Caterpillar C18 diesel engines, 803 hp each at 2,100 rpm
- Twin Disc MGX-5146SC gears, direct mount, electric shift
- (2) Michigan Wheel five-blade nibral propellers
- Kohler 40-kW genset
- Vessel speed: 28 knots

CAPACITIES

- Fuel: 1,200 gallons
- Water: 55 gallons
- Lube oil: 60 gallons

NAVIGATION/COMMUNICATIONS

- Furuno NavNet TZtouch system, radar and

chartplotter interfaced with multifunction displays

- Furuno compass and AIS
- Furuno E-nav software
- FLIR M-Series 625CS thermal imaging camera system
- (2) Engine room CCTV cameras
- (2) Furuno FM8900S VHF radios
- (2) Standard Horizon GX2000S VHF radios

ADDITIONAL EQUIPMENT

- (5) Jlebroc Bandera shock-mitigating seats
- Fireboy-Xintex GA2 fire suppression system with HFC-227 agent
- KVH TracVision TV3 satellite television system

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A pair of Caterpillar C18 diesels give Brazos Pilot a top speed of 28 knots and the power to break stem suction when maneuvering alongside ships.

deaden the outside sounds, making it easier to communicate in the cabin.”

Five Llebroc Bandera shock-mitigating seats, which soften the blows in heavy seas, each have a footrest, cupholder, gooseneck light and 110-volt USB plug for passenger comfort and convenience. There is also a settee and table at the rear of the cabin.

The bridge console consists of a suite of Furuno navigation electronics. The GPS, radar, depth sounder and AIS are accessed primarily through three 19-inch Furuno multifunction displays. The large touch-screen panels also display real-time video from a FLIR thermal imaging camera, as well

as live onboard video feeds from two CCTV cameras installed in the engine room.

The gyrostabilized FLIR camera is a great aid and safety feature for the pilots at night. “Night operations have always been more dangerous,” Burns said. “If a pilot were lost in the water, the boat could only use spotlights to find him. Now, using the FLIR camera, you can spot a man in the water at night from two miles away.”

The large wheelhouse has 360-degree visibility as well as skylights for a direct line of sight to the pilot ladder. Metal Shark installed its signature “pillarless glass” and reverse-raked windows to minimize glare and improve visibility.

The accommodations include a galley and berth area with two bunk beds, drawer storage, and an LED



The newbuild's attributes quickly became apparent to its operators. “She has the capability of a big boat to shoulder through the sea,” says Capt. William Lowery, shown in the boat's spacious wheelhouse.

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Metal Shark's "pillarless glass," reverse-raked windows and skylights provide 360-degree visibility and a direct line of sight to the pilot ladder.

television with Blu-ray player and KVH satellite TV system. The finishes and aesthetics of the interior are intended to create a bright, airy and comfortable atmosphere for crews on board for extended periods.

Outside, *Brazos Pilot* has fully flush non-skid decks, a non-skid boarding platform, and handrails placed for easy

reach at all times. There is also a low-level LED light pathway for safety during nighttime operations.

On the aft deck, the boat is outfitted with a secondary control station, complete with steering and throttle controls and a set of digital displays, for close-quarters operations.

"Our port and the maritime indus-

try have changed, grown and evolved over the past four decades in ways we could not have imagined then," Burns said. In lockstep, mission requirements for pilot boats have evolved, too.

Currently the Freeport Channel is being deepened and extended from three to five miles out to accommodate larger ships. The expectation is for the channel to reach from eight to 10 miles offshore in the next eight years.

"*Freeport Pilot* was never designed to do what we require out of a pilot boat today," Burns said. "To compare the two boats is like comparing a 1920 Ford Model T with a 2019 Ford F-250."

"Transferring personnel on and off huge ships at sea is a dangerous job," he added. "It's important for pilot associations to have the safest equipment possible. The pilot boat is the platform on which all other safety systems are built." ●

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CREW/SUPPLY BOATS

Courtesy SEACOR Marine

Deliveries of American-built OSVs sparse as vessel glut persists

by Susan Buchanan

U.S. shipyards will produce only a few offshore supply vessels (OSVs), which are considered the lifeline to oil and gas rigs, this year. Vessel owners are trimming a surplus that emerged after oil prices sank in late 2014 and drilling declined. Since then, inland shale output has kept a lid on oil prices.

Several vessel owners along the Gulf of Mexico have sprung out of bankruptcy protection, however, and with belt tightening they're staying afloat. Oil producers remain committed to offshore investments, and the Trump admin-

istration supports an expansion in drilling.

The Gulf utilization rate for large platform supply vessels (PSVs), including those that are laid up, was 56 percent in July, according to Richard Sanchez, senior marine analyst at IHS Markit in Houston. The PSV glut is gradually shrinking as assets are moved from the Gulf to Trinidad, Mexico and Guyana. But Gulf vessel usage is below 50 percent when a wide range of offshore boats is considered.

The Gulf's oil and gas hub, Port Fourchon in Louisiana, is somewhat busier than last year, port director Chett Chi-

asson said in July. "It can and should get better, with what we hope are continued increases in rig counts," he said. "We'd really like to see 35 rigs or so drilling in the GOM." The Gulf rig count was 26 in late August versus 16 a year earlier.

In February, vessel operator SEACOR Marine in Houston took delivery of the 221-foot *SEACOR Totonaca* from **Master Boat Builders** in Bayou La Batre, Ala. The OSV is now working in West Africa. In January, SEACOR received the 194-foot *Libby L. McCall*, a fast support vessel, from **Gulf Craft** in Franklin, La. It is the third in a series

of Express Plus-class FSVs built for the operator by Gulf Craft.

"*SEACOR Totonaca* has large cargo capacities for a boat of its size class, especially bulk cement capacity," said SEACOR President John Gellert. "*Libby McCall* is designed for speed and passenger comfort."

Gellert said his company also has contracted with Gulf Craft to build 200-foot FSVs, including *Alexandra* for March

Very few newbuilds of any type hit the water last year to support offshore drilling activity in the Gulf of Mexico. One of the most prominent deliveries, the 221-foot SEACOR Totonaca from Master Boat Builders, is now working in West Africa.

Oceaneering International took delivery of Ocean Evolution, a 353-foot multipurpose support vessel, from BAE Systems Southeast Alabama in April. The vessel was ordered in 2013 when the oil market was still strong.

2020 delivery, a boat for late 2020 and another for September 2021.

“(Overall) the newbuild market for offshore in the U.S. remains gloomy,” Gellert said. “But we cater to offshore oil and gas and to wind power worldwide. We can send vessels to work anywhere. We’re a bit optimistic about demand for newbuilds in wind.” SEACOR and other Gulf firms are supplying boats to support offshore wind facilities on the U.S. East Coast.

New Orleans-based **Harvey Gulf International Marine**, with more than 50 offshore



Courtesy Oceaneering International

vessels, emerged from Chapter 11 proceedings in July 2018. Shane Guidry serves as chairman of its new board of directors. “I’m not seeing a recovery in the U.S. GOM until 2021 or 2022,” Guidry said in

July. In addition to the United States, “we now have vessels contracted into Mexico, Guyana, Trinidad, Suriname and Nigeria. Plus we’ll contract very soon into Angola and are looking to contract into

Gabon, Brazil, the U.K. and Australia.”

As for newbuilds, “We only have my ATB delivering next year, of which Harvey owns 30 percent and I own 70 percent,” Guidry said. The ATB

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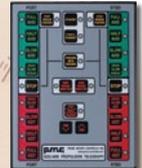
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Gulf Craft delivered Libby L. McCall, a 194-foot fast support vessel, to SEACOR Marine in January. The third boat in the Express Plus class features five Cummins QSK60 diesels driving HamiltonJet waterjets. Firefighting is handled by a pair of FFS pumps feeding two remote-controlled monitors at the stern.



Courtesy Incat Crowther/Gulf Craft

“Considerable progress has been made toward meeting our ambitious goal of selling or recycling 40 additional vessels by the end of the year,” Tidewater President and CEO John Rynd said in May.

On March 31, Tidewater owned 257 vessels, 85 of which were stacked. In the Americas region, 32 of its 71 vessels were stacked. When asked in July if any more vessels might be acquired this

tug is *Q-Ocean Service*, being built by **VT Halter Marine**. It will work the Eastern seaboard for Shell under a 15-year charter, he said, delivering LNG to ports for cruise ships.

Quality Liquefied Natural Gas Transport LLC, or Q-LNG, is a joint venture between Guidry and Harvey Gulf International Marine. Harvey Gulf introduced North America’s first LNG-powered offshore supply vessels in 2015.

In mid-June of this year, Harvey Gulf signed one-year charters in Nigeria for immediate placement of two U.S.-flag, 3,250-dwt PSVs able to work in shallow ports. The company also expects to send two deck vessels to West Africa in the third quarter.

Harvey Gulf is in talks to bring multipurpose support vessels (MPSVs) and dual-fuel PSVs to the North Sea, Brazil and Australia later this year and next, along with fast support intervention vessels to Angola.

In Galliano, La., family-run **Edison Chouest Offshore** (ECO) operates a fleet of over 200 offshore vessels that are in service worldwide. The company owns four shipyards along the Gulf Coast and one in Brazil.

ECO’s **Tampa Ship** in



Florida is building a 312-foot PSV (Hull 298) for ECO affiliate C-Innovation, a marine services group in Mandeville, La., according to David Sheetz, the affiliate’s subsea manager in Houston. Asked in July if anything else is being built for C-Innovation, he said, “No, not in this market.”

In June, C-Innovation said it was awarded a BP contract for well intervention in the Gulf. Construction and intervention vessels *Island Venture* and *Island Performer* will be used in the deepwater operation, which started during the summer. “This contract complements the multiyear IMR (inspection, maintenance and repair) agreement currently in place with BP and

other operators in the Gulf,” Sheetz said.

Bollinger Marine Fabricators in Amelia, La., delivered the 270-foot PSV *Lucy* to ECO’s Nautical Solutions in April for its U.S. offshore fleet. Bollinger is currently building the 270-foot OSV *Millie* for ECO. The company bought Bollinger’s assets in late 2014.

Tidewater Inc. in Houston exited bankruptcy in mid-2017 and merged with Houston-based GulfMark Offshore last November, forming the world’s largest OSV operator. Tidewater is now disposing of vessels, not acquiring them. In May, Tidewater reported a net loss of \$21.7 million for the first three months of the year. The company disposed of 16 vessels in the quarter.

year, Matthew Mancheski, Tidewater’s investor relations vice president, responded that the company’s fleet “is fluid. If something attractive becomes available, we might consider it.”

“There are strong indications that exploration and production spending offshore will increase this year, driving steadily improving drilling activity,” Rynd said in May. Tidewater, with OSV leadership in almost every global region, “is best positioned to benefit from the upside as the market continues to improve through 2019,” he said.

BAE Systems Southeast Alabama in Mobile delivered the 353-foot multipurpose support vessel *Ocean Evolution* to Houston-based Oceaneer-



Brian Gawwin photo

Breaux Brothers in Loreauville, La., a longtime builder of quality crew boats, has had to diversify in the wake of the oil downturn in the Gulf of Mexico. In early August the yard was working on Robert H., a 61-foot excursion vessel for Wendella Sightseeing in Chicago.

ing International in April. The boat was ordered in the second half of 2013, before offshore oil and gas activity peaked in 2014, said Mark Peterson, investor relations vice president at Oceaneering.

“It was ordered when it made sense for us to build, versus chartering a vessel,” he said. “The offshore market has declined significantly since then, and the current supply of vessels is more than enough to handle demand.”

Oceaneering doesn’t plan to take any more deliveries in the next two years. But when asked if demand for subsea construction and intervention vessels is likely to grow over the next five years, Peterson said yes.

“The economics of offshore oil and gas developments have become competitive with onshore or shale again,” he said. “A combination of stabilized commodity prices, with Brent (crude oil) in the \$55 to \$65 a barrel range, lower break-even prices for offshore developments, and larger potential oil-and-gas reserves offshore have led to increasing activity.”

“Most researchers expect offshore activity to increase

modestly over the medium term, and we agree,” Peterson added. “While that’s helpful to vessel utilization, it isn’t likely to result in a lot of new building, which would require sustained higher levels of utilization.”

Hornbeck Offshore Services in Covington, La., reported a \$36.6 million net loss for the first quarter of 2019. When March ended, the company owned 66 new-generation OSVs and eight MPSVs. An average of 36 new-generation OSVs and two MPSVs were projected to be stacked during fiscal 2019. Hornbeck provides technologically advanced offshore vessels to service the Gulf and Latin America. Its build orders were overextended after oil prices dropped in 2014, but the company has

used debt restructuring to stave off bankruptcy.

At **Otto Candies** in Des Allemands, La., company Vice Chairman Otto Candies III echoed the near-term views of other Gulf shipyard executives. “I don’t see anything currently that would lead me to expect dramatic improvement in the GOM OSV market in the next couple of years,” he said. “We have no plans now to deliver new supply vessels this year or in the next two years. It would take something drastic in the market for that to change.”

New uses are being found for some OSVs. **Thoma-Sea Marine Constructors** was awarded a Navy contract in May to buy an OSV and convert it to an Atlantic Undersea Test and Evaluation Center

range support vessel, or ARSV. The work will be done at the company’s yard in Lockport, La., and should be complete by January.

In the Gulf crew boat market, “Rentals are picking up and day rates are improving a little,” Roy Breaux Jr., president of **Breaux’s Bay Craft** in Loreauville, La., said in July. His yard delivered the 202-foot all-aluminum *Judith Ann* to Tobias Inc. in April. “It’s the sister of the 202-foot *Big P*, that we delivered to Crewboats Inc. in 2016,” Breaux said. “These vessels take workers on trips of four to five hours out to platforms in the Gulf and carry supplies and water.

Breaux’s Bay Craft and two other crew boat builders in Louisiana’s Bayou Teche area, Gulf Craft and **Breaux Brothers**, are diversified to stay busy. Gulf Craft has built four boats recently, and in February Breaux Brothers in Loreauville christened a 193-passenger vessel, *Half Moon Clipper*, catering to Bahamas beach excursions for Carnival Corp. (see profile on page 30).

Meanwhile at Port Fourchon, its 80 tenants hold 135 leases, and all waterfront rentals are intact from a year ago, Chett Chiasson said. A 20 percent discount on lease rates that began in April 2015 continues.

As for the future, “2025 is a bit far away for a strong opinion, but the hope is that by then things will pick up, and that through scrapping and attrition of older stacked vessels, some supply-demand balance will return,” Candies said. “The best hope for OSVs is an uptick in the (oil) market, combined with further scrapping and permanent retirement of currently stacked vessels.”



Brian Gawwin photo

The torches were still lit during the summer at Breaux Brothers, but offshore order books were empty at many shipyards along the Gulf Coast.



FERRIES/EXCURSION

Commuter ferry growth drives wave of construction

by Casey Conley

Ferry operators on all U.S. coasts have expanded their fleets over the past year with sleek, cleaner-running vessels that meet the rising demand for new commuting options, particularly in the largest cities.

Similar advances in engine technology have reached the excursion boat sector, where sightseeing and cruise vessels are now equipped with EPA Tier 4 engines. Taken together, these ferry and excursion projects helped drive construction at smaller yards and those specializing in aluminum vessels.

FERRIES

San Francisco's Water Emergency Transportation Authority (WETA) led

the way in 2019 with three ferry deliveries since Jan. 1. *Pyxis*, profiled on page 12, became the first Tier 4 passenger ferry to operate in the U.S., followed by sister ship *Vela* five months later. **Dakota Creek Industries**

built the 143-foot, 445-passenger ferries based on plans from **Advanced Multi-hull Designs** of Australia.

Propulsion comes from twin 3,433-hp MTU 16V 4000 M65 engines powering HamiltonJet waterjets

through ZF gearboxes. The ferries cruise at 34 knots and are capable of 38 knots light. The third ferry in the class is expected to leave Dakota Creek's yard in Anacortes, Wash., early next year.

WETA's third delivery last year, *Carina*, also has Tier 4 equivalent emissions technology thanks to exhaust aftertreatment on a slightly smaller 135-foot,

All American Marine delivered the 78-foot Reliance, above, to Kitsap Transit in Washington in April. The fast ferry's Teknikraft hull design features a low-wake energy signature. The Vigor-built Tazlina, right, joined the Alaska State Ferry system in mid-2018, nine years after state funding was approved. The new transport is a native: It was built at Vigor's Ketchikan yard.



Top photo: AAM/Right: Vigor

St. Johns Ship Building

Multiple Ferries Currently Under Construction



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400-passenger platform. Seattle-based **Vigor** built *Carina* and its three Hydrus-class siblings using an **Incat Crowther** design. Propulsion comes from twin 1,950-hp MTU 16V 4000 M64 engines paired with ZF

362-foot vessel will feature the same efficient hull form as the four existing Olympic-class vessels but is slated to have a hybrid propulsion system to reduce maintenance and emissions. Vigor expects to begin con-

percent over the life of the ferry compared to existing Olympic-class ferries. *Suquamish*, the fourth vessel in the initial four-boat order, left Vigor in July 2018 and entered service less than three months later.

three 320-by-70-foot Ollis-class ferries ordered by Staten Island Ferry. The vessels will be powered by four EMD 12-710 Tier 4 engines generating a total of 9,980 hp. Two engines will be arrayed at each end, each

Julia Leigh is the second high-speed passenger ferry built by Gladding-Hearn for Rhode Island Fast Ferry. The 113-foot aluminum catamaran has Naiad Dynamics trim tabs and Incat Crowther's "S" bow hulls to smooth the ride between the mainland and Martha's Vineyard.



gears turning conventional propellers. The four ferries in the class can run on B5 biodiesel and are capable of 27 knots during regular service.

Farther up the coast, Washington State Ferries received funding in 2019 for a fifth Olympic-class ferry to be built by Vigor. The

construction late in 2020, and delivery is estimated for late 2022.

Additional details on the project, including the type of hybrid system and the cost, won't be available until plans are finalized. However, the hybrid propulsion package is projected to reduce emissions by 94

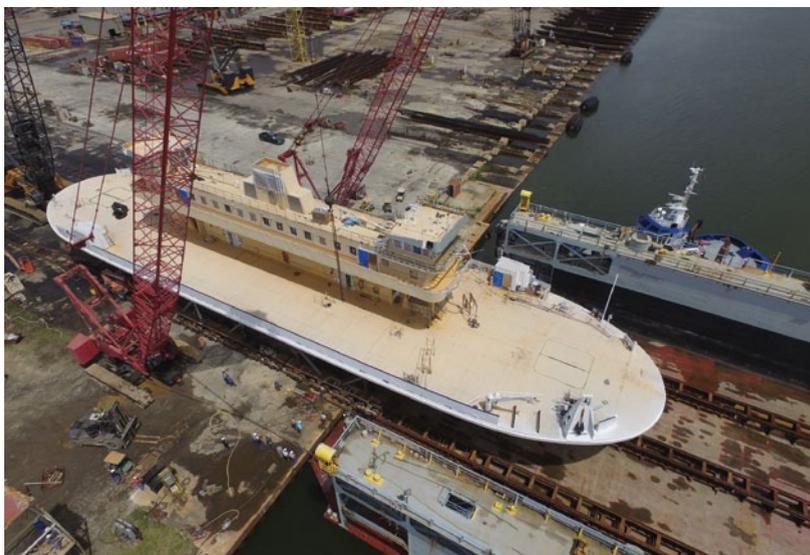
The existing Olympic-class ferries can accommodate 1,500 passengers and 144 vehicles on two decks. Service speed for the four vessels powered by twin 3,000-hp EMD 12-710 engines is 17 knots.

Crews at **Eastern Shipbuilding** in Panama City, Fla., continued work on

driving a Voith Schneider propeller through Reintjes DUP 3000P combining reduction gears.

The ships, capable of transporting 4,500 passengers, were designed by **Elliott Bay Design Group** of Seattle. The lead vessel in the series, *Staff Sgt. Michael Ollis*, was originally scheduled for delivery in late 2019, followed by *Sandy Ground* in mid-2020. However, both were damaged during Hurricane Michael last fall and the construction timetable has not been updated.

VT Halter Marine delivered the 270-by-65-foot *Powhatan* for the Virginia Department of Transportation. The Jamestown-Scotland Ferry Service in Surry County, Va., operates the vessel, which has space for 70 cars or 14 trucks and up to 499 passengers.



The 270-foot Powhatan, shown under construction in 2018 at VT Halter Marine in Pascagoula, Miss., was delivered in late August to the Virginia Department of Transportation. The double-ended, steel-hull ferry can carry up to 70 vehicles and 499 passengers for the Jamestown-Scotland Ferry Service.

Courtesy VT Halter Marine



Courtesy Southwest Shipyard LP

Powhatan has twin Caterpillar 3512C Tier 3 engines generating 1,340 hp each paired with a Voith Schneider R21 drive unit installed at the bow and stern. Electrical power is provided by three John Deere 6068 gensets putting out 150 kW each and a John Deere 4045 emergency genset rated for 99 kW. Furuno supplied the navigation electronics suite, and Icom delivered the VHF radios. The alarm system is from Fairwinds Automation.

On the Kitsap Peninsula in Washington state, Kitsap Transit added three new fast ferries with clean-running technology. The most innovative is the 70-foot hybrid-electric catamaran *Waterman*, which is the first hybrid ferry operating in the Sound, according to builder **All American Marine** of Bellingham, Wash. **Glosten** of Seattle designed the ferry.

Waterman can accommodate up to 150 passengers and is used during peak ridership on routes connecting Bremerton, Wash., with the Sinclair Inlet communities of Port Orchard and

Annapolis. The vessel features twin Cummins QSL9 engines generating a combined 820 hp paired with a BAE HybriDrive system turning two 32-inch, fixed-pitch props. The ferry has a top speed of 15 knots and a

“The hybrid system is fully automated, assessing the power loads, both hotel and propulsion loads, and managing (them),” said Matt Mullett, All American Marine’s president and CEO.

Joseph F. Weber, above, built by Southwest Shipyard LP for the Texas Department of Transportation, is the newest member of the Port Aransas ferry fleet. Gee’s Bend Ferry, right, has been converted to electric propulsion to serve HMS Ferries in Alabama.



Courtesy HMS Ferries

cruising speed of 10 knots.

The hybrid system uses the diesel engines to run generators that charge lithium-ion batteries supplying power to the electric motors. *Waterman* also can run on battery power while loading and unloading passengers. The system will reduce engine hours, fuel consumption, maintenance and emissions.

Waterman’s propulsion system is similar to the one on *Enhydra*, built by All American Marine and delivered last fall for Red and White Fleet of San Francisco. The 600-passenger, battery-electric vessel is the largest excursion boat in North America with a lithium-ion battery hybrid system.

Kitsap Transit’s other

new deliveries from All American Marine feature powerful waterjet propulsion and can hit speeds close to 45 knots. The 78-foot *Reliance* was delivered in April, followed by its nearly identical sibling *Lady Swift* in July. The two vessels are similar to Kitsap Transit’s *Rich Passage I*, which was built in 2011.

The two low-wake aluminum catamarans are built to a **Teknicraft** design and can accommodate 118 passengers. Propulsion comes from Tier 3 Caterpillar C18 engines each generating 803 hp paired with four HamiltonJet HJ403 waterjets. The vessels have a service speed of 37 knots and were designed to run in sensitive areas between Bremerton and downtown Seattle. The

wheelhouses are equipped with Furuno navigation suites.

“*Reliance* is not your typical ferry. It was built to be very lightweight and to fly smoothly through the wake-sensitive zone,” Mullett said after delivery. “This vessel was strictly modeled on the proven hull design, but additional enhancements and modernizations

were added without hampering performance.”

Kitsap Transit, which launched its high-speed service in 2017, isn't finished building new ferries. The operator has two more vessels on order from **Nichols Brothers Boat Builders** of Freeland, Wash., and an

The vessels, designed by Elliott Bay Design Group, can each accommodate 53 cars and 300 passengers.

Propulsion is provided by twin 3,000-hp EMD engines driving Rolls-Royce controllable-pitch propellers and rudders. Three Caterpillar C18 gensets supply ship

Propulsion comes from three 750-hp Cummins engines driving a diesel-electric hybrid system.

In Camden, Ala., HMS Ferries converted *Gee's Bend Ferry* to full electric propulsion. Four 150-hp Baldor electric motors are powered by lithium-ion batteries in

installed charging infrastructure at the docks that can replenish the batteries in less than 30 minutes. Glosten provided the design for the conversion of the 12-year-old ferry.

“The only thing that stayed was the steel,” said Tim Aguirre, general manager of HMS Ferries, adding that the entire propulsion system was replaced during the project. The Coast Guard issued the revamped vessel's certificate of inspection in April.

St. Johns Ship Building in Palatka, Fla., is building four new vehicle ferries for an undisclosed client. The 152-foot vessels, based on a design by Elliott Bay Design Group, will have the capacity for 30 vehicles and 150 passengers. The draft will be 8 feet.

Propulsion will come from Caterpillar C18 engines generating 600 hp, and electrical power will come from Cat C4.4 gensets. Simrad will supply the electronics packages, and Jastram will provide the steering systems. Deliveries will occur through 2020.

NYC Ferry by Hornblower continued its rapid



American Harmony is the second modern river boat serving American Cruise Lines on the Mississippi River. The Tier 4 vessel will be followed in fall 2019 by a third sister from Chesapeake Shipbuilding.

Courtesy American Cruise Lines

option for a third. The 140-foot aluminum catamarans will each accommodate 250 passengers and 26 bicycles. **BMT Nigel Gee** provided the plans.

Propulsion on the vessels, scheduled for delivery in late 2019 and 2020, will come from twin MTU 16V 4000 M65L Tier 4 engines each delivering 3,435 hp to Kamewa S71-4 waterjets through ZF reduction gears. Naiad Dynamics will supply interceptors for an active ride control system. The service speed is estimated at 35 knots.

In Alaska, Vigor finished construction on *Hubbard* for the Alaska State Ferry system. The 280-by-67-foot vessel is a sibling to *Tazlina*, christened in August 2018 at Vigor's Ketchikan shipyard. *Tazlina* has entered service while *Hubbard* remains tied up at the Ketchikan yard.

service power and emergency power.

Along the Gulf of Mexico, the Texas Department of Transportation took delivery of the 161-foot vehicle ferry *Joseph F. Weber*, built by **Southwest Shipyard LP** in Houston. The vessel can carry 28 vehicles and up to 149 passengers between Port Aransas and Aransas Pass.

two banks supplied by Spear Power Systems. The 90-foot ferry can accommodate 18 vehicles on each of its five daily trips from Camden to Boykin, Ala.

The crossing is about 1.5 miles each way across the Alabama River, and *Gee's Bend* makes about 5 knots depending on river conditions. Cochran Marine

Burger Boat is building a pair of all-electric passenger catamarans for Maid of the Mist Niagara Falls, N.Y. The lithium-ion batteries from ABB reportedly will take only seven minutes to recharge between excursions.



Article rendering courtesy Maid of the Mist

expansion in New York City, adding eight 354-passenger ferries since October 2018.

Metal Shark Boats of Jeanerette, La., built seven of the 97-foot ferries, and St. Johns Ship Building launched its first vessel for NYC Ferry in July 2019. The operator's fleet has grown to 27 vessels with a mix of 150-passenger and 354-passenger vessels.

"Since service inception in May of 2017, NYC Ferry has launched six routes, spanning over 60 nautical miles, and carried nearly 12 million passengers, surpassing initial ridership expectations," said Tim O'Brien, director of business development and compliance for NYC Ferry.

The 354-passenger ferries delivered by Metal Shark over the past year include *Golden Narrows*, *Rainbow Cruise*, *Unity*, *Tra-*

Gladding-Hearn Shipbuilding of Somerset, Mass., built the 320-passenger *Julia Leigh* for Rhode Island Fast Ferry. The vessel is a distant sibling to the smaller *Ava Pearl*, the operator's first high-speed ferry delivered by Gladding-Hearn in 2012. Incat Crowther provided the blueprint for *Julia Leigh*, which was completed in July.

The 113-foot aluminum catamaran is powered by two 1,875-hp MTU 12V 4000 M64 engines turning five-blade Brunton nibral propellers through ZF reduction gears. Electrical power comes from two 55-kW gensets supplied by R.A. Mitchell, and Naiad Dynamics built the hydraulic trim-tab motion control system.

Rhode Island Fast Ferry operates the vessel between Quonset Point, northwest of Newport, and Oak Bluffs on



Courtesy Gulf Craft

versity and *Jewel of the Harbor*, while two others are awaiting official names. The vessel built by St. Johns is known as H-90 until it is formally named. Vessels in this class are powered by twin Tier 3 Moteurs Baudouin 12M26.3 P2 engines each generating 1,381 hp. Their top speed is more than 30 knots, with a typical operating speed of about 24 knots.

A whale-watch boat from the bayou? Gulf Craft can do that. The Louisiana shipyard delivered Dolphin XI to Dolphin Fleet of Provincetown, Mass., last spring.

Martha's Vineyard. *Julia Leigh* has a top speed of 29 knots, and the passage usually takes about 95 minutes.

Blount Boats of Warren, R.I., completed the 400-passenger *Isle of Fire* for Fire Island Ferries of Bay Shore, N.Y. The new ferry

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runs from Bay Shore to Fire Island in Great South Bay on Long Island, N.Y.

The 85-by-20-foot aluminum ferry is powered by three John Deere 6135SFM85 650-hp engines turning 34-inch ZF props

transporting 260,000 pounds on deck thanks to twin Caterpillar C18 engines delivering 470 hp each. Those mains, paired with Twin Disc gears, 4-inch Aquamet 22 shafts and four-blade nibrals props, comprise the propulsion train.

on excursions. That is starting to change. **Gulf Craft** of Franklin, La., delivered its first Tier 4 vessel last spring to Dolphin Fleet of Provincetown, Mass.

The 114-by-25-foot *Dolphin XI* can accommodate

tem and Twin Disc supplied the controls. *Dolphin XI* has Icom VHF radios, Furuno navigation electronics and a Hatteland CCTV system.

American Cruise Lines' *American Harmony*, built by **Chesapeake Shipbuilding** of Salisbury, Md., is another new excursion vessel with Tier 4 propulsion. The 345-foot modern riverboat has accommodations for 190 people and is slightly larger than its sister ship *American Song*, completed last year. *American Harmony* conducted its first voyage on the Mississippi River in August.

The ship's propulsion system consists of twin Caterpillar 3512E Tier 4 engines, each generating 1,810 hp, linked to Veth z-drives. It also has two Veth bow thrusters each rated for 544 hp.

American Harmony has six decks, with balconies on every stateroom. Rooms range from 250 square feet for single occupancy to 800-square-foot grand suites and 645-square-foot owner's suites. The center of the ship features a multistory glass atrium. *American Jazz*, the cruise operator's third modern riverboat, is scheduled for launch in fall 2019.

In upstate New York, Maid of the Mist Co. is going



A busy year of deliveries from Armstrong Marine USA included George Ryan, a 46-foot aluminum catamaran for Alaska Tales Whale Watching. Four Suzuki outboards deliver 1,400 hp.

Courtesy Armstrong Marine USA

through ZF 550 reduction gears. Other components include Duramax keel coolers and Garmin and Furuno navigation electronics. The cruising speed is 10 knots.

Blount is currently building ferries for two other New York operators. One is a 101-by-40-foot double-ended ferry for South Ferry Co. serving Shelter Island. *Southern Cross* will be capable of

The yard is also building a passenger ferry for The Trust For Governors Island based on a design from Elliott Bay Design Group.

EXCURSION VESSELS

Tier 4 engine technology is becoming more common across the U.S. commercial fleet, but there still aren't many of these cleaner-running vessels operating

up to 360 people, primarily for whale-watch voyages off Cape Cod. Propulsion comes from three Caterpillar C32 engines turning Michigan Wheel props through Twin Disc reduction gears. The aluminum monohull has a 30-knot service speed.

Electrical power comes from two Cat C4.4 gensets each supplying 75 kW. Skipper supplied the steering sys-

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even further to reduce emissions. The iconic Niagara Falls tour operator is close to replacing its diesel tour boats with two fully electric catamarans. The newbuilds from **Burger Boat Co.** of Manitowoc, Wis., will undergo final outfitting near Niagara Falls.

The new vessels will be the first all-electric passenger boats built in the U.S. ABB supplied the electric systems, according to Maid of the Mist, including the lithium-ion batteries and shoreside charging infrastructure. Charging will reportedly take about seven minutes after each ride.

In addition to a cleaner ride, the vessels will operate more quietly and smoothly, company officials said. That should make a difference for the roughly 1.6 million people who ride Maid of the Mist vessels each year. The company's two existing boats dating to the 1990s will be removed from service once the electric vessels are added to the fleet.

Much of the other excursion boatbuilding activity last year occurred on the West Coast. **Armstrong Marine USA** of Port Angeles, Wash., finished several vessels for operators in Alaska and Hawaii. Chief among the deliveries was the 46-foot aluminum catamaran *George Ryan*, built for Alaska Tales Whale Watching in Juneau.

The 49-passenger boat is powered by four 350-hp Suzuki outboard motors paired with a SeaStar Opti-mus EPS steering system. Garmin supplied navigation electronics for the vessel, which operates with three crewmembers. Twin 300-gallon fuel tanks allow for longer voyages, and passengers can relax in comfort no

matter the season thanks to Webasto heaters.

Another Alaska operator, Kodiak Legends Lodge, took delivery of the 35-by-13-foot landing craft *Sea Wolf*. The vessel has twin Yamaha 300-hp outboards and Garmin navigation electronics, as well as numerous amenities for offshore sport fishermen. *Sea Wolf* has a hydraulic bow door and 10 tie-downs on the aft deck for transporting supplies or all-terrain vehicles.

Capt. Rafe Oliphant described *Sea Wolf* as "a solid vessel (that) will be an outstanding platform for our guests' adventures. We can't wait to get gear on board and go chase some fish."

Armstrong also delivered a 46-foot aluminum high-tunnel catamaran to Chenega Future, a nonprofit arm of the Chenega Tribe based along Alaska's Kenai Peninsula. *OMC* is powered by four Suzuki 350-hp outboards paired with a SeaStar Opti-mus 360 steering system. Garmin supplied the navigation electronics. The vessel has seating for 15, a full head and a bunkroom for four people.

OMC is named for Charles William Selanoff Sr., known as Old Man Charley, a former chief of the Chenega Tribe. The vessel entered service in Prince William Sound soon after delivery in summer 2019.

Armstrong also delivered two 16-passenger dive boats for Aquatic Life Divers of Kailua-Kona, Hawaii. The aluminum high-tunnel catamarans *Amelia* and *Johan* are powered by twin Yamaha 300-hp outboards paired with SeaStar steering and Garmin navigation electronics. The vessels have freshwater showers and storage for diving equipment. •

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FIRE/PILOTS/PATROL

Small fireboats find bigger niche; patrol demand steady

by Casey Conley

Building activity in the fireboat, pilot boat and patrol boat sectors was slow but steady during the past year. Law enforcement agencies in the United States and abroad drove construction of new patrol boats, and fire departments continued to take delivery of smaller, nimble vessels, particularly for use in fresh water. Shipyards on the East Coast, West Coast and Gulf Coast announced projects for new pilot launches.

FIREBOATS

Lake Assault Boats of Superior, Wis., had a busy year, with multiple deliveries and high-profile orders. In February, the East Side Fire District on Lake Coeur d'Alene in Harrison, Idaho, took

delivery of a 32-foot fireboat powered by twin 300-hp Yamaha outboards.

The vessel features a fire pump that can deliver 1,500 gallons per minute powered by a dedicated V-8 engine, and a rooftop Task Force Tips (TFT) monitor

with foam capabilities. The modified deep-V hull form has a 72-inch hydraulically operated bow door, and the wheelhouse is equipped with a thermal imaging camera, sonar, radar and GPS.

The Waco Fire Department in Texas took delivery

last spring of a 26-foot fireboat powered by twin 225-hp Honda outboard motors. Firefighting capabilities include a Hale Attack fire pump capable of 550 gpm driven by a 35-hp engine paired with two TFT portable Hemisphere monitors. Garmin supplied the navigation electronics.

Also this spring, Rabun County Fire Services in Georgia took delivery of a 26-foot fireboat for duty on Lake Rabun. Components include

Gladding-Hearn delivered the 75-foot Emerald Island, above, to the Southwest Alaska Pilots Association in December. The launch features the builder's traditional deep-V hull. The 31-foot Maia Stanton, right, from North River Boats has a pair of Task Force Tips monitors powered by a Darley fire pump and Kodiak Vortec engine.



Top photo: Gladding-Hearn/Right: North River Boats

twin 175-hp Mercury outboards, a 1,250-gpm fire pump paired with a TFT Hurricane monitor, and an advanced navigation electronics suite.

The Gibraltar Fire Department in Wisconsin took delivery in summer 2019 of a 28-foot aluminum fire and rescue vessel. Propulsion comes from twin 300-hp Suzuki outboards, and a portable pump provides firefighting capabilities.

Lake Assault also is building an emergency response craft for the River Rescue Unit in Pittsburgh, Pa. The vessel will have twin 425-hp Yamaha outboards and a 750-gpm Darley fire pump paired with an Elkhart Brass deck monitor. The top speed is projected at 39 knots.

In December, **North**

The 33-foot Bob Annand is now pulling duty for the Canada Border Services Agency. Rosborough Boats of Nova Scotia delivered the 500-hp RHIB in May.

River Boats of Roseburg, Ore., delivered the 31-foot *Maia Stanton* to the Narragansett Fire Department in Rhode Island. The fireboat was named in honor of a 14-year-old girl who drowned in Narragansett Bay while snorkeling in 2015.

A deep-V aluminum hull and a pair of Yamaha 250-hp outboards allow the newbuild to reach speeds of 40 knots. The boat was designed with a bow ramp to enable crewmembers to maneuver a Stokes rescue basket aboard, then get it inside the cabin.

Firefighting power is provided by a Darley HE 500

Courtesy: Canada Border Services Agency



The Oregon Board of Maritime Pilots is seeking qualified applicants for the Columbia River Bar pilotage ground. Applicants must have a least one year sea time as Master on commercial ships over 5,000 GT to apply and two years' sea time to be accepted. The Board will be accepting applications through November 30, 2019. Application and information material are available at this link: <https://www.oregon.gov/puc/bmp/Pages/Forms.aspx>

Contact:

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fire pump coupled to a 130-hp Kodiak Vortec engine. A TFT Tornado monitor is mounted on the bow, and a TFT valve under monitor (VUM) system is at the stern. Both are manually operated.

Moose Boats of Vallejo, Calif., delivered an M2-38 aluminum catamaran fireboat with chemical, biological, radiological and nuclear (CBRN) defense capability to the San Francisco Fire

similar M2-38 catamaran for the Rochester Fire Department in New York. The propulsion system will consist of twin 425-hp Cummins engines, Twin Disc gears and HamiltonJet waterjets. The fire pump will be capable of providing 1,500 gpm to monitors mounted on the roof and along the cockpit.

Metal Shark Boats received an order from the Miami-Dade (Fla.) Fire Res-

The Waco (Texas) Fire Department boosted its emergency capability with a new-build from Lake Assault Boats. A Hale fire pump and two TFT monitors can deliver up to 550 gpm.



Courtesy Lake Assault Boats



Metal Shark will build a new generation of fireboats for the Miami-Dade (Fla.) Fire Rescue Department based on the shipyard's 50 Defiant X platform.

Artist rendering courtesy Metal Shark Boats

Department. Twin 425-hp Cummins QSB6.7 engines are paired with HamiltonJet HJ292 waterjets.

The vessel is equipped with a Hale fire pump that can dispense 1,500 gpm, and the wheelhouse has a Simrad electronics suite that includes radar, side-scanning sonar, AIS and a FLIR camera. Motorola and Icom supplied the communications equipment.

Moose Boats is building a

cue Department for a series of aluminum fireboats based on the Louisiana builder's 50 Defiant X platform. The 50-foot vessels will have twin diesel engines paired with waterjets. The top speed is expected to exceed 45 knots. Deliveries are expected starting in 2020.

Meanwhile, naval architects at **Robert Allan Ltd.** in Vancouver, British Columbia, have developed a crewless fireboat design intended to

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Naval architect Robert Allan Ltd. has added the RALamander 1600 to its lineup for crewless firefighting capability. The 52-foot vessel is designed to attack fires quickly and powerfully without risking injury to crews.

Artist rendering courtesy Robert Allan Ltd.

allow responders to work in closer proximity to dangerous fires.

The 52-foot RALamander 1600 is a cousin to the 65-foot RALamander 2000 developed with **Kongsberg**. The 1600 model has a helm station that allows operators to manually steer toward a fire, then depart the vessel once on scene. The fireboat can then be operated remotely from shore or another nearby vessel.

PILOT BOATS

Gladding-Hearn Shipbuilding has stayed busy building its deep-V pilot launches favored by operators across the U.S. The yard, located in Somerset, Mass., delivered *Emerald Island* to the Southwest Alaska Pilots Association in Homer, Alaska, in December 2018.

The all-aluminum vessel features the hull form developed decades ago by

Ray Hunt to improve performance at high speeds. The 75-by-20-foot launch is powered by two 1,400-hp Cummins QSK38-M1 engines paired with HamiltonJet HM651 waterjets through ZF gearboxes. Electrical power comes from twin Northern Lights gensets each delivering 30 kW. *Emerald Island* has a top speed of 29 knots.

The launch features Humphree interceptors installed at the transom to provide active ride control and automatic trim optimization. The vessel has two staterooms in the forecabin as well as a head, shower and dressing area.

The multizone hydronic heating system also provides air conditioning for the wheelhouse and crew spaces in the forecabin. *Emerald Island* has heated windows, roof, main deck and handrails to improve safety during the long winter months in Alaska.

A hand-held remote allows the crew to control hydraulic rescue davits on the port and starboard sides.

In August, Gladding-Hearn announced another order from the Virginia Pilot Association in Virginia Beach, Va. The 55-foot Chesapeake-class launch will feature Volvo Penta's IPS pod system and Humphree interceptors to improve acceleration and comfort while reducing fuel consumption. The vessel will be the ninth that Gladding-Hearn has built for the Virginia pilots since 1983, and its second in less than three years. The builder delivered the 55-foot *Hampton Roads* in summer 2018.

Twin Volvo Penta D13-700 Tier 3 engines, each producing 700 hp at 2,250 rpm, will provide propulsion. The engines drive IPS 3 pods with two forward-facing, counter-rotating propellers that pull rather than push the vessel

forward. Each pod functions like an azimuthing drive and can rotate up to 27 degrees in each direction to steer the launch.

Volvo Penta also supplied the integrated EVC electronic steering system for the new boat. Twin 12-kW Northern Lights gensets will provide electrical power. The top speed will exceed 32 knots. Delivery is expected next year.

Gladding-Hearn isn't the only American yard building pilot boats. In January, Metal Shark Boats delivered the 64-foot *Brazos Pilot*, built at its yard in Franklin, La., to the Brazos Pilots Association in Freeport, Texas. The vessel, profiled on page 35, is based on Metal Shark's Defiant monohull platform.

Propulsion comes from two Caterpillar C18 Tier 3 engines, each generating 803 hp, turning five-blade nibral propellers through Twin



Courtesy: Moose Boats

The San Francisco Fire Department's new aluminum responder from Moose Boats is powered by a pair of 425-hp Cummins engines driving HamiltonJet water-jets. At the scene of the fire, it can deliver 1,500 gpm.

Disc gears. The launch has a top speed of 28 knots and an efficient cruising speed of 18 knots. Electrical power is provided by a 40-kW Kohler genset.

In April, Seattle-based **Vigor** announced an order from the Port of Los Angeles for two 56-foot, all-aluminum pilot boats. The **Camarc** twin-chine hull form is designed for excellent seakeeping in all weather conditions.

The vessels will be powered by dual Caterpillar C18 Tier 3 engines generating 803 hp each turning five-blade nibral fixed-pitch props through ZF 665A-1 gears. Electrical power will come from a 16-kW Northern Lights genset. The wheelhouse will be equipped with Furuno navigation electronics, and top speed is projected to be 27 knots. Both launches are scheduled for delivery in summer 2020.

PATROL BOATS

In recent years, Metal Shark has positioned itself as an industry leader for patrol boats used by military and law enforcement customers in the United States, and by the nation's allies. The company continued that trend with a four-boat delivery in January to the Dutch Caribbean Coast Guard in Aruba.

The vessels are based on Metal Shark's 38 Defiant aluminum monohull design. Each is powered by twin Cummins QSB6.7 diesels paired with dual-prop, counter-rotating stern drives. Top speed for the newbuilds exceeds 45 knots. Raymarine supplied radar and other navigation electronics, and each comes with a FLIR thermal imaging system. Seating for six is available in Corbin shock-mitigating seats, and a V-berth has overnight accommodations.

Lake Assault Boats deliv-

ered a 34-foot patrol boat to the Wisconsin Department of Natural Resources. The vessel has twin Suzuki outboards with a digital anchor and joystick system, Garmin navigation electronics and a small cabin in the bow. The vessel entered service in June.



Artist rendering courtesy Camarc

Seattle-based Vigor has been awarded a contract to build a pair of 56-foot pilot boats for the Port of Los Angeles. The all-aluminum Camarc hull design will allow the launches to hit a top speed of 27 knots.

Vigor and Fincantieri Marinette Marine partnered on two 44-foot response boats for the Royal Jordanian Navy. The vessels are capable of 42 knots and can operate for up to 24 hours at a time. Notable features include a push knee at the bow and a FLIR night vision camera. Propulsion equipment was not disclosed.

Fincantieri Marinette Marine served as the prime contractor for the project, and Vigor built the vessels in Seattle. The partners have delivered 174 similar vessels to the U.S. Coast Guard, and they have six others on order from the Kingdom of Bahrain.

North of the U.S.-Canadian

border, **Rosborough Boats** of Beechville, Nova Scotia, delivered the 33-foot *Bob Annand* to the Canada Border Services Agency. The rigid-hull inflatable boat (RHIB) is powered by twin 250-hp Mercury outboard engines, with Simrad marine electronics and a FLIR thermal imaging system.

The vessel, delivered in May, is assigned to the agency's Atlantic region. It will be used for year-round duties that include serving as a platform for remotely operated vehicles (ROVs), and facilitating verifications and inspections of small vessels that arrive in the region but can't be accessed by land. •

Metal Shark continued to extend its reach beyond the U.S. in January with a four-boat delivery to the Dutch Caribbean Coast Guard in Aruba. The new patrol boats have seating for six and the power to hit 45 knots.



Courtesy: Metal Shark Boats



RESEARCH/SURVEY

Canada introduces *Sir John Franklin*; RCRVs advance in United States

by Rich Miller

It took more than nine years, but Canada has taken delivery of the first ship constructed under the National Shipbuilding Strategy. The trailblazer is *CCGS Sir John Franklin*, a 208-foot offshore fisheries science vessel (OFSV) that will be followed by two sisters from Vancouver's **Seaspan Shipyards**.

The new ship, delivered in late June, will serve as a research platform for scientists from the Canadian Coast Guard and Fisheries and Oceans Canada. The design by Seaspan includes advanced trawls, wet and dry labs, and a deployable drop keel. The ship will conduct fishing and acoustic surveys to assess marine populations “and the impacts of human activity on fisheries resources and ecosystem health,”

according to the Canadian Coast Guard.

The ship did not have an auspicious beginning. Named for the 19th-century British explorer who led an ill-fated expedition to find the Northwest Passage, Canada's first

OFSV underwent design changes in 2012 after engineers discovered that the ship might be prone to capsizing in heavy seas. The overall length was extended by nearly 28 feet, increasing the ship's displacement by 610 metric tons.

“We immediately set to work with our customer to correct the problem well ahead of the project's production design phase,” Seaspan said in a prepared statement at the time. “The outcome proved the value of

Sir John Franklin, above, is the first ship to enter service under Canada's National Shipbuilding Strategy. The vessel's design was altered in 2012 after concerns were raised about capsizing. The 42-foot catamaran Bob and Betty Beyster, right, from Armstrong Marine USA will serve the Scripps Institution of Oceanography. The boat has a dynamic positioning system for precise control during research deployments.



Top photo: Seaspan/Right: Armstrong Marine USA

collaboration with the Coast Guard.”

In 2015, Fisheries and Oceans Canada said it believed the ship would never be in danger of capsizing due to its initial design characteristics.

“Weight and stability are checked at every stage of the process,” the department said. “The design was stable and met the requirements set forth under shipbuilding regulations from Lloyd’s, our third-party regulator. The design was adjusted as engineering proceeded from the



Armstrong Marine's deliveries in the past year included the 40-foot Nanuq, top, to the University of Alaska Fairbanks College of Fisheries and Ocean Sciences, and the 38-foot Sentry, right, to the Washington State Department of Natural Resources.



basic full design to a blueprint for a fully equipped ship.”

In August 2018, eight months after *Sir John Franklin* was launched, portions of the ship’s hull were rewelded due to defective joints. During sea trials in March 2019, the OFSV reversed into a breakwater in Ogden Point, British Columbia, damaging the ship’s rudder, propeller and port stern quarter. It was repaired using parts from OFSV 3, the future *John Cabot*.

Sir John Franklin was dedicated in late August at the Institute of Ocean Sciences in Sidney, British Columbia, which will serve as the ship’s home port.

OFSV 2, the future *Capt. Jacques Cartier*, was launched in June and will undergo sea trials this fall. *John Cabot* was scheduled to be structurally complete by the end of the summer, according to Seaspan.

All three OFSVs, built on a project budget of 687 million Canadian dollars (\$519 million), will have diesel-electric propulsion systems and a top speed of 13 knots. They are replacing the Canadian Coast Guard ships *Teleost*, *Alfred Needler* and the decommissioned *W.E. Ricker*.

In the United States, government-backed work in the research/survey sector advanced in November 2018 with a keel-laying ceremony

for the nation’s first regional class research vessel (RCRV) at **Gulf Island Shipyards** in Houma, La. The 199-foot *Taani*, a word used by the Siletz Indians meaning “offshore,” is scheduled for delivery to Oregon State University in the spring of 2021.

Oregon State is managing the design and construction of three RCRVs for the National Science Foundation, with as much as \$365 million authorized for the project. In May, Gulf Island laid the keel for the second vessel in the class, *Resolution*, which will be operated by an oceanographic consortium led by the University of Rhode Island. Delivery is

scheduled for January 2022. Construction of the third RCRV is slated to begin in November 2019, with delivery in mid-2022. It will be operated by the University of Southern Mississippi and Louisiana Universities Marine Consortium (LUMCON).

Taani will operate primarily in the Pacific Ocean, *Resolution* primarily in the Atlantic, and RCRV 3 in the Gulf of Mexico, Caribbean Sea and the southeast Atlantic. The ships will have a cruising speed of 11 knots, a maximum speed of 13 knots and a range of more than 5,000 nautical miles. There will be berths aboard each for 16 scientists and 13 crewmembers. Under normal operating conditions, the ships will be able to stay out to sea for 21 days before returning to port for fuel and supplies.

According to Seattle-based designer **Glosten**, the RCRVs will have diesel-electric propulsion, twin z-drives and twin bow thrusters. In addition to flexible laboratory spaces, each ship will be equipped with a suite of over-the-side handling

gear including an articulated A-frame aft; a main crane capable of reaching the entire aft deck; a CTD (conductivity, temperature and depth) launch and recovery system; a below-deck oceanographic traction winch; and a hydrographic winch on the main deck. Electronic equipment will include multibeam sonars, fisheries sonars and an acoustic Doppler current profiler.

“This new class of modern vessels will support future research focused on the physical, chemical, biological and geologic processes in coastal waters,” said Roberta Marinelli, dean of Oregon State’s College of Earth, Ocean and Atmospheric Sciences. “This research is critical to informing strategies for coastal

Artist's rendering courtesy Glasten



resilience, food security and hazard mitigation not only in the Pacific Northwest, but around the world.”

With the political winds in Washington blowing against oceanographic and climate-change research, prospects aren’t favorable for additional federal funding for newbuilds in the sector.

Activity continued on projects already in the pipeline, however, for state and academic entities.

The most notable delivery on this front was the 93-foot *Virginia*, the new flagship of the Virginia Institute of Marine Science (see the profile on page 25). Designed by **JMS Naval**

Resolution is the second regional class research vessel (RCRV) being constructed with funding from the National Science Foundation. Upon delivery in 2022, it will be operated by an oceanographic consortium led by the University of Rhode Island.

Architects and constructed by **Meridien Maritime Repa-ration** of Matane, Quebec, the purpose-built vessel

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will greatly expand the institute's research capabilities in Chesapeake Bay and the mid-Atlantic. *Virginia* replaces the converted crew boat *Bay Eagle* at the head of the fleet.

Other new deliveries in the sector were paced by **Armstrong Marine USA**, which completed research vessels for customers from San Diego to Alaska. The shipyard in Port Angeles, Wash., is an established

power through Volvo Penta IPS drives. *Beyster* has a cruising speed of 25 knots, a top speed of 37 knots and a range of 500 nautical miles. It can accommodate six scientists and a boat operator.

The vessel's scientific equipment includes a sea-floor mapping system, a knuckle-boom crane for deploying autonomous vehicles, a stern A-frame with hydraulic hoist, and a

duty suspension bases to accommodate captain and crew.

Two Cummins QSB6.7 engines deliver a combined 850 hp for a cruising speed of 24 knots and a pursuit speed of 30 knots. An IMTRA bow thruster, Bennett electric trim tabs, Teleflex SeaStar steering and a Garmin electronics suite with autopilot complete the propulsion and navigation package.

plemented with a Furuno SC70 satellite compass.

Nanuq has overnight accommodations for five, a full-service galley and a head. Deck equipment for deploying fishing and oceanographic gear includes a hydraulic A-frame, a davit with a Kinematics pinch hauler, and a stowable dive ladder.

"The boat performed beyond the scientists' expectations," said Capt. Brian Mullaly after *Nanuq's* maiden 11-day voyage in and around Prince William Sound. "Our work had us out in the Gulf of Alaska, but when weather shifted, we were able to travel with ease and quickness to the sound. The boat handled well in rough conditions."

Aluma Marine of Harvey, La., got in on the newbuild action over the summer with the delivery of two shoreline survey boats to New York City's Department of Environmental Protection. The 30-foot *Sea Robin* and *Tide Runner*, which will support the Harbor Monitoring Program across the city's five boroughs, also can be reconfigured for firefighting and law enforcement.

The all-welded aluminum boats are powered by twin 250-hp four-stroke Honda outboards that delivered a top speed of nearly 48 knots during factory sea trials. A Northern Lights 9-kW generator covers power for heating and air conditioning, and each boat also has a Norcold refrigerator.

The Furuno electronics suite includes 36-mile radar, chartplotter, GPS and depth sounder. Icom VHF radios and a Whelen siren/public address system anchor the communications package. •



Courtesy Aluma Marine

New York City's DEP has a new pair of shoreline survey boats by way of Louisiana's Aluma Marine. The 30-foot monohulls can be reconfigured for firefighting or police work if necessary.

aluminum builder that has found a niche in oceanographic work.

In February, Armstrong delivered the 42-foot *Bob and Betty Beyster* to the Scripps Institution of Oceanography at the University of California San Diego. Construction of the vessel was supported by a variety of donors in honor of the late Dr. J. Robert Beyster, founder of Science Applications International Corp. (SAIC), and his widow, Betty.

The catamaran is propelled by a pair of Volvo Penta D11 engines delivering a combined 1,020 horse-

power through Volvo Penta IPS drives. *Beyster* has a cruising speed of 25 knots, a top speed of 37 knots and a range of 500 nautical miles. It can accommodate six scientists and a boat operator.

The vessel's scientific equipment includes a sea-floor mapping system, a knuckle-boom crane for deploying autonomous vehicles, a stern A-frame with hydraulic hoist, and a

hull-mounted transducer for underwater communications. A dynamic positioning system integrates GPS data with propulsion controls to automatically maintain heading and position, enabling precise control of remotely operated vehicles.

Moving farther north, the Washington builder delivered the 40-foot *Nanuq* in July to the University of Alaska Fairbanks College of Fisheries and Ocean Sciences. The aluminum monohull is customized for research and teaching operations from its home port of Seward.

Twin Volvo Penta D6 inboards, each delivering 330 hp, are paired with Aquamatic outdrives to provide a cruising speed of 28 to 32 knots. A Side-Power electric bow thruster and an aft deck joystick station give operators added control during research operations. A Northern Lights 5-kW diesel generator provides auxiliary power. In the wheelhouse, a Garmin/NMEA electronics package is sup-



MEGAYACHTS

Courtesy Christensen Shipyards

New facilities, yard upgrades signal growth in megayachts sector

by Rebecca Cahilly-Taranto

Rebuild, repair, repaint, refit. These seem to be the buzzwords of the year in North America's private megayacht sector. While newbuilds of 100 feet and above plug along at a modest pace, the rejuvenation of older vessels has spurred exponential growth in the marina and refit markets, attracting new yachts to the U.S. and promising to keep the private yachting industry in North America alive and well.

"There are newbuilds being launched and delivered every year, and the global fleet is growing. They need to be maintained, refit and docked somewhere," said Francois van Well, vice president of business development at **Rybovich Superyacht Marina** in West Palm Beach, Fla. "Most of these new yachts are getting

bigger and bigger, which creates an additional amplifier on (the) space and capacity requirement."

Rybovich is part of the growing trend at North American yacht yards that doesn't necessarily concern newbuilds, but rather refit and maintenance facilities, marinas and dockage. In November 2018, the company opened a new facility in Riviera Beach, Fla., and effectively tripled its out-of-water work capacity, offering a floating dry dock, 450-ton Travelift and plans for 21 hard spaces for boats up to 165 feet. An expansion at the West Palm Beach facility added 2,000 linear feet of dockage, all in an effort to respond to customers' increased demand for service facilities for new yachts, whether built in the U.S. or elsewhere, van Well said. Rybovich also has partnered

with Dutch builder **Feadship** to be the exclusive Feadship service provider for the U.S., yet another facet of the industry's approach to encourage cruising and the yachting lifestyle here.

Derecktor Shipyards has added a yacht service and storage yard in Robinhood, Maine, to accompany its facilities in Mamaroneck, N.Y., and Dania, Fla. But it's the new facility in Fort Pierce, Fla., which opened last summer and plans to begin haulouts by late summer 2020, that has people talking. Positioned as "America's first shipyard designed and built specifically for megayachts," Derecktor is aiming to attract vessels exceeding 200 feet and 900 tons. Just inside the Fort Pierce inlet, three nautical miles from the Atlantic, the eight-acre deepwater facility will offer complete

refit and maintenance services as well as a 1,500-ton hoist and 4,000-ton dry dock.

Operating on the Miami River, Florida's oldest shipyard, **RMK Merrill-Stevens**, is nearing completion of a \$30 million renovation. The project includes a new 2,700-ton shiplift and complete rejuvenation of its North Yard and South Yard.

Another Florida company getting in on the yacht action is **Hendry Marine Industries** in Tampa, which recently completed refit work on the 238-foot *Honor*, the yard's first megayacht project. Hendry has made the decision to capitalize on its plum 53-acre location and begin

The 164-foot Jackpot was one of the last vessels to be launched from Christensen Shipyards' facility in Vancouver, Wash. The company has moved operations to a larger yard in Tellico Lake, Tenn., that can build yachts up to 230 feet.



Hendry Marine Industries, long known for its work in commercial and government ship repair, recently completed a refit of the 238-foot megayacht Honor.

Courtesy: Hendry Marine Industries

inviting megayacht owners to consider its facilities, which include four dry docks and the capacity to lift yachts of any size. The nearly mile-long waterfront property is easily accessed without height or draft restrictions.

“The global fleet of yachts is getting larger, both in size and number of vessels, and there are not many facilities, certainly not on Florida’s west coast, that can accommodate them,” said Hal Hendry, special projects manager for Hendry Marine Industries.

Operating from a 65-acre facility — the largest yacht repair yard in the U.S. — **Lauderdale Marine Center (LMC)** in Fort Lauderdale, Fla., has exploded onto the refit scene with a renovation of its own. The facility now

boasts new floating docks, multiple Travelifts with lifting capacities up to 485 tons, and a full complement of refit services from bottom paint to hull modifications. In 2017, LMC became the first foreign trade zone in the U.S., effectively allowing brokers to show and sell foreign-flagged vessels to American buyers on site and eliminating the standard import duty on newbuilds. In 2018, LMC received production authority, which allows for refit and maintenance work on vessels in the foreign trade zone at an exceptional cost savings to owners of foreign-flagged yachts.

Colin Kiley, LMC’s executive vice president, said the heavy investment in new equipment and facilities will continue. “We wouldn’t be

investing over \$35 million if we didn’t feel great about the marine industry right now,” he said. “People are building and buying boats, and there’s a desperate need for space for these boats to get their work done.” Part of LMC’s growth strategy included getting rid of smaller slips in order to accommodate vessels in the 100- to 150-foot range, the company’s target market.

While service yards and marinas are expanding to meet the demand and prepare for more American owners to keep and use their megayachts stateside, new projects from U.S. yacht builders continue at the aforementioned modest pace with one exception — one that concerns once-tabled plans for an impressive con-

struction and marina facility in Tennessee for **Christensen Shipyards**.

Christensen launched the 164-foot *Jackpot* during the summer and as of press time was turning over the partially completed Hull 42 — also 164 feet — to its owner, marking the final launch from the builder’s facility in Vancouver, Wash. The plan to open a large boatbuilding operation on the Tennessee River had been in the

works since 2005. It was stymied by the 2008 recession but revived with gusto recently, with fabrication operations to begin in late 2019. Designed to be one of the largest megayacht construction facilities under a single roof in the world, the 55-acre, climate-controlled building will contain 13 individual bays for constructing yachts up to 230 feet in an array of materials including steel. Also on site in Tellico Lake, Tenn., is a marina accessible from the Gulf of Mexico through a series of locks and dams.

“This is a huge step for us, but also for American yacht building,” said Christensen Chairman Henry Luken. “We can now compete with any builder in the world in both price and quality, and can offer yachts virtually unrestricted in beam.”

Maintaining their stations in the Pacific Northwest, **Delta Marine** in Seattle and composite production builder **Westport Yachts** in Port Angeles, Wash., continue building megayachts for their clients — the former keeping mum on the particulars of its projects and the latter updating *American Ship Review* on the delivery of two 112s and a 164 this year. Hulls 5 and



A 214-foot triple-deck motor yacht is among the new design concepts at Burger Boat in Manitowoc, Wis. The boat’s sleek lines are courtesy of Gregory C. Marshall Naval Architect Ltd.

Courtesy: Burger Boat Co.

6 of Westport's latest model, the 125, will deliver to their owners this year, with Hull 7 in production to deliver by the middle of next year. In 2021, the first Westport 170-footer (replacing the 164-foot model) will deliver to its owner.

In late 2018, family-owned custom builder

Perhaps the most well-rounded example of the current state of the yacht-building industry in North America is **Burger Boat Co.** in Manitowoc, Wis. The yard recently completed its second Burger 48 Cruiser, developed in partnership with Dutch naval architects **Vripack** and featuring an interior by **De**



Courtesy Crescent Custom Yachts

Nordlund quietly launched a 115-foot expedition yacht fisher. Christened *Cazador* and built for experienced owners, the boat has a 3,000-nm range and was the second-largest yacht ever built at the Tacoma, Wash., yard.

Over the border in British Columbia, **Crescent Custom Yachts** will soon launch a new design by **Gregory C. Marshall**. The 117-foot Fast Pilothouse boasts a 24-knot cruising speed and, thanks to twin 2,735-hp MTU engines, tops out at 29 knots. Also in build is another Fast Pilothouse design by Marshall, a 110-footer with classic styling and accommodations for eight that is scheduled for a 2020 launch. Both yachts are being built on spec and are actively seeking buyers, but the yard confirmed it has two additional newbuilds for which details will be announced soon.

Crescent Custom Yachts of British Columbia is developing a 117-foot composite yacht featuring interior and exterior design by Greg Marshall. The launch of the newbuild is scheduled for 2019.

Basto Designs, and it has kept its workforce busy with refit and repair work on a wide variety of yachts and commercial vessels. The yard also has unveiled two stunning yacht concepts at 144 and 214 feet, both designed by Gregory C. Marshall and both a testament to the quality and craftsmanship for which the pedigreed yard is known.

“Our conversations about the Burger 48 Cruiser and larger custom luxury yachts give us optimism about the future,” said Ron Cleveringa, Burger’s vice president of sales and marketing. “Across all markets we are seeing that the love of yachting, and chasing the life of adventure, remains as strong as ever.” •



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Top 50 index

This register lists vessels of interest to professional mariners completed by North American shipyards in the year ended Sept. 1, 2019. In the case of sister vessels built by the same yard, we list only one.

American Harmony, 345'

Cruise ship

Designer/builder: Chesapeake Shipbuilding, Salisbury, Md.
Owner/operator: American Cruise Lines, Guilford, Conn.

Bob Annand, 33'

Patrol boat

Designer/builder: Rosborough Boats, Beechville, Nova Scotia
Owner/operator: Canada Border Services Agency, Halifax, Nova Scotia

Bob and Betty Beyster, 42'

Research vessel

Designer/builder: Armstrong Marine USA, Port Angeles, Wash.

Owner/operator: Scripps Institution of Oceanography, UC San Diego, La Jolla, Calif.

Brazos Pilot, 64'

Pilot boat

Designer/builder: Metal Shark Boats, Jeanerette, La.

Owner/operator: Brazos Pilots Association, Freeport, Texas

Captain Ben Moore, 65'

Hybrid delivery boat

Designer/builder: Incat Crowther, Belrose, Australia/Derecktor Shipyards, Mamaroneck, N.Y.

Owner/operator: Harbor Harvest, Norwalk, Conn.

Carina, 135'

Passenger ferry

Designer/builder: Incat Crowther, Belrose, Australia/Vigor, Seattle, Wash.

Owner/operator: Water Emergency Transportation Authority, San Francisco, Calif.

Casco Bay Cat, 46'

Excursion boat

Designer/builder: Fogg's Boatworks, North Yarmouth, Maine

Owner/operator: Fogg's Boatworks, Portland, Maine

Cazador, 115'

Megayacht

Designer/builder: Ed Monk Jr. and Tim Nolan Marine Design, Port Townsend, Wash./Nordlund Boat Co., Tacoma, Wash.

Owner/operator: Private

CCGS Sir John Franklin, 208'

Offshore fisheries science vessel

Designer/builder: Seaspan Shipyards, North Vancouver, British Columbia

Owner/operator: Canadian Coast Guard, Ottawa, Ontario

Daniel K. Inouye, 850'

Dual-fuel containership

Designer/builder: Philly Shipyard, Philadelphia, Pa.

Owner/operator: Matson Navigation Co., Honolulu, Hawaii

Dolphin XI, 114'

Excursion boat

Designer/builder: Gulf Craft, Franklin, La.

Owner/operator: Dolphin Fleet, Provincetown, Mass.

Emerald Island, 75'

Pilot boat

Designer/builder: Ray Hunt Design, New Bedford, Mass./GladdingHearn Shipbuilding, Somerset, Mass.

Owner/operator: Southwest Alaska Pilots Association, Homer, Alaska

Fireboat 2, 26'

Fire and rescue boat

Designer/builder: Lake Assault Boats, Superior, Wis.

Owner/operator: Waco Fire Department, Waco, Texas

George Ryan, 46'

Excursion boat

Designer/builder: Armstrong Marine USA, Port Angeles, Wash.

Owner/operator: Alaska Tales Whale Watching, Juneau, Alaska

Gitga'at Transporter, 55'

Supply boat

Designer/builder: Adrenalin Marine, Delta, British Columbia

Owner/operator: Gitga'at First Nation, Hartley Bay, British Columbia

Golden Narrows, 97'

Passenger ferry

Designer/builder: Incat Crowther, Belrose, Australia/Metal Shark Boats, Jeanerette, La.

Owner/operator: New York City Economic Development Corp./NYC Ferry/Hornblower, New York, N.Y.

Half Moon Clipper, 105'

Crew boat

Designer/builder: Breaux Brothers Enterprises, Loreauville, La.

Owner/operator: Holland America Line, Seattle, Wash.

Headmaster, 26'

Pumpout boat

Designer/builder: Marine Boatbuilders, Warwick, R.I.

Owner/operator: Friends of Casco Bay, South Portland, Maine

Isle of Fire, 85'

Passenger ferry

Designer/builder: Blount Boats, Warren, R.I.

Owner/operator: Fire Island Ferries, Bay Shore, N.Y.

Jackpot, 164'

Megayacht

Designer/builder: Christensen Shipyards, Vancouver, Wash.

Owner/operator: Private

Johan, 32'

Dive boat

Designer/builder: Armstrong Marine USA, Port Angeles, Wash.

Owner/operator: Aquatic Life Divers, Kailua-Kona, Hawaii

Joseph F. Weber, 161'

Passenger-vehicle ferry

Designer/builder: Elliott Bay Design Group, Seattle, Wash./Southwest Shipyard LP, Houston, Texas

Owner/operator: Texas Department of Transportation, Port Aransas, Texas

J.S. Chatry, 310'

Cutter suction dredger

Designer/builder: C&C Marine and Repair, Belle Chasse, La.

Owner/operator: Weeks Marine, Cranford, N.J.

Judith Ann, 202'

Crew boat

Designer/builder: Breaux's Bay Craft, Loreauville, La.

Owner/operator: Tobias Inc., Erath, La.

Julia Leigh, 113'

Passenger ferry

Designer/builder: Incat Crowther, Belrose, Australia/GladdingHearn Shipbuilding, Somerset, Mass.

Owner/operator: Rhode Island Fast Ferry, North Kingstown, R.I.

Kayak Express, 64'

Excursion boat

Designer/builder: DLBA Naval Architects, Chesapeake, Va./Moran Iron Works, Onaway, Mich.

Owner/operator: Pictured Rocks Kayaking, Munising, Mich.

Libby L. McCall, 194'

Fast support vessel

Designer/builder: Incat Crowther, Belrose, Australia/Gulf Craft, Franklin, La.

Owner/operator: SEACOR Marine, Houma, La.

Lucy, 270'

Platform supply vessel

Designer/builder: Bollinger Shipyards, Amelia, La.

Owner/operator: Nautical Solutions, Cut Off, La.

Maia Stanton, 31'

Fire and rescue boat

Designer/builder: North River Boats, Roseburg, Ore.

Owner/operator: Narragansett Fire Department, Narragansett, R.I.

National Geographic Venture, 238'

Cruise ship

Designer/builder: Jensen Maritime Consultants, Seattle, Wash./Nichols Brothers Boat Builders, Freeland, Wash.

Owner/operator: Lindblad Expeditions, New York, N.Y.

Ocean Evolution, 353'

Multipurpose support vessel

Designer/builder: BAE Systems Southeast Shipyards, Mobile, Ala.

Owner/operator: Oceanering International, Houston, Texas

OMC, 46'

Landing craft

Designer/builder: Armstrong Marine USA, Port Angeles, Wash.

Owner/operator: Chenega Future, Anchorage, Alaska

Patrol Boat 10, 38'

Patrol boat

Designer/builder: Metal Shark Boats, Jeanerette, La.

Owner/operator: Dutch Caribbean Coast Guard, Aruba

Powhatan, 270'

Passenger-vehicle ferry

Designer/builder: VT Halter Marine, Pascagoula, Miss.

Owner/operator: Virginia Department of Transportation/Jamestown-Scotland Ferry Service, Surry, Va.

Pyxis, 143'

Passenger ferry

Designer/builder: Advanced Multihull Designs, Sydney, Australia/Dakota Creek Industries, Anacortes, Wash.

Owner/operator: Water Emergency Transportation Authority, San Francisco, Calif.

RB 1, 38'

Dive and rescue boat

Designer/builder: Moose Boats, Vallejo, Calif.

Owner/operator: San Francisco Fire Department, San Francisco, Calif.

Reliance, 78'

Passenger ferry

Designer/builder: Teknicraft Design, Auckland, New Zealand/All American Marine, Bellingham, Wash.

Owner/operator: Kitsap Transit, Bremerton, Wash.

Rodanthe, 183'

Passenger-vehicle ferry

Designer/builder: Elliott Bay Design Group, Seattle, Wash./Bollinger Shipyards, Amelia, La.

Owner/operator: North Carolina Department of Transportation Ferry Division, Havelock, N.C.

RTA 2, 105'

Passenger ferry

Designer/builder: BMT Designers & Planners, Alexandria, Va./Metal Shark Boats, Jeanerette, La.

Owner/operator: New Orleans Regional Transit Authority, New Orleans, La.

Salish Sea Eclipse, 78'

Excursion boat

Designer/builder: Gregory C. Marshall Naval Architect Ltd., Victoria, British Columbia/ABD Enterprises, North Vancouver, British Columbia

Owner/operator: Prince of Whales, Victoria, British Columbia

SEACOR Totonaca, 221'

Platform supply vessel

Designer/builder: Master Boat

Builders, Bayou La Batre, Ala.

Owner/operator: SEACOR Marine, Houma, La.

Sea Robin, 30'

Survey boat

Designer/builder: Aluma Marine LLC, Harvey, La.

Owner/operator: New York City Department of Environmental Protection

Sea Wolf, 35'

Excursion boat

Designer/builder: Armstrong Marine USA, Port Angeles, Wash.

Owner/operator: Kodiak Legends Lodge, Larsen Bay, Alaska

Sentry, 38'

Dive compliance boat

Designer/builder: Armstrong Marine USA, Port Angeles, Wash.

Owner/operator: Washington State Department of Natural Resources, Olympia, Wash.

Taino, 720'

LNG-powered con-ro

Designer/builder: VT Halter Marine, Pascagoula, Miss.

Owner/operator: Crowley Maritime Corp., Jacksonville, Fla.

Tazlina, 280'

Passenger-vehicle ferry

Designer/builder: Elliott Bay Design Group, Seattle, Wash./Vigor, Seattle, Wash.

Owner/operator: Alaska State Ferry, Ketchikan, Alaska

USCGC Benjamin Bottoms, 154'

Fast response cutter

Designer/builder: Damen Shipyards Group, Gorinchem, Netherlands/Bollinger Shipyards, Lockport, La.

Owner/operator: U.S. Coast Guard, Los Angeles-Long Beach, Calif.

USCGC Midgett, 418'

National security cutter

Designer/builder: Ingalls Shipbuilding, Pascagoula, Miss.

Owner/operator: U.S. Coast Guard, Honolulu, Hawaii

Virginia, 93'

Research vessel

Designer/builder: JMS Naval Architects, Mystic, Conn./Meridian

Maritime Repairation, Matane, Quebec

Owner/operator: Virginia Institute of Marine Science, Gloucester Point, Va.

Waterman, 70'

Hybrid passenger ferry

Designer/builder: Glosten, Seattle, Wash./All American Marine, Bellingham, Wash.

Owner/operator: Kitsap Transit, Bremerton, Wash.

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