Casualties: Captain presumed dead, two rescued after Louisiana fleet boat sinks

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AUTONOMOUS SHIPS and liability: Who takes the blame?

Honolulu tug crews keep pace in paradise

VT HALTER builds on LNG, niche markets

A MARINER'S NOTEBOOK:
Make America's shipyards, merchant marine great again

Contents

Professional Mariner June/July 2019

Towing

Trends & Currents

Correspondence

A Mariner's Notebook

Industry Signals

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Contents

Professional Mariner June/July 2019

Maritime Casualties

Vessels at Work

ON THE COVER

Capt. Evan Williams guides *Enhydra*, Red and White Fleet's new hybrid excursion boat, to the dock on a windy March day on San Francisco Bay. Designed by Teknicraft of New Zealand and built by All American Marine of Bellingham, Wash., the 128-foot newcomer is the largest "green" vessel in the nation's excursion fleet. See story, page 24. Photo by Brian Gauvin

Signals

New funding puts Coast Guard on path to expand icebreaker fleet

The U.S. Coast Guard will receive $675 million to fund construction of the nation's first polar security cutter, or heavy icebreaker, an appropriation that proponents say is long overdue as the only operational ship of its type in the U.S. fleet continues to deteriorate.

In a spending package passed in February, Congress allocated $655 million for the lead vessel in the program, with an additional $20 million to purchase long-lead-time materials for a second cutter. The House of Representatives had canceled funding for the heavy icebreaker program last summer to help fund President Trump's border wall project, according to the U.S. Naval Institute (USNI).

Barry Lane, a Coast Guard spokesman, said an additional $300 million in previously allocated Navy advance procurement funding will go toward the design and construction of the initial polar security cutter. The Coast Guard's proposed budget for fiscal year 2020 identifies another $35 million for management and production of the ships, he added.

U.S. Coast Guard photo

Contractors prepare to exchange the 16-foot-diameter propellers on *Polar Star* while the cutter undergoes repairs at a dry dock in Vallejo, Calif., in June 2018. *Polar Star* is the nation's only heavy icebreaker and one of only two Coast Guard cutters, along with *Healy*, capable of accessing the polar regions.

The Coast Guard has just one operational heavy icebreaker, the 43-year-old *Polar Star*. The ship has experienced a litany of mechanical problems on its recent voyages, including power outages, a failed shaft seal and a fire in February on its annual resupply mission to Antarctica's McMurdo Station.

The new ship funded by Congress "will be capable of operating in extreme polar conditions where continued surface presence is essential to national security, maritime domain awareness, freedom of navigation, and protecting national sovereignty," Lane said.

In its request for design and construction proposals, the Coast Guard established 2023 as the target year for delivery of the first ship. The Coast Guard and Navy are

evaluating the proposals and plan to award a contract this year, Lane said. He could not provide a specific date for when an announcement would be made.

According to Jim Dolbow, editor of The Coast Guardsman's Manual and former member of the USNI editorial board, the need for new icebreakers has existed for well over a decade. The recent funding provided by Congress "gets us on the path of building three more heavy icebreakers and three more medium icebreakers," he said.

Six new icebreakers is the minimum number needed, Dolbow said, noting that Russia currently has a larger icebreaker fleet than the U.S. According to *The National Interest* magazine, Russia has two operational heavy icebreakers, with four more being refitted.

"We have a lot of natural minerals and resources underneath the Arctic Ocean that are U.S. territory, and we need to protect our sovereignty," Dolbow said, referencing the U.S. exclusive economic zone (EEZ).

The United Nations has designated EEZs for Arctic nations, including the U.S. The framework gives countries control over resources up to 200 miles off their coasts, according to the Council on Foreign Relations.

Icebreakers help keep trading lanes open, and new polar security cutters could help the U.S. Navy increase its presence in the Arctic, Dolbow said.

Lane said polar security cutters "will be capable of supporting all identified mission areas, capable of operating in both the Arctic and Antarctic regions and across a spectrum of environmental conditions." But the ships will hold particular significance for national security with respect to the Arctic, Dolbow said.

"There's a lot more traffic up there now than in years past, so we just need to have a presence," he said.

Sam Bojarski

Federal budget includes funds for new Mass. Maritime training ship

For the second year in a row, the federal budget enacted by Congress included $300 million for the Maritime Administration (MarAd) to commission a new training vessel, this one to replace the aging *T/S Kennedy* at Massachusetts Maritime Academy.

The first national security multi-mission vessel (NSMV), funded by the fiscal year 2018 budget, will replace *T/S Empire State VI* at the State University of New York (SUNY) Maritime College. Three more NSMVs will follow for academies in Maine, Texas and California.

"Great Lakes (Maritime Academy) has been a part of the conversation lockstep, but it's their feeling that for the next decade, up there on the fresh water, they're not in the position that they're in need of an NSMV," said Rear Adm. Francis McDonald, president of Mass. Maritime.

The six state maritime academies use the ships to train cadets. In addition, the federal government often assigns the ships to assist with cleanup and recovery efforts following natural disasters.

In 2015, MarAd commissioned a design for the new NSMV class to fulfill these dual roles. A request for proposal (RFP) process was initiated, and the agency expects to choose a vessel construction manager for the project by this summer. Following that, MarAd will award the shipyard contract before the end of the calendar year, with delivery of the first two ships expected in FY 2022 and FY 2023.

"As you can imagine, to say it's strategically very important is an incredible understatement," McDonald said. "The training ship program is the linchpin of the education model we operate under, but we're training on vessels that sometimes don't meet safety standards or current environmental standards, or that aren't representative of what's truly out in the industry today. … This NSMV program will stabilize the training of mariners for the next 40 years in this country."

The average age of ships in the academy fleet is about 38 years old. The 57-year-old *Empire State VI* is the oldest.

The 52-year-old *Kennedy* began life as the break-bulk

U.S. Maritime Administration photo

MarAd's new national security multi-mission vessels (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. Herbert Engineering Corp. of Annapolis, Md., provided the design.

freighter *Velma Lykes*, built at Avondale Industries in New Orleans in 1967. After MarAd acquired the ship in 1985, it served the federal government for almost two decades as *Cape Bon*. That service included several tours to the Persian Gulf in 1991 during Operation Desert Storm.

In 2003, MarAd sent *Cape Bon* to Bender Ship Repair in Mobile, Ala., for the freighter to be converted to a training ship. Renamed *T/S Enterprise*, it was assigned to Mass. Maritime to replace *T/S Patriot State*. Following a $10 million refurbishment in 2009, the vessel was renamed again to honor the Kennedy family.

The six state maritime academies use the training ships for "sea terms" that last between 45 and 90 days. Cadets rotate through onboard classes and laboratory training sessions, learning about ship operations, deck and engine watches, emergency drills and maintenance.

> "The training ship program is the linchpin of the education model we operate under, but we're training on vessels that sometimes don't meet safety standards."
>
> Rear Adm. Francis McDonald, Mass. Maritime Academy

"These vessels are federal vessels at ready reserve status, ready to be deployed for federal use in a matter of days," McDonald said.

Kennedy, joined by ships from SUNY Maritime and Texas Maritime, served in relief efforts after Hurricane Sandy in New York in 2012 and Hurricane Maria in Puerto Rico in 2017. Cadets are not involved in relief missions; the academies excuse staff familiar with vessels from their day jobs, who join crew hired by the government through a maritime contract.

"The six state maritime academies have been working collaboratively with MarAd for over a decade on this (NSMV) project," McDonald said. "With the leadership in Washington right now … we were able to push this over the line and get it rolling."

Chris Bernard

Trump order aims to ease move from military to merchant marine

Maritime industry leaders are pleased with an executive order signed in March by President Trump that is designed to make it easier for veterans to transition from the U.S. military to the merchant marine.

Under the order, all military and training experience will be reviewed to see if it can be used for maritime credentials. Verification of sea service is to be provided no later than one month after discharge. All fees associated with the Transportation Worker Identification Credential (TWIC) will be covered for active-duty personnel, and all fees for license evaluation, issuance and examination will be waived. Costs associated with obtaining credentials are estimated to run as high as $25,000 per veteran.

There is such a shortfall of merchant mariners that it would impede the country's ability to fight a large-scale war with full military mobilization, said Peter Navarro, director of the White House Office of Trade and Manufacturing Policy.

"After just six months, the most powerful country in the world could find itself challenged to supply its overseas military personnel," he said.

In the past several decades, the number of merchant mariners with unlimited oceangoing credentials who have sailed in the past 18 months has fallen below 12,000. The United States could have an expected shortfall of 1,800 qualified mariners in the event of war, according to Mark Buzby, head of the U.S. Maritime Administration (MarAd).

On the industry side, employers are eager to hire veterans. Veterans are ideal employees, according to Matt Woodruff, vice president of public and government affairs at Kirby Corp.

"We recognize that in the maritime industry, and we want to get as many (veterans) as we can, but unfortunately other (employers) have figured it out as well. People fight for these veterans," he said.

Making the transition process easier is crucial. If a service member is about to leave active duty and would like to pursue a career in the maritime industry, "he can just say, 'Send me a TWIC,' then he can walk in and we can commit to him right away. (If) he's a candidate

U.S. Navy photo

Steven Moore, a merchant mariner aboard the hospital ship *USNS Mercy*, signals the oiler *USNS Rappahannock* during a replenishment operation in the Pacific Ocean in May 2018. An executive order by President Trump is designed to make it easier for active-duty service members to become civilian mariners.

for us, the uncertainty is gone," Woodruff said. "We've lost a lot of candidates just through simple stuff like that, which this executive order will help us deal with."

Trump's executive order is the latest in a series of steps designed to strengthen the merchant marine. In 2014, at the request of MarAd, the Military to Mariner Task Force was created to coordinate federal efforts to help veterans find work in the merchant marine, according to Buzby.

"The executive order puts us over the finish line to ensure that those already trained in sea-related fields within the military sea service … can apply those skills to a merchant mariner credential, should they so choose," he said.

Maritime jobs pay well. Water transportation workers earn an average of $65,720 a year, and those in the merchant marine earn even more, according to Navarro.

"This is a great opportunity for sea veterans to seamlessly transition into really good, high-paying jobs that will help our national security front," he said.

Officials are not sure how many veterans Trump's executive order might attract, but it removes a hurdle that could be discouraging some to attempt the transition.

"Anecdotally, we know of active-duty officers and senior petty officers with sea service training who have not been able to apply their experience to acquire or maintain their merchant mariner credentials," Buzby said.

David A. Tyler

Record fine for illegal charters calls attention to nationwide problem

The U.S. Coast Guard hopes levying a record $80,000 fine against a Lake Michigan offender in February sends a strong message to anyone else illegally using recreational boats for commercial passenger service.

Robert Glick of Chicago had been stopped 10 times between June 2017 and June 2018 and told he needed to bring the two 35-foot boats he was chartering into compliance with federal regulations. Glick repeatedly was told to cease operations, including once after a passenger was injured last June, said Lt. Cmdr. S. Lincoln Puffer, executive officer with Coast Guard Marine Safety Unit Chicago, which is responsible for enforcement and oversight on about 500 miles of rivers and lakefront.

Puffer said the Coast Guard noticed a sharp rise in illegal operations a few years ago with the onset of mobile phone apps for boat charters — think Uber and Lyft for vessels.

"People are using these apps but not checking regulations," he said. More vessel owners are listing their boats as charters via such apps without having the required credentials and safety equipment. The practice, which puts the safety of passengers at great risk, is "extremely rampant," Puffer said.

It's a nationwide problem that the Passenger Vessel Association has been earnestly addressing, said Eric Christensen, the group's director of regulatory affairs and risk management.

"Our members are engaged with the Coast Guard to combat this. Illegal charters have been around since legal charters, and there always will be people trying to subvert regulations," but it's risen to a new level, he said.

"The rise of the sharing economy with apps such as Uber, Airbnb and GetMyBoat has put illegal operators in the palm of the customer's hand with promises of convenient, cashless and unique experiences," Christensen said, noting that more than 200 boat-sharing apps now exist. "This unprecedented access, combined with a lack of knowledge by the public regarding vessel chartering requirements, has resulted in legal operators losing business to illegal operators.

"When a vessel operator does not have the overhead of regulatory compliance, they can offer a cheaper product, period," he continued. "What the public does not understand is that the reduced cost comes with reduced safety. Coast Guard requirements for vessel construction, safety equipment, mariner licensing and drug testing have all come from recommendations following marine casualties and are intended to prevent future casualties."

In 2017, Puffer's office started a campaign to clarify federal rules governing boating operations by posting signs at marinas, sending letters to operators offering help with compliance, and holding public meetings to educate people

U.S. Coast Guard photo

Members of a Coast Guard inspection team board the 35-foot pleasure boat *Fun* on Lake Michigan last June near Chicago. The owner was fined $80,000 for violating federal regulations while operating the vessel and another as an illegal passenger business.

about what they should ask before boarding any charter boat, including whether the captain is licensed and whether the owner has a certificate of inspection.

Puffer's safety unit and others around the country are still "actively engaged" in educating both the public and operators, he said.

"We've been very out in front of this, so it was blatant that this operator was ignoring us," Puffer said, noting that Glick was given repeated opportunities to comply.

Puffer said the Coast Guard noticed a sharp rise in illegal operations a few years ago with the onset of mobile phone apps for boat charters — think Uber and Lyft for vessels.

Though some operators feel they're being unfairly targeted and that the Coast Guard is "out to get them," Puffer said the service was "just enforcing the laws as written."

"We're not out there looking for every nail like we're a hammer," he said. "We have an extremely large backlog — over 100 suspected vessels, anything from a 20-foot pontoon to a decent-sized motor yacht — and only have bandwidth to go after the most egregious violators."

Puffer said about three dozen people have reached out to his office in recent years about charter compliance, but just one couple has followed all the way through to run a legal operation.

The credentialing process was time consuming but was the right thing to do, said Monika Wykurz, who with her husband owns two boats that they now legally charter for day trips from May to September: *Martini*, a 60-foot Sea Ray, and *Stray Kat*, a 100-foot luxury yacht that is the largest on Lake Michigan.

"You can get discouraged by all the paperwork, but it was worth it for the safety of our customers and everybody else," Wykurz said.

The compliance upgrade, which involved engineers and architects, included everything from welding to stability testing to electrical improvements. It also meant three months of schooling and CPR training for her husband, Robert, who captains the boats.

"We feel good about it, and the Coast Guard was very helpful," she said.

Patricia McCarthy

Increments and corrections

The May 2019 article about the U.S. Coast Guard's AMVER rescue system stated that participating vessels are directed from its administration office in New York City. The coordination is now done from search and rescue centers around the world that communicate directly with the AMVER computer center in West Virginia.

Courtesy Wikipedia

Canada considers stabilizers for cutters after reports of rolling

The Canadian Coast Guard is assessing whether stabilizers should be integrated into the service's nine Hero-class midshore patrol vessels, constructed by Irving Shipbuilding from 2011 to 2014. The federal government opted not to outfit the cutters with stabilizers when they were built, and the 140-foot ships are reportedly prone to rolling excessively at sea.

John Dalziel, technical adviser to the Union of Canadian Transportation Employees, said in March that the government's decision not to include stabilizers, which are part of Damen's Stan Patrol 4207 design, was made before he served as a Coast Guard deputy project manager from 2012 to 2015.

"I'm not aware of any Coast Guard front-line personnel who agreed with that decision," said Dalziel, who is an adjunct professor of industrial engineering at Dalhousie University in Halifax, Nova Scotia.

The Hero-class cutters, designed by the Netherlands-based Damen Group, can reach a speed of 25 knots, have a range of 2,000 miles and can be at sea for two weeks without re-provisioning.

Excessive motion by a ship without stabilizers can make mariners fatigued, and that's a problem recognized by the International Maritime Organization, Dalziel said. He cited the IMO's MSC.1/Circular 1598, which states "ship motion may interfere with sleep, cause motion-induced fatigue (fatigue caused by the extra energy expended to maintain balance while moving, especially during harsh sea conditions) and seasickness."

Dalziel said excessive motion also makes it very difficult to launch and recover rigid-hull inflatable boats, which are among the Coast Guard's tasks. "Working near rotating machinery and near hot surfaces may also be dangerous" when a vessel rolls, he said.

Another IMO document, MSC/Circular 1014, states that fatigue increases susceptibility to errors, creating potential for steps in a sequence to be omitted; can cause individuals to choose risky strategies when they require less effort to exe-

The first Hero-class cutter, *CCGS Private Robertson V.C.*, entered service in 2012. None of the nine vessels in the class, based on Damen's Stan Patrol 4207 design, were fitted with stabilizers when they were built.

cute; affects and delays reactions to stimuli; and hinders problem-solving essential to handling new tasks.

The Canadian Coast Guard is assessing whether integrating stabilizers would reduce rolling in certain weather conditions and spur other improvements, said Barre Campbell, spokeswoman for Fisheries and Oceans Canada and the Canadian Coast Guard.

"We're reviewing options for vessel stabilization and their potential impact on operations," she said. "A decision will be made about the best options. There's no specific timeline for this."

Hero-class cutters typically have a crew of nine composed of five Canadian Coast Guard crewmembers and four others from Fisheries and Oceans Canada or the Royal Canadian Mounted Police, Campbell said. More than 15 countries, including the United Kingdom's Border Agency and Mexico's navy, operate vessels based on variants of Damen's Stan Patrol 4207 with stabilizers.

In March, spokesman Sean Lewis at Irving Shipbuilding in Halifax said the Canadian Coast Guard hadn't brought the rolling issue to the company's attention. He recommended that inquiries be addressed to the service.

Campbell said the Canadian Coast Guard is committed to a high standard of safety and security for all sailing personnel. "The midshore patrol vessels are safe," she said. "They were built to Canadian standards, including marine regulations and construction standards, and they continue to be safe for operation."

The nine Hero-class cutters were built under terms of a $194 million contract announced by the Ministry of Fisheries and Oceans and the Ministry of National Defense in September 2009. The vessels are named after Canadians who sacrificed their lives in service to their country. •

Susan Buchanan

Towing

Story and photos by Casey Conley

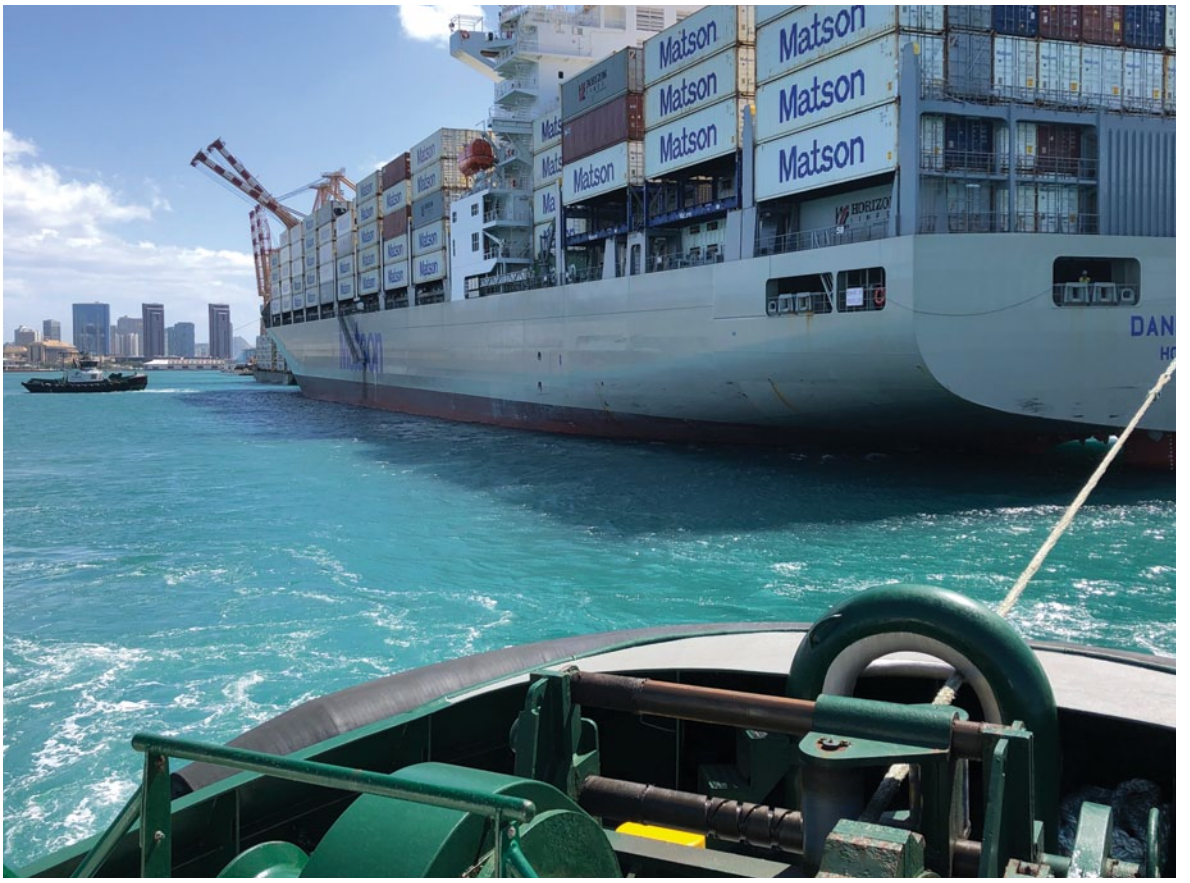
From barges to bovines, Foss tug crews keep pace in paradise

Matson's *Daniel K. Inouye* was approaching a dogleg turn in Honolulu Harbor when Capt. Cameron Andrews swung the Foss tugboat *Pi'ilani* from the containership's transom to the starboard quarter. And then, seemingly out of nowhere, came the overpowering smell of farm animals.

Sure enough, about 30 feet up on the ship's aft deck stood a multilevel livestock shipping pen. Calves weighing more than 400 pounds were about to embark on a long voyage to the mainland United States.

"One thing we do export is cows," Andrews said. "They breed them on the Big Island and send them to Texas to fatten them up."

Living cargo is just one quirk about working



The Foss Maritime tugboats *Mikioi*, left, and *Pi'ilani* pull the Matson containership *Daniel K. Inouye* off the terminal pier in Honolulu Harbor. The tugs routinely handle eight to 10 jobs in a 12-hour span.

on the water in Honolulu, Hawaii's capital city and biggest port. Another is the sheer volume of work that awaits Foss tug crews each day. The harbor is always busy with U.S.-flagged cargo ships from Pasha and Matson, cruise ships, tankers and interisland barges coming and going.

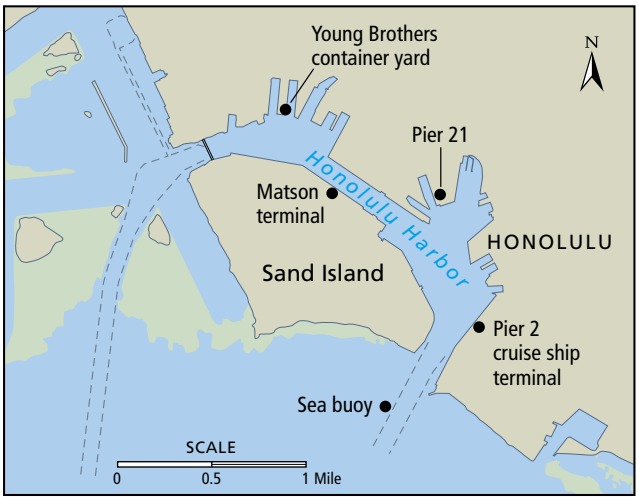
Given the city's location roughly 2,500 miles west of Los Angeles and 3,800 miles east of Tokyo, steady maritime commerce isn't surprising. Just about everything that arrives in Hawaii gets here by boat. When the cargo reaches Honolulu, much of it gets separated and delivered to neighboring islands.

"It's pretty normal within a 12-hour span to do eight, nine, 10 jobs," said Andrews, who joined Foss' Honolulu operation in 2017 as a captain. "As you can tell, these boats are moving all the time."

Foss has four tugs in Honolulu's compact harbor. Located between the famed Waikiki district and the international airport, the crescent-shaped waterway is no more than 2.5 miles from end to end. The sea buoy, where tugs meet inbound vessels, is just a half mile offshore from Sand Island, home to Matson's terminal. Foss tugs also serve the bulk cargo facility 12 miles away at Barbers Point Harbor.

Pi'ilani, left, is the second Dolphin-class tugboat built by Foss at its former Rainier, Ore., shipyard. The vessel joined the company's Hawaii fleet in 2009. Capt. Cameron Andrews, below, joined Foss' Honolulu operation two years ago. He enjoys the fast pace and steady work in the harbor.

Tidal changes are minimal, and the harbor is well protected from the ocean swells that gave Hawaii its reputation as a surfing mecca. Recreational vessels are not allowed in the harbor, but there is a sizable foreign fishing fleet. Wind is perhaps the biggest variable for harbor tug crews.



"We are on the lee side of the island, so normally the wind comes from the northeast, and generally we are blocked from it (by mountains)," Andrews said. "But if we get anything other than

Kapena Raymond Alapai, left, is positioned at the port hip after guiding the cargo barge *Ha'aheo* into a berth at the Young Brothers yard in Honolulu. Below, the 6,000-hp tug approaches Honolulu Harbor after a 24-hour voyage from Hilo with *Ha'aheo*. Bottom, engineers William Reyes, left, and Aaron Lanet stand by on *Pi'ilani*'s bow as *Kapena Raymond Alapai* and *Ha'aheo* pass by near the harbor entrance.

from the northeast, we get hammered by it."

Such was the case on this sunny, warm Saturday in February as winds gusted to 25 knots from the northwest. "This is probably the hardest time to come in because the currents are all crazy and the wind is blowing," he said.

Engineers William Reyes and Aaron Lanet joined Andrews for his first job of the day aboard the 78-foot *Pi'ilani*. It was one they all knew well, assisting a tug and barge from sister company Young Brothers into a container yard at Pier 39 on the western side of the harbor.

Andrews backed the 5,080-hp tugboat away from the Foss dock at Pier 21 and spun the Rolls-Royce z-drives 180 degrees. The vessel chugged past the iconic Aloha Tower lighthouse and downtown high-rises, as well as the cruise terminal and foreign-flagged container port, on its way to the sea buoy.

The 6,000-hp *Kapena Raymond Alapai* approached the harbor with the 340-by-90-foot barge *Ha'aheo* in tow. Capt. Jeb Baker had already shortened the line and eased off the throttles for a controlled entry. *Pi'ilani* stood by as the vessels passed at 7.5 knots, then pressed against *Ha'aheo*'s starboard stern. Lanet climbed aboard and got a line onto the barge.

Getting a line out at that speed, in frequently rough conditions, is one of the toughest parts of the job. "When we put our lines up at the sea buoy when the ships are coming in, they are doing between 8 and 10 knots," Andrews said. "We don't put our lines up in protected waters. … Sometimes (ships are) 10 or 15 feet out there when we are trying to put our lines up going 10 knots."

Kapena Raymond Alapai slowed to about 3 knots once it reached a turning basin on the harbor's western flank. Baker swung the tug around to *Ha'aheo*'s port-side hip, and *Pi'ilani* got a line on the barge's port stern. Baker issued a handful of commands to *Pi'ilani* as it spun the barge about 90 degrees for its final approach into the terminal.

Young Brothers' core business involves moving cargo from one Hawaiian island to another, although it also carries some freight that arrives from the mainland. Young Brothers serves all of the major islands in the chain at least once a week. *Ha'aheo* was about half full on this return trip from Hilo, roughly 24 hours away by boat on the island of Hawaii. It carried vehicles, cement and dump trucks, building supplies and dozens of containers.

Kapena Raymond Alapai's mate called out distances to the pier from *Ha'aheo*'s starboard quarter. He also issued commands to *Pi'ilani*, which pushed on the barge's port quarter. After about 10 minutes, *Ha'aheo* was safely in position.

By then, *Daniel K. Inouye*, Matson's newest containership, was ready to sail. *Pi'ilani* and its Dolphin-class sibling *Mikioi* took positions on the ship's port quarter and bow flare, respectively. After releasing the mooring lines,

> "Normally the wind comes from the northeast, and generally we are blocked from it (by mountains). But if we get anything other than from the northeast, we get hammered by it."
>
> Capt. Cameron Andrews

Foss, Young Brothers and Kirby tugboats tie up at Pier 21 in Honolulu Harbor. The mountain ridge running across much of Oahu helps block winds from the northeast.

Matson's new containership *Daniel K. Inouye*, left, helps keep grocers, retail shops and the islands' popular Costco stores stocked. Below, *Pi'ilani* returns home shortly before sunset after assisting Young Brothers' chartered tug *Montana* and barge *Maka'ala* off the company dock.

Tom Heberle of the Hawaii Pilots Association ordered both tugs to begin backing with one-third power.

The northwesterly wind blew directly at the stern stacked with six rows of containers, most of which were empty. Matson and Pasha ships typically arrive in Hawaii loaded with cargo bound for grocers, building suppliers and wholesale stores like Costco. But they return to the mainland with substantially lighter loads. Livestock, coffee and exotic fruits and nuts are some of the local products shipped back for mainland consumers.

Daniel K. Inouye's speed increased to 5 knots in the main channel with the stiff wind blowing on its stern. *Pi'ilani* had a line on the transom to check the ship's speed as it approached the dogleg near the channel entrance. The tug vibrated and bucked as it worked against the massive vessel.

"He needs us to help slow down, so he will have *Mikioi* push the bow around, which is another crazy move to be a part of," Andrews explained. "We are doing 5 knots and he is trying to come in and push on the 90."

"Those are the things you can't do with bigger tugs," he continued, "and it is hard to do in these tugs — to be driving backward at 5 knots under the flare of a ship, and trying to come in and push."

Mikioi was the first Dolphin-class tug built by Foss at its former shipyard in Rainier, Ore. The compact tug was designed by Robert Allan Ltd. for Foss subsidiary Hawaiian Tug & Barge, which has since been rebranded as Foss. *Morgan Foss*, the second Dolphin-class tug, joined Foss' Honolulu fleet in 2009 as *Pi'ilani*.

Mikioi is a little different than its sister tugs. Built as a true day boat, it lacks overnight accommodations. At 4,730 hp, it is also slightly less powerful than *Pi'ilani*, which has two staterooms and taller stacks, among other tweaks. Both vessels are powered by Caterpillar 3512 engines paired with Rolls-Royce z-drives. Markey electric winches are installed fore and aft.

Foss does nearly all of the commercial ship-assist work in Honolulu Harbor, but it is by no means the only tug operator. Kirby has a robust bunkering operation there, and Sause Brothers

tows Matson container barges between islands.

Mikioi retrieved its line and remained alongside *Daniel K. Inouye*'s bow as the ship approached the final dogleg in the harbor. Over the radio, Heberle asked *Pi'ilani* to collect its line. "Let me know when you are in position and ready for them to lower it down," the pilot said.

Andrews acknowledged the order and pushed ahead toward the transom, while Reyes stood ready to haul in the high-performance Cortland Plasma synthetic rope. Once that was complete, in one graceful motion Andrews swung the tug around to the port quarter just below the livestock pens. With the wind now broadside to the ship, he remained in position just in case the pilot needed a push. The request never came, however, and the ship was now pointed toward open water.

From start to finish, the job took about 40 minutes. That's part of the appeal for Andrews, who grew up in Southern California and worked for Foss in Red Dog, Alaska, before joining its Hawaii service. Another perk is the chance to go home every night when his 12-hour shift ends at 2300.

"I like the quicker pace," he said as the tug returned to Pier 21. "This is a slow day. We are only doing six jobs today."

At least that was the plan. A major winter storm was bearing down on Hawaii with 60-mph winds and 25-foot seas, and dispatchers at Young Brothers and Foss were considering a series of schedule changes and barge shifting to get ahead of it.

Such is the price of working in paradise. •

Courtesy Crowley Maritime

Lessons in LNG propulsion, niche markets move VT Halter forward

by Casey Conley

Building ships with liquefied natural gas (LNG) propulsion comes with numerous challenges. Bunkering them for the first time probably isn't the first issue that comes to mind.

VT Halter Marine faced that dilemma last summer as *El Coqui*, Crowley Maritime's lead LNG-powered container/roll-on/roll-off ship (con-ro), approached sea trials. Trucks loaded with the fuel traveled from Jacksonville, Fla., to the Pascagoula, Miss., shipyard to fuel the newly built ship. The process was a true learning experience.

"For the first vessel, *El Coqui*, it took us about 15 days to bunker it the first time. It involves cooling tanks with nitrogen before putting fuel in there so it doesn't flash to gas," VT Halter CEO Ronald Baczkowski explained in a recent interview at the 84-acre shipyard. "And it was in South Mississippi, hot, humid, with a line of fueling trucks waiting to offload their product onto the ship."

Throughout the build process for the 720-foot *El Coqui* and sister vessel *Taino*, the yard learned valuable lessons working with the LNG propulsion system and the fuel itself. So when it came time to bunker *Taino* in late 2018, the process "worked like a Swiss watch," Baczkowski said.

"With *Taino*, we factored in six days for bunkering, but we achieved it in four days," he said, adding that "we did learn some hard lessons on Crowley. But we learned them, and we've applied them to future programs."

VT Halter, a subsid-

***El Coqui*, the first of two LNG-powered con-ros built by VT Halter Marine for Crowley Maritime, approaches San Juan, Puerto Rico, with a load of cargo in July 2018. "Clearly, we see an interest in LNG," says VT Halter CEO Ronald Baczkowski, shown at left. "We feel very fortunate to be out in front."**

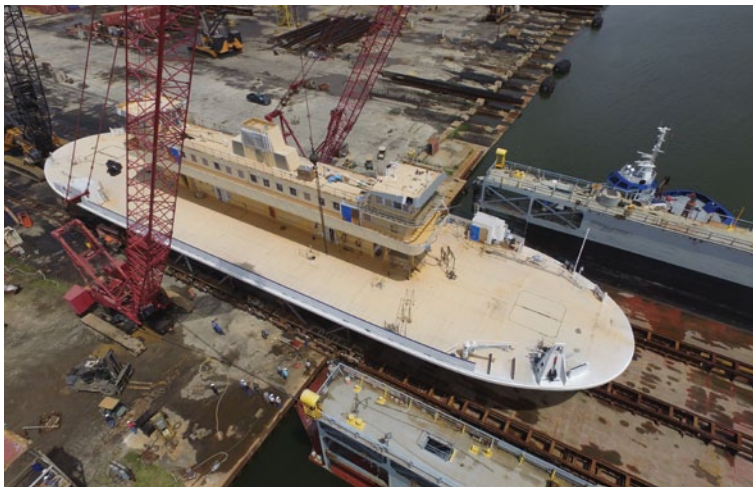
iary of Singapore-based ST Engineering, expects those hard lessons to pay off as the Jones Act shipping market moves toward wider adoption of LNG propulsion. There are more immediate benefits too, particularly as the shipyard continues work on the first Jones Act-compliant offshore LNG bunkering barge for Q-LNG. The barge will pair up as an articulated tug-barge (ATB) unit.

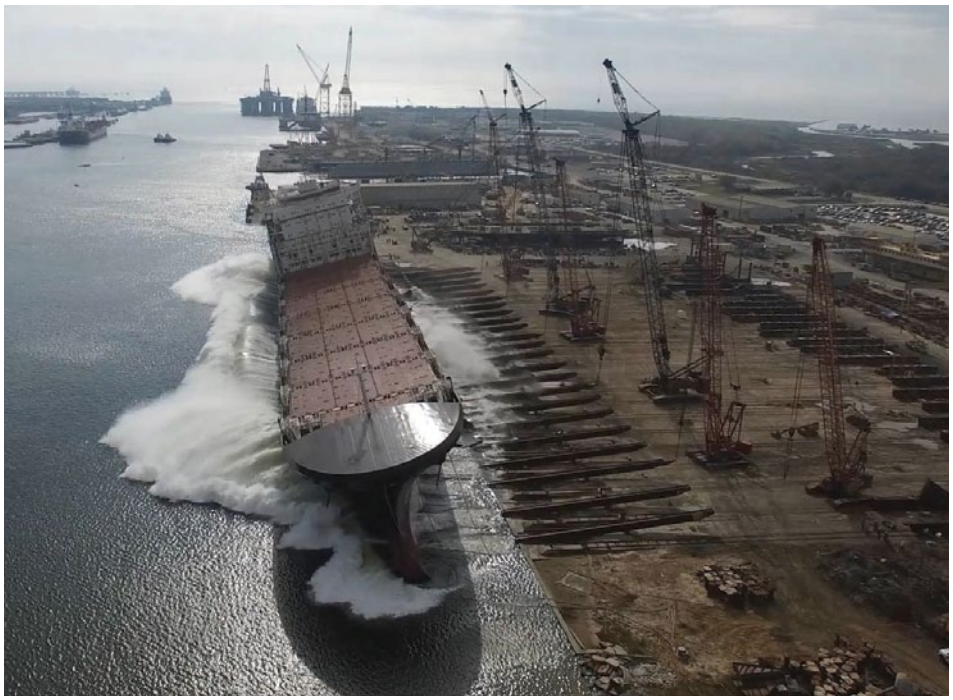
The first ATB, with its 4,000-cubic-meter capacity barge, is scheduled to leave VT Halter's shipyard in early 2020. Harvey Gulf will operate the vessels under charter to Shell. The shipyard also has received inquiries from other operators interested in LNG projects. LNG burns cleaner than marine diesel but isn't widely available even in large U.S. ports, creating opportunities for LNG bunkering vessels.

VT Halter isn't the only American shipyard with LNG shipbuilding experience. General Dynamics NASSCO in San Diego completed *Isla Bella* and *Perla del Caribe* more than three years ago for TOTE Maritime. Philly Shipyard also has built a half-dozen "LNG-ready" ships for several U.S.-flagged operators, though these vessels are currently burning marine diesel. For now, TOTE's two containerships and Crowley's two con-ros are the only vessels in the Jones Act cargo trade burning LNG.

"Clearly, we see an interest in LNG," Baczkowski said. "We feel very fortunate to be out in front."

Baczkowski became CEO of VT Halter in mid-2018. He spent 32 years in the U.S. Marine Corps, where he rose to the rank of brigadier general before retiring in 2012. He joined VT Systems, which focuses on marine engineering, in 2016. He served as vice president of business development before his promotion to chief executive. He has assembled a team that includes longtime shipbuilding industry veteran Robert Socha as a senior vice president, among other hires.





VT Halter's recent portfolio of niche vessels includes *Powhatan*, right, a new ferry built for the Virginia Department of Transportation. The 270-foot vessel is shown being moved onto a dry dock prior to being launched in August. Below, *Taino*, the second LNG-powered con-ro from VT Halter, is launched in December 2017 at the shipyard in Pascagoula, Miss.

Photos courtesy VT Halter Marine

Liquefied natural gas is loaded from trucks onto Crowley's *El Coqui* at VT Halter in Pascagoula, Miss. The future of LNG bunkering is moving offshore as barges make it faster and more efficient than land transfers of the fuel.

Baczkowski arrived during a challenging period for VT Halter, Mississippi's second-largest shipyard behind nearby Huntington Ingalls. VT Halter occupies a unique niche in the industry with a focus on medium and large military, government and commercial vessels that require complex engineering. Its commercial sector work takes advantage of that engineering expertise when building complex ships and barges for the petroleum and chemical sectors, as well as other niche vessels.

Since Baczkowski took over, VT Halter has announced several new orders, including a series of barracks barges for the U.S. Navy and a contract potentially worth more than $150 million for a new National Oceanic and Atmospheric Administration (NOAA) ship. The yard also delivered the 4,000-hp Tier 4 ATB tugboat *Evening Breeze* in March for Bouchard Transportation.

Baczkowski sees the U.S.-flag market gaining steam in the near term. This is welcome news for a shipbuilding industry still recovering from the 2008 recession followed by the military spending cuts enacted during the Obama administration. The past decade, he said, was a worst-case scenario. But now, in addition to building more warships, the Navy is starting to build more auxiliaries, which has long been a focus for VT Halter.

"Our niche is we can build a medium-size to a large-size vessel. That is something that not everyone can do, and that requires engineering," Baczkowski said. "So we think that is our sweet spot. And at the same time, on the commercial side, we are starting to see some pick up."

Both signs bode well for a shipyard that is operating at less than half of full capacity. During a visit in early February, the yard had about 500 employees. By summer, as more work begins, that number should rise to about 850. Historically, the workforce has

reached as high as 1,200 people.

The shipbuilding industry relies heavily on steel and to a lesser degree on aluminum when constructing new vessels. Tariffs on both enacted by the Trump administration have raised prices for new vessels, Baczkowski said, although he noted the effect has been relatively minor overall. VT Halter sources most of its steel from a plant in Alabama that recycles old steel.

Nearly two decades ago, VT Halter, whose parent company is owned by the commonwealth of Singapore, operated 11 shipyards across the Gulf of Mexico from Louisiana to Florida. Over time, most of those yards closed or were sold until just three were left around Pascagoula. Both former Moss Point yards are now shuttered, and the company is asking more than $7.5 million combined for the two properties.

VT Halter's lone remaining shipyard has received millions of dollars in new investment in recent years. Last spring, the facility opened a 304-by-120-foot blast/paint complex that allows those operations to occur indoors in a controlled environment.

Baczkowski said consolidation has led to fewer jobs in both construction and the back office, a development that has corresponded with broader changes in the shipbuilding industry that have reduced the need for manpower. VT Halter, like many other shipyards and designers, relies heavily on 3D modeling when developing a new vessel. Having that type of precision design available, he said, makes for a much more efficient construction process where more work can be done before the vessel goes into the water.

VT Halter occupies a unique niche in the industry with a focus on complex medium and large military, government and commercial vessels that require complex engineering.

"The industry used to fix a lot of designs by grinding and straightening," he said. "Now, what we do is less of the pounding and shaping metal and more up front in design. We can now build more efficiently by designing it right and having a more efficient design to build from."

At Work

Bay Area's hybrid newcomer red, white and 'green' all over

Story and photos by Brian Gauvin

Bucking a brisk March wind, *Enhydra*, the hybrid-propelled pride of San Francisco's Red and White Fleet, made for the Golden Gate Bridge.

"I love the boat," said Capt. Evan Williams, citing its responsive handling characteristics and stability, as he made the turn in the swells at the bridge. "She has a really high power-to-weight ratio because she is made of aluminum, and has a lot of torque instantly available that's really nice in close quarters, such as docking."

Despite the chilly off-season day, a respectable number of passengers boarded *Enhydra* for the bay tour. Although just 30 feet wide, the 600-passenger vessel is certified to accommodate 300 guests on its open third deck. Even the passengers braving the sharp wind on the upper deck experienced a smooth and quiet ride on a rough sea.

The 128-foot excursion boat — *American Ship Review*'s Ship of the Year for 2019 — is the first aluminum-hulled, battery-electric hybrid built from the keel up under U.S. Coast Guard Subchapter K regulations. It is named for *Enhydra lutris*, a Pacific Coast sea otter. *Enhydra* is also the largest "green" boat in the U.S. excursion fleet and, for Red and White, the first step toward the company's goal of reaching zero emissions by 2025.

At first glance, *Enhydra*'s engine room appears more like a NASA-engineered configuration than that of an excursion vessel. However, Dan Johnson, Red and White's director of operations and engineering, is at home amid the riot of electronics, wiring and gauges.

The vessel's propulsion is provided by two independent power trains, each consisting of a 300-kW BAE HybriGen system and an 80-kW Corvus Orca energy storage system. The Corvus lithium-ion battery bank is housed in a separate climate-controlled fireproof room.

Each power train features a variable-speed Cummins QSL9 engine driving a permanent magnet integrated starter generator. The generator is wired to a propulsion control system that directs power to the batteries or AC traction motor to propel the boat or to charge the batteries. The engines run on 100 percent Neste MY Renewable Diesel, a low-carbon biofuel that further reduces greenhouse emissions by up to 80 percent.

On short, slow-speed cruises, *Enhydra* can operate solely on electric power for most — if not all — of the trip. On longer cruises where vessel speed, distances and

***Enhydra*, resplendent in the colors of Red and White Fleet on a brilliant March day, prepares for another tour of San Francisco Bay. The hybrid excursion boat was delivered last year by All American Marine.**

weather conditions create larger load demands, the generators augment the batteries as required.

The battery room is designed to expand for additional banks in the future, which will enable *Enhydra* to be fully electric. Red and White Fleet is working on the shoreside infrastructure required to provide fast plug-in charging for the larger battery packs.

"The boat has a lot of technology in her," Johnson said. "Our owner (Tom Escher) is a visionary and his goal is to achieve zero emissions. We're getting there and this is a great first step. People are watching with interest." •

Enhydra

SPECIFICATIONS

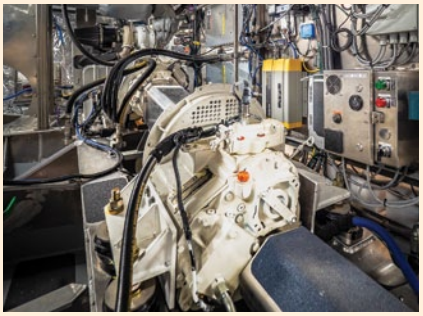
Owner/operator: Red and White Fleet, San Francisco, Calif.
Designer/builder: Teknicraft, Auckland, New Zealand/ All American Marine, Bellingham, Wash.
Dimensions: L: 128' B: 30' D: 6'
Mission: Hybrid electric excursion boat
Crew size: Six

PERFORMANCE
- Maximum speed: 13 knots fully laden

PROPULSION
- (2) Cummins QSL9 EPA Tier 3 diesel engines, 410 hp each at 2,100 rpm
- (2) BAE Systems HybriGen propulsion system with generator, control system and AC electric traction motor
- (2) 48-inch VEEM Star four-blade, fixed-pitch propellers
- (2) Corvus Energy 80-kW lithium-ion battery packs
- Jastram HPU-1225PF-24VD three-station jog-lever hydraulic power steering system
- Twin Disc EC300 electronic control system

NAVIGATION/COMMUNICATIONS
- Furuno DRS6A radar
- Furuno DRS4D NavNet radar
- Furuno DFF1 echosounder
- Furuno SS60-SLTD through-hull transducer
- Furuno GP330 GPS
- Furuno FA150 AIS
- Furuno SC50 satellite compass
- (3) ICOM M604 VHF radios
- (3) Morad VHF antennas
- JBL interior and exterior speakers
- CFE sound system

CLASSIFICATIONS
- U.S. Coast Guard Subchapter K



Capt. Evan Williams, above, adjusts the radar monitor as he takes *Enhydra* out on the bay. He gives high marks to the boat for its power-to-weight ratio and torque. The power train aft of each main engine, above left, consists of an integrated starter generator and a propulsion control system linked to a 48-inch propeller. At left is one of *Enhydra*'s two Corvus lithium-ion battery banks.

Enhydra "has a lot of technology in her," says Dan Johnson, right, Red and White Fleet's director of operations and engineering. Behind him is one of the excursion boat's Cummins QSL9 mains, along with two boxes that house propulsion control components. Above, passengers bundle up against a cold, brisk wind on the boat's 300-passenger upper deck.

Casualties

Captain presumed dead after fleet boat sinks in Lower Mississippi

The captain of a Mississippi River fleet boat is missing and presumed dead after the vessel capsized and sank near the Myrtle Grove fleeting area in Louisiana.

Three mariners were aboard the 1,200-hp *Seattle Slew* when it rolled over and rapidly sank at about 2000 on March 18 near mile marker 57. The sinking occurred outside the channel north of Pointe a la Hache, La.

"Although I do not have the specifics of what occurred, I can confirm that *Seattle Slew* was in the process of moving two barges at the time of the incident," said Plaquemines Parish Sheriff's Office Lt. Chaun Domingue.

Two other crewmembers escaped from the towboat before it went down. They were rescued by another towboat operating nearby, according to Turn Services of New Orleans, which operated *Seattle Slew* and the good Samaritan vessel. Both survivors wore life jackets.

The sheriff's office identified the missing captain as David Mills of Marrero, La. His remains had not been recovered at press time.

The Coast Guard is investigating but has not yet determined the cause of the sinking. It did not provide additional details about the incident or confirm the description provided by the sheriff's office.

The service issued two safety notices after the incident suggesting that it mirrored two other casualties that occurred during high, fast water on the Lower Mississippi.

Courtesy Turn Services

***Seattle Slew*, a 1,200-hp fleet boat, capsized on March 18 near Pointe a la Hache, La., with three people on board. Two were rescued, but the captain is missing and presumed dead.**

"These cases are all under investigation by the Coast Guard, but the preliminary fact-finding indicates there are some similarities between the three incidents," the Coast Guard said in a safety alert issued March 27. "In all three cases, towing vessels became pinned against another object in an aspect that exposed the vessel broadside to very strong currents. Once in that position, the vessels could not recover and sank."

The alert recommended that operators "minimize the number of operations which require the vessel to be positioned beam-to the river current."

River conditions at Pointe a la Hache at the time of the incident were not available. However, the Carrollton Gauge in New Orleans, roughly 55 miles upriver, recorded 16.8 feet at the time of the incident with a 6.5-knot current. Flood stage at Carrollton is 17 feet.

The safety alert noted that fast current can significantly reduce response time. Current running at about 6 knots, for instance, would cover the length of a football field in just 30 seconds.

The other notice, issued by K.M. Luttrell, Coast Guard captain of the port in New Orleans, established safety rules for when water rises above 16 feet on the Carrollton Gauge. Luttrell prohibited transits between anchored ships and required at least one foot of freeboard for towboats shorter than 79 feet. The notice also required at least 320 horsepower for each barge in the tow.

The Coast Guard joined state and local authorities in a search for *Seattle Slew*'s captain that lasted nearly 18 hours and covered 158 square miles. The service called off its effort on March 19, but the Plaquemines Parish Sheriff's Office has continued to search for Mills daily by boat and weekly by helicopter.

"We will continue to search for Mr. Mills until he is recovered," Domingue said in an email in early April.

The Coast Guard closed the Lower Mississippi River between mile markers 55 and 58 at 2330 on March 18 and reopened it at 1316 the next day after the sunken towboat was found. Turn Services ultimately located the vessel at mile marker 57, the Coast Guard said in a prepared statement. Crews were delaying the salvage until the water level dropped.

In a statement issued shortly after the incident, Turn Services thanked everyone who responded to the incident.

"At this moment our entire focus and attention is geared toward the search for our missing teammate," the company said. "We extend our sincere thoughts and prayers to all the crewmembers involved, their families and to the rest of our Turn Services team."

The company did not respond to a request for additional comment on the incident.

Casey Conley

Mariner dies when dredge tender capsizes off Charleston

A mariner aboard a dredge tender died when the vessel capsized off the coast of Charleston, S.C., while under tow.

The 25-foot *Addi-Kate* was tethered to the dredge *Brunswick* in the Ashley River when the workboat rolled over, according to Lt. j.g. Phillip Vanderweit of Coast Guard Sector Charleston. The incident happened April 11 at about 2130 southeast of The Battery in downtown Charleston.

"They had a workboat in a side tow and they were moving to a new dredge project location," Vanderweit said. "Along the way, the workboat attached to the side capsized and went under the (dredge) itself."

Two mariners were aboard *Addi-Kate* at the time. A crewman on the main deck grabbed ahold of some dredging equipment and climbed onto *Brunswick*, where he notified the dredge crew about the rollover.

"They stopped and realized the workboat had collapsed and was submerged," Vanderweit said.

The body of the second mariner, Derrick Nesmith, 49, of Goose Creek, S.C., was found early on April 12 in a tidal creek near the Ashley River. The Coast Guard said he was wearing a life jacket.

The cause of the incident remains under investigation by the Coast Guard. Vanderweit did not know whether lines parted or any mechanical issues preceded the rollover.

Southern Dredging Co. of Charleston operated the workboat and the dredge. A woman who answered the phone at the company a day after the incident said no one was available to comment.

Courtesy Southern Dredging Co.

***Addi-Kate* was tethered to the dredge *Brunswick* in a side tow when the workboat rolled over and became lodged under the dredge. A mariner who was working in *Addi-Kate*'s wheelhouse was killed.**

Brunswick was involved in several dredging projects in Charleston Harbor. The vessels left a project in Wappoo Creek and were traveling south in the Ashley River when the workboat capsized. It wasn't clear to which side of the dredge the workboat was tethered.

Weather conditions at the time of the incident were not available, although rain and wind affected search crews throughout the night. The workboat capsized two hours after low tide in an area with challenging currents.

Authorities located *Addi-Kate* underneath *Brunswick*, where the workboat was positioned upside down, Vanderweit said. The mariner who died in the incident was working in the wheelhouse when the boat encountered trouble.

The fatality on April 11 was the second major casualty involving a Southern Dredging workboat in five months. Three people escaped injury when a similar workboat, *Miss Anne*, capsized and sank on Nov. 17 in Shipyard Creek north of the Arthur J. Ravenel Jr. Bridge.

In that incident, crew aboard *Miss Anne* were moving an anchor pipe when the vessel encountered a strong current, the Coast Guard said. The cause of the capsizing has not been disclosed. Southern Dredging declined to comment on that incident as well.

Casey Conley

Inadequate maintenance, steel wastage cited in towboat sinking

Federal investigators have determined a fleet boat that flooded and sank near Dyersburg, Tenn., lost "watertight integrity," most likely from inadequate maintenance.

Ms. Nancy C. sank March 6, 2018, at about 1630 in Everett Lake, a Mississippi River tributary, the day the towboat returned to service after a lay-up period. The National Transportation Safety Board (NTSB) said water accumulated in the aft stern void due to corrosion on the main deck.

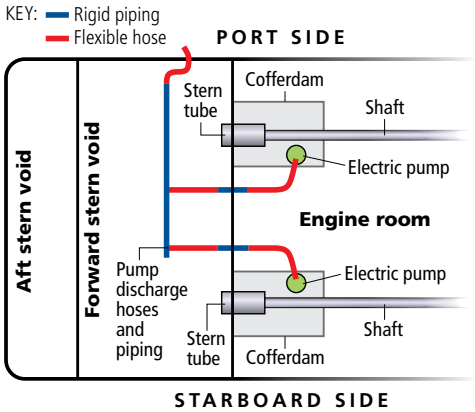
Crew attempted to dewater the vessel but couldn't keep up with flooding. The captain and deck hand escaped the towboat before it went down. More than 830 gallons of fuel and lube oils entered the waterway, and damage to the vessel exceeded $667,000.

"Investigators discovered numerous potential sources of water ingress on the main deck, in the engine room and in the voids," the NTSB stated in an accident report. The agency said multiple aft hatch covers were not watertight, and there was widespread steel wastage around the deckhouse.

Ms. Nancy C., a 39-year-old fleet boat operated by Choctaw Transportation Co. of Dyersburg, went to work tending barges in Everett Lake at about 0600 on the morning of the incident. The vessel arrived at a company dock a day earlier after a lay-up period of several weeks.

Weather conditions were challenging, with winds gusting to 34 mph from the west and waves up to 4 feet with whitecaps, the report

NTSB photo/Pat Rossi illustration



An NTSB photo shows *Ms. Nancy C.* before it was salvaged on March 11, 2018. A diagram of the boat's cofferdam discharge system shows a hose passing through the main deck from the forward stern void, then through the port-side bulwark. "Investigators discovered numerous sources of potential water ingress on the main deck, in the engine room and in the voids," the agency said.

said. *Ms. Nancy C.* had two feet of freeboard, and investigators believe waves splashed on deck throughout the day.

The deck hand noticed water coming over the starboard side at 1600. He opened two hatches to the aft stern void and noticed the space was three-quarters full of water. He placed two electric submersible pumps within the space but found they were not keeping up with the flooding.

Shortly afterward, the deck hand and captain noticed the vessel was listing to starboard. They left *Ms. Nancy C.* to grab a gas-powered pump from a nearby work barge. Before they could return, the towboat sank at the stern in about 15 feet of water. Its bow remained tethered to the barge *PBM413*, owned by Pine Bluff Materials of Nashville, which was pushed into the west bank of Everett Lake.

Federal investigators inspected the towboat shortly after it was refloated on March 11, and again in dry dock. They identified steel wastage on and around the deckhouse where it met the main deck. One long section around the back of the house, from the port to starboard engine room doors, was of particular concern.

CASUALTY BRIEFS

Bulk carrier strikes another off Vancouver, damaging both ships

A bulk carrier struck another bulker that was anchored in Vancouver Harbor shortly after midnight on March 17, and Canadian authorities are trying to determine the cause.

The 751-foot *Caravos Harmony* was preparing to depart Vancouver with 21 crewmembers and a load of corn when it struck the 958-foot *Pan Acacia* at anchor near the city's downtown. *Pan Acacia* was reportedly waiting to load coal.

Caravos Harmony, which sails under the Marshall Islands flag, sustained damage to its port-side bow structure in the allision. The Panama-flagged *Pan Acacia* reported a 6-foot gash on its starboard hull at its No. 4 cargo hold, according to Eric Collard, spokesman for the Transportation Safety Board of Canada (TSB).

Reports in local media suggested *Caravos Harmony* lost power before the incident, although that could not be confirmed. No one was injured and no pollution was reported. Weather conditions at the time of the incident were not available.

Caravos Harmony was operating with a pilot from the British Columbia Coast Pilots at the time of the allision, as required in compulsory pilotage waters including Vancouver Harbor, said Paul Devries, spokesman for the pilots group.

"We are working closely with TSB in their investigation to determine the cause of the incident," he said in an email. Devries declined to share details about the incident, citing the ongoing federal inquiry.

After the accident, *Caravos Harmony* sailed under its own power to a nearby anchorage. The 5,000-hp *Seaspan Raven* escorted the ship into position. Canadian authorities cleared *Caravos Harmony* to leave Vancouver on March 18, and AIS data indicates it left for Inchon, South Korea, later that night.

The 81,631-dwt bulker was built in China in 2013 and is managed by Iason Hellenic Shipping Co. The company did not respond to an email seeking information about the incident.

Towboat hits object, sinks near mouth of Mississippi

Three mariners escaped from a towboat that reportedly struck an underwater object and partially sank near the mouth of the Mississippi River.

The 900-hp *DeJeanne Maria* was downbound in Pass a Loutre, La., pushing two empty dry cargo barges when it struck the undisclosed object at about 0200 on April 15, according to the U.S. Coast Guard. The three crewmembers stepped onto the good Samaritan vessel *Supporter 1* and were not injured.

DeJeanne Maria partially sank on its starboard side while its port side remained above water. The towboat carried as much as 7,000 gallons of fuel oil, and authorities believe about 60 gallons entered the water. As of midday on April 15, the vessel was blocking the channel in Pass a Loutre.

The oil spill response company ES&H deployed boom around the vessel, and drone

Although doubler plates were installed to address the corrosion, investigators said gaps remained that would have allowed water to enter the voids below. Openings between the aft and forward stern voids allowed water to move between them.

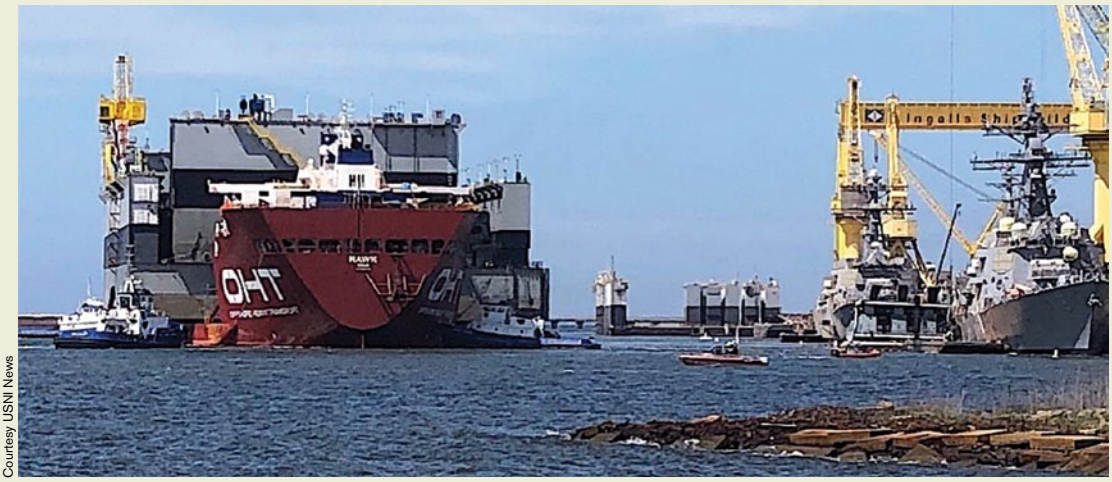
Leaking hoses from a pump used to remove water from a cofferdam under the port-side stern tube, as well as corroded unsecured access covers on deck, might have contributed to the flooding in the voids, investigators found.

"This quantity of water increased the stern trim and decreased the aft freeboard to a point where water on the main deck was able to freely enter the (two) open access covers to the stern voids, as well as through several other loose access hatches and poorly fitted doubler plates intended to cover holes created by deckhouse corrosion," the report said.

"As the vessel sank further," it continued, "water would then have entered the engine room through wastage on the aft side of the deckhouse and over the sills of the open engine room doors."

Choctaw Transportation did not respond to a message seeking comment on the NTSB findings.

Casey Conley



Courtesy USNI News

The heavy-lift ship *Hawk*, left, approaches Ingalls Shipbuilding in Pascagoula, Miss., on March 29 with a floating dry dock. The ship later bumped a barge that struck *USS Delbert D. Black*, damaging the destroyer.

footage suggested no discharge of oil from the sunken vessel. There were no signs of oil on nearby shores, the Coast Guard said.

The cause of the sinking, which occurred in the southernmost tip of the Mississippi where it meets the Gulf of Mexico, is under investigation. Denet Towing Service of Boothville, La., operated the 55-foot towboat. The company did not respond to a phone message seeking comment.

Barge, bumped by ship, hits destroyer at Ingalls

An inbound heavy-lift ship hit a work barge, which then struck a guided-missile destroyer under construction at Huntington Ingalls Shipbuilding in Pascagoula, Miss., damaging the warship.

The Norway-flagged heavy-lift ship *Hawk* "made contact" with a test barge berthed alongside the Arleigh Burke-class *Delbert D. Black* (DDG 119), said Bill Glenn, a spokesman for Huntington Ingalls Industries. The incident occurred at 1013 on March 29. *Hawk* was carrying a floating dry dock.

"The barge, which was supporting electrical work aboard the destroyer, in turn made contact with the destroyer," Glenn said. "There were minor injuries treated at the scene by Ingalls' medical personnel."

The extent of the damage to *Delbert D. Black* was not disclosed by Ingalls or the Navy. The next-generation destroyer is named for the first master chief petty officer in the Navy, who also served on *USS Maryland* during the attack on Pearl Harbor in World War II.

Casey Conley

INDEX TO ADVERTISERS

Oil spills from cargo ship's fractured hull near New York Harbor

A German-flagged cargo ship leaked up to 100,000 gallons of heavy bunker fuel during a voyage up the East Coast, reportedly after a shipping container fell overboard and damaged the vessel's hull.

Crew aboard the 922-foot *Dublin Express* reported sheening at 1400 on March 28 while the vessel unloaded at Staten Island's Global Marine New York Container Terminal in the Arthur Kill waterway. Authorities later traced the leak to a 15-by-15-inch hole alongside the ship's No. 4 fuel tank.

Authorities said a band of tar balls 400 yards long by 2 feet wide washed up on the beach at Jacob Riis Park in Rockaway, Queens. Testing confirmed the oil and tar came from the cargo ship.

The National Oceanic and Atmospheric Administration (NOAA) said the damage stemmed from a shipping container that fell overboard days earlier in heavy seas. The agency did not specify when the incident occurred. The Coast Guard has not officially determined the cause of the leak.

"USCG Sector New York notified (NOAA) that the container vessel *Dublin Express*' hull was damaged by a container that fell from her deck in heavy sea conditions. It is reported that between 12 and 16 containers were lost," NOAA said in a report noting the fuel spill into the waterway.

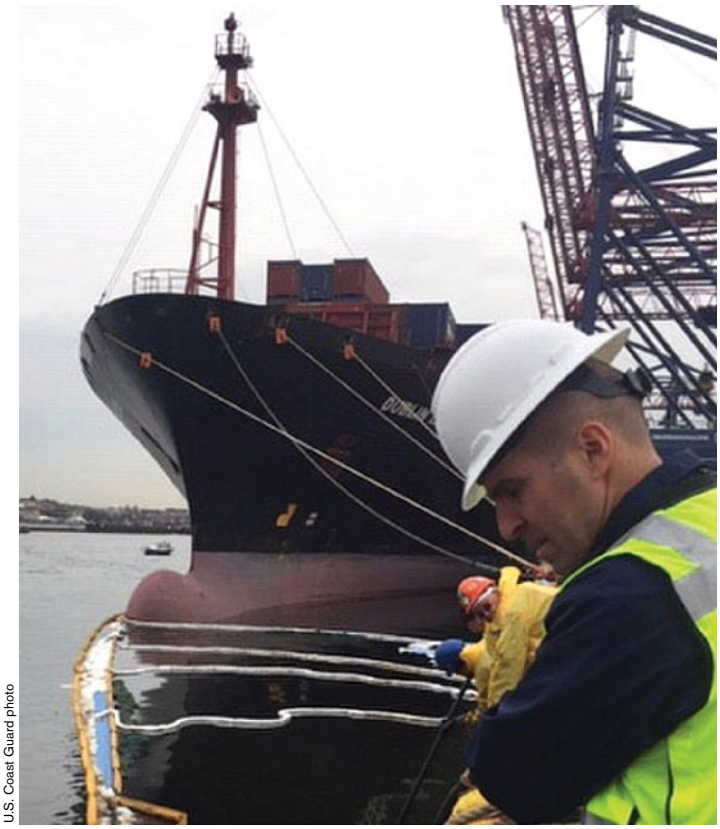
A spokesman for Hapag-Lloyd, the German shipper that owns the vessel, confirmed *Dublin Express* lost containers in "heavy swell" while sailing from Port Everglades, Fla., to New York. He did not say when or where the containers fell overboard, or what they carried.

Coast Guard spokeswoman Nicole Groll said the stormy weather occurred while the ship was off the Carolinas.

"Please understand that it is still too early to make an accurate assessment of the damage. At present, we are not able to say the time at which the damage occurred and what caused it," Hapag-Lloyd spokesman Tim Seifert said in a March 30 email.

It's not clear how long *Dublin Express* was tied up in Staten Island before crews noticed the leak. Once they did, responders placed boom around the ship. Authorities later traced the leak to the gash roughly 10 feet below the waterline. Divers patched the hole at night on March 28, Groll said.

The Coast Guard established a unified command with authorities from New York and New Jersey as well as Hapag-



Capt. Jason Tama, commander of Coast Guard Sector New York, assesses cleanup operations on March 29 after oil spilled into the Arthur Kill waterway from the containership *Dublin Express*. The incident resulted in a 400-yard-long band of tar balls washing up on a nearby beach. U.S. Coast Guard photo

Lloyd representative Gallagher Marine. *Dublin Express*' No. 4 tank can hold 300,000 gallons of fuel, and investigators believe 100,000 gallons escaped during the ship's voyage up the East Coast. Skimmers deployed throughout New York Harbor collected roughly 35,000 gallons of oily water. Cleanup operations in Jacob Riis Park concluded on April 2.

Authorities cleared *Dublin Express* to leave New York a week after the incident. AIS data shows the vessel stopped in Baltimore, Md., and Charleston, S.C., over the next four days.

A spokesman for shipper Hapag-Lloyd confirmed *Dublin Express* lost containers in "heavy swell" while sailing from Port Everglades, Fla., to New York. He did not say when or where the containers fell overboard, or what they carried.

Dublin Express was the second containership in five weeks that leaked fuel while at dock, according to the Coast Guard. Fuel escaped from a fracture in the 758-foot *Matsonia* while it was docked in the Port of Oakland on Feb. 21. The cause of that incident is unknown, and authorities haven't said how much fuel spilled into the waterway.

Groll said the agency is committed to finding out what happened with *Dublin Express* "in order to prevent something like this from happening again in the future."

Casey Conley

NTSB: Crane barge improperly moored before canal breakaway

An unmanned crane barge that broke free and struck high-voltage power lines over a Louisiana canal was not effectively moored, federal investigators have determined.

The 192-foot *Troy McKinney* was tied up at Chet Morrison Contractors (now called Morrison shipyard) on the Harvey Canal on June 7, 2017. The barge came loose at about 2000 after a towboat and barge passed the dock at nearly 5 knots.

Troy McKinney drifted south for about a half mile until its A-frame crane hit the power lines 124 feet above the canal. The barge was not damaged, but the power lines, owned by Entergy Corp., required $440,000 in repairs.

National Transportation Safety Board (NTSB) investigators focused their attention on the barge's mooring arrangement. They determined that 18-knot winds from the north and the wake from the passing tow should not have caused the breakaway.

U.S. Coast Guard photo

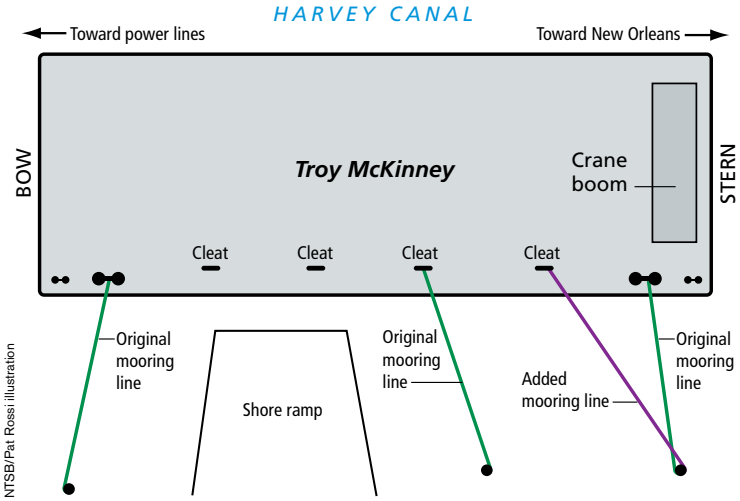
After coming free from its moorings, *Troy McKinney* drifted south on Louisiana's Harvey Canal for about a half mile. The barge's transit came to an end when its A-frame crane struck power lines owned by the Entergy Corp.

"Neither the prevailing wind conditions nor the speed and wake of the *Gail Cecilia* tow appeared to be extraordinary circumstances that would have caused a properly moored vessel to break free from its mooring," the NTSB determined in its accident report.

Troy McKinney arrived at the Morrison shipyard in mid-May for crane washing, blasting and repainting. The barge tied up port side to the yard, with its stern facing north toward the Mississippi River. Two weeks later, the crane boom was raised to allow for the paint work. Its top stood almost 136 feet off the water.

Troy McKinney was initially tied up with five mooring lines. Two connected with another barge to its north, and three connected to shore. The other barge was moved on May 21, leaving just the three shore lines, the NTSB report said. The president of barge owner McKinney Salvage & Heavy Lift of Baton Rouge, La., added a fourth line when he toured the vessel June 1.

Six days later, the barge came



NTSB/Pat Rossi illustration

A diagram from the NTSB report shows the mooring line arrangement for *Troy McKinney* on June 1, 2017, six days before the accident.

loose soon after *Gail Cecilia* passed with its barge. Video showed *Troy McKinney*'s stern coming loose from the dock, and soon the rest of the vessel was free and drifting south. It spun 180 degrees along the way and its stern-mounted crane hit the power lines at about 2025.

McKinney Salvage and the shipyard gave conflicting accounts of who was responsible for mooring the barge. McKinney officials said the shipyard had that duty, while the yard said its scope of work did not include mooring, according to the NTSB.

"The shipyard project manager who oversaw work on the *Troy McKinney* told investigators that the owner was responsible for mooring the barge and that this was 'fairly typical' when other vessels moored at the facility," the NTSB said in its report. "The project manager also stated that vessel owners would occasionally specify (in the contract with the shipyard) that the shipyard would be responsible for the vessel's mooring."

Shipyard personnel also produced emails suggesting the scope of work did not include mooring, the report noted.

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In any case, the mooring arrangement did not align with best practices cited by the NTSB. The agency's investigators referenced R.S. Crenshaw's *Naval Shiphandling* and Charles F. Chapman's book, *Piloting, Seamanship, and Small Boat Handling*.

Crenshaw's volume notes that spring lines should run parallel to the keel to prevent forward or aft movement, the NTSB report said, and Chapman calls for bow lines that run from a bitt on the vessel as far forward as possible to prevent astern movement. Stern lines, conversely, should extend from an aft bitt to a secure bollard or piling located aft of the vessel to check forward motion.

Troy McKinney was moored with three lines that ran almost perpendicularly from the vessel to the shoreside connections. The fourth line placed by McKinney's president ran roughly 45 degrees to the vessel's keel rather than parallel as the research recommends.

"Investigators therefore believe that *Troy McKinney*'s mooring lines were led from vessel to shore at an angle insufficient to prevent the barge from moving forward, or to the south, as the *Gail Cecilia* tow passed," the NTSB said. "Forward and aft movement is best prevented by forward- and aft-leading lines."

Neither Morrison nor McKinney Salvage responded to emails seeking comment on the NTSB findings.

Casey Conley

Damaged safety latch allows BC Ferries rescue boat to fall into sea

A rescue boat from BC Ferries' *Spirit of Vancouver Island* slipped off a davit hook due to a damaged spring-loaded safety latch, causing an "uncontrolled fall" into the water more than 50 feet below, the Transportation Safety Board of Canada (TSB) said in an investigative report.

No injuries were reported in the incident, which occurred on June 19, 2018, in Swartz Bay, British Columbia, after the completion of a davit repair. But the impact from the fall resulted in two cracks to the rescue boat's fuel tank and minor damage to the hull. An estimated 26 gallons of gasoline spilled from the tank.

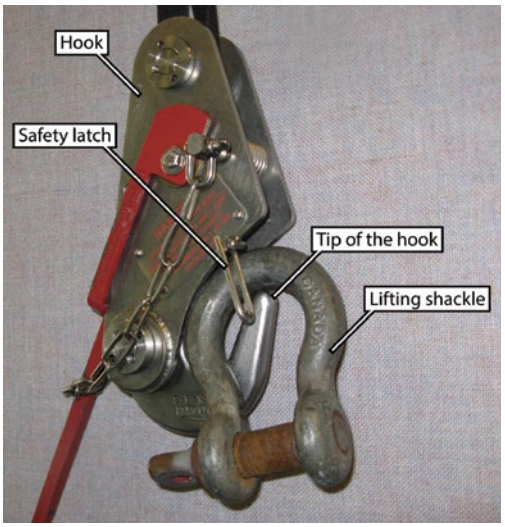
The rigid-hull inflatable boat (RHIB), one of four on the ferry, is 22 feet long and 6.5 feet wide. It weighs 2,443 pounds and has a six-person capacity. It was manufactured in March 2014 and fitted on the starboard side of the vessel in 2016, along with the davit used for raising and lowering the boat.

The incident occurred at the No. 1 dock at BC Ferries' Swartz Bay Terminal while a service technician for the davit manufacturer was responding to a call about intermittent jerking of the device. The technician, positioned on deck 6, lowered and raised the rescue boat several times with assistance from crewmembers to test the davit and determine the source of the problem.

As the troubleshooting continued, the technician explained to a deck hand that he planned to charge the device's hydraulic accumulator with nitrogen. To allow that, the deck hand lowered the rescue boat to the water and slackened the fall by approximately three feet, then raised the davit back to its maximum height. The unmanned rescue boat remained floating in the water, with the fall slack and the lifting shackle and hook resting on top of the fuel tank, while the technician charged the accumulator, the TSB report said.

After the technician had finished charging up the nitrogen, the first engineer came up to deck 6 to witness the testing and acknowledge the completion of the repair. The deck hand began retrieving the rescue boat from the water using the davit. When the boat was approximately 10 inches below the davit's limit switch, the deck hand changed the lifting speed from high to low to avoid activating the switch. The rescue boat jerked slightly due to this change in speed, then fell about 52 feet into the water.

After the incident, the first engineer, the deck hand and the technician inspected the hook and



TSB photos

A photo from the TSB report shows a rescue boat similar to the one involved in the incident, left, with the same type of davit. The photo at right shows the bent safety latch with the shackle positioned on top of the hook.

observed that the spring-loaded safety latch was bent to the side, creating a gap between the latch and the tip of the hook. It could not be determined when or how the safety latch was bent.

TSB investigators determined that the hook design is such that the lifting shackle can rest on the tip of the hook. While the rescue boat was floating unmanned in the water, there may have been an opportunity for the shackle to become positioned on the tip of the hook so that it could slip off due to the bent safety latch.

According to the TSB, the incident was the second in two months involving a BC Ferries rescue boat. On April 18, 2018, a rescue boat on another company ferry fell into the water during a drill, injuring two crewmembers in the vessel.

> The impact from the fall resulted in two cracks to the rescue boat's fuel tank and minor damage to the hull. An estimated 26 gallons of fuel spilled.

The TSB said that after the June 19 incident, service company Palfinger Marine instructed its technicians to conduct davit maintenance or repairs only after confirming that a rescue boat had been removed from its davit fall. Another safety action was taken by BC Ferries, which currently is not putting employees in rescue boats while lowering or raising them during training drills, spokeswoman Astrid Braunschmidt told *Professional Mariner*.

"They are boarding the boats from the water during training operations," she said. •

Michel Drouin

Courtesy Kongsberg

As autonomous ships make headway, questions loom about liability

by Alan R. Earls

Popular culture has been inundated with stories about autonomous or semi-autonomous cars. Sometimes the stories are about a bright future in which car crashes are a thing of the past. More often, the story is about autonomy that failed in some way, with tragic human consequences.

In the meantime, the same technologies that have made autonomous road vehicles a reality are also permeating the maritime field, leading to developments such as *Yara Birkeland*, an autonomous containership that received $16 million in project funding from the Norwegian government. Currently being built by Vard for Yara Birkeland AS and due to enter service in 2020, initially with a crew, the all-electric ship is designed to be fully autonomous and could take to the waves without humans as early as 2022.

But what happens when something goes wrong, as it inevitably will? Regulations generally imply that a vessel owner or operator should have control of a vessel and have the ability to deal with mishaps when they occur. In fact, owners and operators have sometimes taken liberties with this vision, satisfying themselves — if not the authorities — by having a plan and the expectation that they can hire someone to help when a problem arises.

The new world of autonomy, though, raises the stakes. With the potential for no humans to be present to work their way out of a mess, the question of who or what is in charge becomes even more urgent.

"It is a major overhanging topic for 2019," said Cole Callihan, a partner with the New Orleans-based legal firm Adams and Reese. "There are questions as far as litigation and liability and the application of Coast Guard regulations for these vessels."

"There is an international group, including the U.S. Coast Guard, presently scoping the navigation

A working 19-foot model of *Yara Birkeland*, an autonomous containership scheduled to launch in 2020, takes to the water at a testing facility in Horten, Norway, in December 2017. At left is *Odin*, an unmanned surface vessel (USV). As crewless ships advance, one question is repeatedly being asked in maritime circles: What happens when something goes wrong at sea?

rules to see if any changes are needed," said Grady Hurley, lead attorney of the maritime litigation and arbitration team at Jones Walker LLP in New Orleans.

Hurley said if a collision occurred involving two autonomous vessels, the owner of the ship responsible would be liable just as if a captain were at the wheel. There may be arguments of both negligent operation and unseaworthiness if the artificial intelligence (AI) equipment "was not reasonable, fit and maintained," he added. Likewise, the situation wouldn't be all that different if there were a collision between a manned vessel and an autonomous vessel. The fundamental assumptions would be the same. Hurley said that many ships currently have AI features such as autopilot, so the problem isn't entirely novel.

But the classic concepts of liability and fault may need refinement when human "operators" are potentially thousands of miles away from the vessel. Furthermore, the fault may turn out to be in logic or assumptions built into a computer program. Does the person who created the code then bear responsibility, and is that different from an unreliable radar unit or a failed shaft bearing, which also could cause a disaster?

Someone is ultimately responsible and has made a mistake, but what is unknown is how that will be traced back. The current responsibility regime is focused on the ship and its crew as the primary players.

The classic concepts of liability and fault may need refinement when human "operators" are potentially thousands of miles away from the vessel.

"From our perspective, I see as a first application, essentially phase one, things like transportation of cars on ferries on inland waters, or containers on short-sea voyages," said Lars Gustafson, managing director and U.S. marine practice leader at Arthur J. Gallagher & Co., an insurance brokerage and risk management company headquartered in Rolling Meadows, Ill. And there is a big leap from there to phase two.

Larger vessels would need "a lot of sign-offs from marine insurance companies," and the insurers would have to be convinced that the technology has been tested in real-life situations, Gustafson said. Those insurers thrive on accurate data and will insist on it before they agree to underwrite anything that is this new or of this magnitude, he added.

Yara Birkeland fits Gustafson's description of a "phase one" project. The parent company of Yara Birkeland AS is a fertilizer manufacturer. Once in service, the ship is expected to eliminate up to 40,000 truck journeys per year to distribute the company's bagged products.

"For early adopters actually moving onto the open sea, insurance costs will be high," Gustafson said, drawing a comparison with the introduction of liquefied natural gas

Courtesy Rolls-Royce

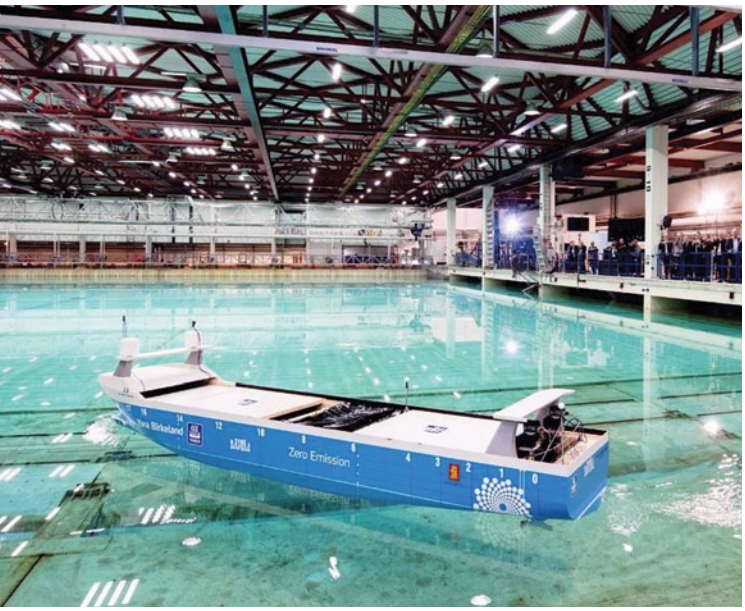
Rolls-Royce's Blue Ocean designers have come up with a range of concepts for autonomous cargo ships, including an LNG-fueled short-sea vessel. The early costs of insuring such ships is likely to be high until the technology proves reliable, experts say.

(LNG) tankers in the 1970s. "At the time, that was untested technology and the insurance premiums were very high, probably about eight to 10 times higher in relative terms than they are today." Eventually the technology proved to be reliable and claims were few, so insurance become much more competitive, he said.

While regulation is an issue, Gustafson said the most crucial factor for determining whether autonomous vessels take to the waves and whether they become insurable is the role of the classification societies.

"The IMO (International Maritime Organization) represents the flag states of each country, (but) it is a division of the U.N. with an inexact legal standing because it is up to the individual states to accept or reject its recommendations," he said.

On the other hand, it is the classification societies that will be looking at the technical side of the vessels and will sign off on the feasibility and legal ramifications. Of the dozen or so classification societies that examine 90 percent of the world's maritime tonnage, Gustafson said the leaders for autonomous technology and vessel design have been DNV GL and the American Bureau of Shipping (ABS).



Courtesy Kongsberg

Before being tested outdoors, a scale model of *Yara Birkeland* plies SINTEF Ocean's test tank in Trondheim, Norway, in September 2017. How the full-size ship and others like it handle scenarios outside a controlled environment is driving regulatory discussions at the IMO and elsewhere.

Lt. Amy Midgett, a spokeswoman for the U.S. Coast Guard, said autonomous technology is being discussed by various IMO committees that are beginning to wrestle with many of the potential implications. While there are no answers yet on the path toward regulation, the weighty importance of the questions is well recognized.

"When it comes to charting a course to develop standards and regulations, the advancement of vessel autonomy presents several new challenges for ensuring the continuity of safety and security in the marine transportation system," she said. "These challenges include consideration of stakeholder concerns, the regulatory framework, industry best practices, international standards and eventually specific regulatory standards. These are complex challenges with many factors to consider in order to ensure the safe deployment and implementation of autonomous technology."

While it is clear that the neither the Jetsons nor their robotic friends will be running the shipping business in the near future, changes will be coming. Even assuming that "computers do not make mistakes," the liability picture changes very little.

"Vessels can be liable *in rem*," said Hurley, citing the legal concept that assumes the property involved in an action is the primary focus, not a particular person. "There are presumptions of negligence under the law and strict liability."

Thus, there can be negligence in programming or calibrating, or equipment failure. Likewise, there could be in error in programming, or various sensors malfunctioning could affect the data received. So, Hurley added, "A ship can be held liable *in rem* and its owners and operators *in personam*."

"The maritime industry is flexible and has adjusted with advances in technology from oars to sails to propulsion, and from compass to autopilot and radar," he said. "The basic rules of the road will stay in place and be adapted to technology."

Callihan noted that shipping "is a traditional industry, so it is going to take time. Trucking will probably be the first with autonomy." •

Correspondence

by Andrew Norris

Ballast water next frontier for US environmental crime prosecutions

For the past 15 years or so, the United States has aggressively prosecuted foreign vessels, their owners and operators, and their crews for failing to comply with U.S. regulations for the control of oil discharges. Similar prosecutions, and the draconian sentences that result from them, are likely to begin occurring for the violation of U.S. ballast water management regulations.

The U.S. regulations for the control of oil discharges center on the requirement for vessels to process oil-contaminated bilge water through an oily water separator (OWS), and to only discharge processed bilge water when it has been cleaned of oil to 15 parts per million (ppm) or less. The separated oil waste is routed to a sludge tank for separate disposal.

As for recordkeeping, each oil tanker of 150 gross tons and above, and all ships of 400 gross tons and above other than an oil tanker, are required to maintain an Oil Record Book (ORB) Part I (Machinery Space Operations). All machinery space operations listed in the regulations — including the ballasting or cleaning of fuel oil tanks, the discharge of ballast containing an oily mixture or cleaning water from fuel oil tanks, the disposal of oil residue, and the discharge overboard or disposal otherwise of bilge water that has accumulated in machinery spaces — must be fully recorded without delay in the ORB. Each completed operation must be signed by the person or persons in charge of the operations concerned, and each completed page must be signed by the master or other person having charge of the ship. The ORB must be maintained aboard for not less than three years, and must be kept in such a place as to be readily available for inspection at all reasonable times.

> Ballast water records and reports, which require certificates of accuracy, provide fertile grounds for the types of prosecutions that have occurred in the oil discharge control realm.

While at a port or terminal under the jurisdiction of the United States, vessels are subject to inspection by the Coast Guard to, among other things:

- Determine that a valid International Oil Pollution Prevention (IOPP) certificate is on board, and that the condition of the ship and its equipment correspond substantially with the particulars of the IOPP certificate.
- Determine whether the ship has discharged any oil or oily mixtures in violation of the provisions of MARPOL 73/78 or U.S. regulations for the control of oil discharges.

The oil-related prosecutions of foreign vessels, their owners and operators, and their crews that have occurred have not been for actual oil pollution incidents, which occur in waters outside U.S. jurisdiction. Instead, those prosecutions have been based on fraudulent entries in ORBs, which are presented to U.S. authorities as a supposedly accurate record of machinery space operations involving the management of oil. The actual charges typically include a substantive violation (failure to "maintain" an ORB), plus some mixture of criminal charges including making a false statement, conspiracy, falsification of records and obstruction of justice.

Courtesy Wikimedia

A person who knowingly violates U.S. ballast water management regulations may be guilty of a Class C felony and be subject to criminal proceedings. The rules closely mirror those related to the control of oil discharges.

A typical sentence in such cases is epitomized by one handed down in November, in which the vessel's operating company was required to pay a $3.2 million fine and complete a four-year term of probation, during which time vessels operated by the company are required to implement an environmental compliance plan, including inspections by an independent auditor.

The ballast water regulatory regime

U.S. ballast water regulations, which apply to all non-recreational vessels, U.S. and foreign, that are equipped with ballast tanks and operate in the waters of the United States, closely mirror those related to the control of oil discharges. Both sets of regulations are found in Title 33 Code of Federal Regulations, Part 151 (Vessels Carrying Oil, Noxious Liquid Substances, Garbage, Municipal or Commercial Waste, or Ballast Water). Though several approved methods exist for managing ballast water in U.S. waters, if the vessel owners elect to install a ballast water management (BWM) system, then, like with oil, ballast water has to be treated to meet numerical standards, those being for the amount or number of organisms that can exist in ballast water discharged into U.S. waters.

As for compliance and monitoring, U.S. regulations do not require vessels to maintain a ballast water record book, though the International Maritime Organization (IMO) Ballast Water Convention does. How-

ever, U.S. regulations do require the master, owner, operator, agent or person in charge of a vessel subject to the U.S. BWM regulations to submit a ballast water report to U.S. authorities no later than six hours after arrival at the port or place of destination, or prior to departure from that port or place of destination, whichever is earlier, that contains such items as:

• Ballast water information about the vessel, including the total ballast water capacity, total number of ballast water tanks, total volume of ballast water on board, total number of ballast water tanks in ballast, and the identification of ballast water management method used.

• Information on ballast water tanks that are to be discharged into the waters of the United States or to a reception facility, including for each tank discharged (i) the numerical designation, type and capacity of the ballast tank; (ii) the source of the ballast water, including date, location and volume; (iii) the intended date, starting location, ending location, volume and method of ballast water management.

Ballast water information submitted to U.S. authorities must contain a certificate of accurate information that includes the name and title of the individual (i.e., master, owner, operator, agent or person in charge) attesting to the accuracy of the information provided, and an attestation that the activities were in accordance with the vessel's ballast water management plan.

In addition to the reporting requirements, U.S. regulations require the master, owner, operator, agent or person in charge of a vessel to maintain written or digital records, including reports made to U.S. authorities as described above. In addition to this substantive information, the records must also contain a certification of accurate information attesting to the accuracy of the records, and that all activities were done in accordance with the ship's ballast water management plan.

> There is no reason to believe that sentences handed down in such ballast water cases will materially differ from the very painful sanctions handed down in analogous oil discharge control cases.

When in waters subject to U.S. jurisdiction, the master, owner, operator, agent or person in charge of a vessel must provide the Coast Guard with access to the vessel in order to take samples of ballast water and sediment, examine documents and make other appropriate inquiries to assess the vessel's compliance with U.S. ballast water management regulations. Additionally, the written or digital records required to be maintained aboard the vessel must be provided to the Coast Guard upon request.

Parallel regulatory regimes, parallel enforcement

A person who knowingly violates U.S. BWM regulations may be guilty of a Class C felony and be subject to criminal proceedings. According to secondary Coast Guard doctrine, cases falling into this category are expected to be rare and typically involve severe violations. However, as with oil-related prosecutions, the ballast water records and reports, which both require certificates of accuracy, provide fertile grounds for the types of prosecutions that have occurred in the oil discharge control realm. Specifically, any false statements in those records or reports may lead not only to a prosecution for failing to comply with U.S. regulations, but also to such charges as making a false statement, conspiracy, falsification of records and obstruction of justice. And there is no reason to believe that sentences handed down in such cases will materially differ from the very painful sanctions handed down in analogous oil discharge control cases.

Tips to avoid ballast water prosecutions

Potentially liable parties can avoid these types of prosecutions by ensuring that ballast

water reports and records contain truthful information. It is better to honestly record ballast water transactions, even if the transaction itself does not comply with the vessel's ballast water management plan or U.S. regulations, than to make and present fraudulent entries. U.S. regulations envision the occurrence of extraordinary circumstances (for example, the vessel's BWM method becoming unexpectedly unavailable), and provide for "workarounds" to rectify, or at least minimize, negative consequences that may result. Better to utilize that process than attempt to hide issues and falsify records and reports.

An excellent tool available to owners and operators is an external audit of a vessel and/or company environmental program. Such proactive assessments are a cost-effective means of obtaining a snapshot of the effectiveness of the environmental compliance program, and can pay enormous dividends through the advance identification and correction of deficiencies that may, if uncorrected, subject the vessel, owner/operator and crew to the types of prosecutions that have occurred in the oil discharge control realm. •

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continued from page 48

When the CDS was eliminated, U.S.-flag shipping companies that had been ordering about 20 new vessels a year for the foreign trade from American shipyards abruptly stopped doing so. With no financial incentive to build those commercial ships in the United States anymore, a number of shipping companies began replacing their U.S.-flag international fleets with foreign-built and foreign-crewed vessels. Other companies continued operating their CDS-constructed ships until they reached the end of their service life, and then got out of the market altogether after either scrapping the vessels or selling them — often to foreign vessel operators. From 1982, the year the CDS was defunded, until 2016, more than 100 U.S.-flag unlimited tonnage oceangoing ships in the international trade were lost, a nearly 60 percent reduction in the fleet that resulted in thousands of American merchant marine jobs being eliminated.

In hindsight, it is clear that President Reagan's egregious decision to do away with ship construction subsidies not only hurt our industry and cut jobs, but in my opinion it also put our country at risk. Today, foreigners control the movement of 99 percent of our seaborne international trade. We are now at the mercy of companies operating ships registered in countries that may hate us and seek to do us harm, manned by mariners who have no allegiance to the United States or commitment to our maritime security, economic security or national security. If the current rhetoric about tariffs and embargoes becomes more strident and we get into an extensive trade war, we may soon find out how long it takes for the store shelves to empty if the foreign-flag ships that now control our economic destiny decide to stop shipping here altogether.

Our government has not offered any monetary subsidies for the construction of new U.S.-flag commercial vessels for over 37 years, yet it continues to subsidize the oil industry to the tune of $4 billion a year. In fact, in 2018 the Trump administration proposed $10 billion in subsidies for the coal and nuclear industries, but not one penny toward subsidizing the construction of any new U.S.-registered commercial vessels.

If we ever hope to reclaim our economic dominance and get out from under the thumb of foreign control, then our government needs to invest in our shipbuilding and maritime industries. Personally, I would like to see a return to the days when MarAd construction subsidies helped get 20 new U.S.-flag oceangoing vessels for the international trade built in American shipyards each year. Failing that, everything from tax breaks and direct cash subsidies to interest-free ship construction loans and vessel-specific financial incentives should be considered. It's time to make America's shipyards and merchant marine great again.

Till next time, I wish you all smooth sailin.' •

Kelly Sweeney holds a license of master (oceans, any gross tons), and has held a master of towing vessels license (oceans) as well. He sails on a variety of commercial vessels and lives on an island near Seattle. You can contact him at captsweeney@professionalmariner.com.

A Mariner's Notebook

by Capt. Kelly Sweeney

Time to make nation's shipyards, merchant marine great again

For almost 50 years, beginning in the late 1930s, our government actually helped get U.S.-flag merchant ships built, utilizing the Construction Differential Subsidy (CDS) program. The CDS covered up to 50 percent of the additional cost to build ships in a U.S. shipyard instead of a foreign yard. The money was paid by the U.S. Maritime Administration (MarAd) directly to shipyards and/or shipowners, and was only allowed to go toward the construction of U.S.-flag ships in the international trade. Between the end of World War II and the early 1980s, about 250 U.S.-flag tankers, containerships and break-bulk cargo vessels were built in the United States using CDS funds, with tens of thousands of citizens owing their livelihoods to this government program.

I have known of many ships in my seagoing career that were originally built using construction subsidies, and even sailed on a few as well. Once I caught an asphalt tanker in Morehead City, N.C., filling in for a young third mate so he could be home for the holidays. I had a good time on my 60-day relief as we visited ports such as Savannah, Ga., Rio Haina in the Dominican Republic, and the island of Curacao in the Lesser Antilles, where I paid off the ship. Not long after joining the vessel, I found out that it was built with CDS funds and launched as *Falcon Champion* in 1984, the last commercial ship produced at the famous Bath Iron Works on the Kennebec River in Bath, Maine. Another ship built with CDS funds that is still operating today is the fish processing vessel *Ocean Phoenix*, which originally entered sea service as the break-bulk freighter *Oregon Mail* and flew the American President Lines house flag before it began its latest incarnation. Mark, a longtime captain who was a year behind me at Cal Maritime, once served as the master of the 680-foot Coast Guard-inspected fish factory ship.

Very early in my career, I ran a crew boat for a large West Coast towing company in Southern California. One evening, I dropped off a tankerman on a barge that was pumping bunkers to a huge crude oil tanker, *ARCO Independence*. A number of my Cal Maritime schoolmates ultimately worked on that 1,100-foot ship, which was originally built with CDS funds at the Bethlehem Steel shipyard at Sparrows Point, Md., in 1977 as the tanker *American Independence*. As mariners say, the ship is now "razor blades" after being scrapped in 2010.

Our government established the CDS program to help keep the U.S.-flag commercial fleet viable, and to level the playing field by counteracting the financial support many other countries provide for their shipbuilding industries. In the 1970s and 1980s, Japan, South Korea and China rose to become shipbuilding powers by paying huge government subsidies to their shipyards. In contrast, the Reagan administration killed the CDS program, a move that immediately placed U.S. shipyards at a terrible disadvantage because the foreign yards competing against them were still receiving financial support from their respective governments. With no CDS payments from MarAd, the American shipbuilding industry was gutted. Nearly 50 percent of the private shipyards in the United States closed in the 1980s, with tens of thousands of U.S. citizens losing their jobs as a result.

continued on page 47

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