

TowLine

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Moran Towing Corporation

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On Blue Water, the *Eagle* Flies

Moran's Tom Craighead Sails aboard
the Coast Guard's Celebrated Tall Ship

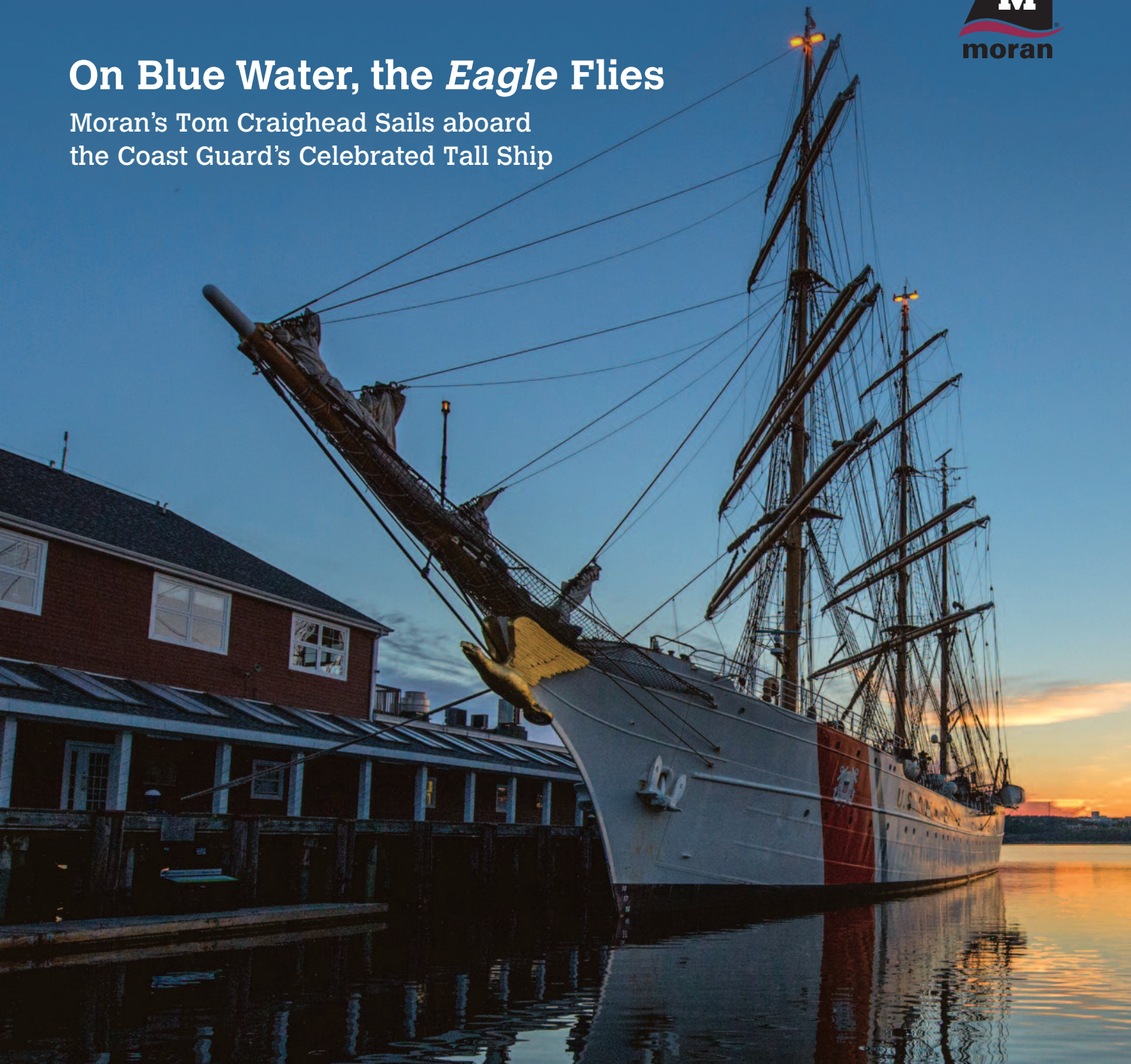


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On the cover:

The *USCGC Eagle*, seen here
moored in Nova Scotia.

Photograph by Petty Officer
2nd Class Walter Shinn,
USCG Atlantic Area

Opposite page:

In Port Arthur, Texas, the
oil tanker *Eagle Kinabalu*
readies for an assist from
the tractor tug *Hayley
Moran* [story on page 20].

48 Moran Tugs Receive Devlin Awards for Safety

48 Moran tugboats were awarded 2013 Devlin Awards at the program's Annual Awards Luncheon last June.

According to the Chamber of Shipping of America, which sponsors the honor, the Jones F. Devlin Award is given to "all manned merchant vessels that have operated for two full years or more without a crew member losing a full turn at watch because of an occupational injury."

Moran's current recordholder for the achievement is the *Jennifer Turecamo*, which is now in its 14th year without a Lost Time Injury (LTI). Among Moran's other awarded vessels, four have now exceeded 10 years, and more than a dozen have gone five years or more. 45 Moran vessels received the award in 2012.

"We're glad that the industry credits people publicly for making safety succeed," commented Matt Baker, manager of Moran's Quality, Health, Safety, Security & Environmental Group. "It's an exceptionally demanding challenge, and the awards give well-deserved recognition to our vessel crews."

Moran Launches Social Media Pages

Moran went live with its Facebook page in 2013, splashing a bounteous assortment of photos, videos, links, news items, and information onto the social networking site. Featuring postings about the company's activities, vessels, history, and practices, the page has been visited by employees, customers, shipbuilders, suppliers, shipspotters, and

the general public. Many visitors have themselves contributed impressive videos, photos, and comments — including rare documentary footage, technical facts, historical content, and links to news stories involving Moran tugs, which were originally broadcast by major public media outlets. To visit, log on to:

www.facebook.com/MoranTowingCorporation.

You can also follow Moran on Twitter, at @morantug, and can access Moran's LinkedIn page under Moran Towing Corporation.



93 Moran Vessels Receive CSA 2014 Environmental Achievement Awards

93 Moran vessels were awarded Chamber of Shipping of America (CSA) Environmental Achievement Awards for 2014, at a dinner ceremony held this past November in Washington, D.C.

The awards are given to vessels that have operated for two years or longer without reportable spills, citations for MARPOL violations (from the Coast Guard or a port state), and violations of state or local pollution regulations. Moran's recordholder for the distinction is the Baltimore-based tug *Harriet Moran*, which has now gone 36 years without a spill or violation. The tug *Cape Romain*, currently serving in the Moran Norfolk fleet, is a close runner-up, with 35 years. Among Moran's 2014 award winners, three of the vessels have





now maintained the incident-free status for 30 to 35 years; three have held it for 16 to 20 years; and 31 have gone 10 to 15 years. 92 Moran vessels received the award in 2013.


Moran's White "M" Goes Pink for Breast Cancer Awareness Month

Last October, an unusual sight appeared on the water in ports and terminals where Moran tugs operate: the white Moran "M," the company's famously traditional, stack-borne insignia, was, for the entire month, pink. The color was not some exotic new primer, but a pointed gesture: an acknowledgment of Breast Cancer Awareness Month.

The idea for the recognition came from a Moran employee who works on one of the company's tugs. The fellow contacted Paul Tregurtha and his son Ted (Moran's CEO and president, respectively), and requested permission to paint the port and starboard "M's" on his tug pink, in honor of a family member. He would do the work and cover the expenses himself, the petitioner said. Paul and Ted liked the idea, and Ted thought it should extend to all of Moran's ports, with the company covering the costs. He directed Moran's management team to designate at least one tug in each location to get painted, but gave blanket approval to do more if crews on additional vessels wanted to support the cause. Within two days, word came back that the

entire fleet wanted to participate: every crew, on every tug, in every location.

"We ordered a large quantity of pink paint from Armorica, our supplier, and they immediately asked what we were up to," Ted said. "When we told them, they volunteered to donate the paint." It is likely that a small number of tugs in Moran's fleet of about 100 could not be painted because they were at sea or in dry dock undergoing repairs, he said.

Moran's employees have been donating to the Susan G. Komen Foundation of their own accord. "With a relatively large group of employees spread out in many locations, it is wonderful to see them all spontaneously rally behind such a worthy cause. I think the other thing that this highlights is how many of us have been touched directly or indirectly by this disease," Ted Tregurtha said. 

Above: The *Laura K. Moran* at work in New York Harbor last October, bearing a pink "M" for Breast Cancer Awareness Month.

Opposite page: Moran Savannah tugboat captains accepting the CSA 2014 Environmental Achievement Award on behalf of Moran. Left to right, Capt. Paul Johnson; Capt. Matt Lee; USCG VADM Charles D. Michel, Deputy Commandant for Operations; and Capt. Arthur Booth.

Port Profile

Moran Port Arthur/ Beaumont





he Golden Triangle — the area of South Texas bounded by Port Arthur to the south, Beaumont to the north, and Orange to the east — got its name from “black gold.” It was the birthplace, in 1901, of Texas’ oil wealth: at Spindletop Hill, south of

Beaumont, the celebrated Lucas Gusher sent a geyser of crude a reported 150 feet in the air, eventually yielding 100,000 barrels a day.

The Lucas strike launched the petroleum industry and the region down the path of exploration and economic development that came to be known as the Texas Oil Boom. It’s a colorful history, and it contains the seeds of the Golden Triangle’s modern-day maritime industry. One of the first large-scale development initiatives to be triggered by the 1901 boom was the creation of navigable waterways and workable harbors in the region — a lasting legacy that has to this day undergone virtually continuous upgrading. The Triangle, currently home to four major refineries, is the acknowledged heart of the U.S. Gulf Coast’s refining and petrochemical industries. Over the years, its regional economy has broadened to include thriving import/export trades in grain, fertilizer, chemicals, coke, soda ash, steel slabs, fishmeal, and forest products as well — essential commodities that have myriad uses in agriculture, industry, and, ultimately, the daily lives of consumers. “General cargo volumes [at Texas ports] are expected to grow by more than 50 percent by 2035,” a consulting group led by Cambridge Systematics wrote in a 2010 report prepared for the Texas Department of Transportation.

Many of these cargoes are transported by ship, via the Sabine-Neches Waterway, the Triangle’s freight corridor. On an average day, 150 barges

and 15 tankers pass through the Waterway, the Coast Guard reported in 2013. In addition to these oil and chemical tankers, a variety of break-bulk freighters, Ro-Ro ships, bulkers, and other cargo vessels make their way up and down the Sabine-Neches’ main arteries, which include the Neches River, the Sabine River, the Sabine-Neches Canal, and the Sabine Pass Ship Channel. The Channel connects the Waterway with the Gulf of Mexico.

Moran Port Arthur/Beaumont, headquartered in Port Arthur, provides top-tier marine towing services to all of the vessel types calling at the Triangle. Among the division’s customers, the petroleum sector is predictably well-represented. From 2011 through mid 2014, the U.S. shale oil boom drove

increased demand for tanker and Articulated Tug and Barge (ATB) assists, and the Sabine-Neches’ heavy tanker traffic has long reflected the Nation’s immense utilization of oil and petrochemicals. (In 2013, the U.S. Energy Information Administration [EIA] estimated America’s oil consumption to be 18.8 million barrels of refined petroleum products per day.) Moran Port Arthur/Beaumont routinely assists tankers spanning up to 902 feet in length, with drafts exceeding 40 feet, says Stephen M. (Steve) Kelly, the division’s vice president and general manager, as well as some very large military vessels and



bulklers that transit the waterway.

“Many of the ships we assist are ‘daylighters,’” Kelly says. The term refers to restrictions on the ships’ transit; owing to their size relative to the narrow waterway, the vessels are only allowed to transit the Neches and Sabine Rivers during daylight hours, and when they call, marine traffic is restricted to one-way passage. “Our customers and the Sabine-Neches pilots are acutely exacting about safety,” Kelly says. “It’s the foremost reason they hire us.”

Moran Towing Corporation arrived in Port Arthur in 1963, with the company’s purchase of D.M. Picton & Company, a local marine towing and construction firm. The acquisition established Moran in the U.S. Gulf region at an auspicious time for the area’s industrial and economic growth, Kelly says. Major oil producers like Texaco, Gulf Oil, and Humble (later called Exxon) were already well-established in the Triangle, along with some

Opposite page: The Reinhold Schulte, an oil/chemical tanker, waits for an undocking assist from the Eleanor F. Moran.

Above: Aboard the Hayley Moran, Mate Jeremy Welch prepares a line for hauling to the stern of the tanker Eagle Kinabalu.



of their petrochemical counterparts, and the industries' surging growth drove an expanding need for tankers, freighters, and tugs to assist them. Imports of crude and domestic trades of refined petroleum products had increased steadily since the end of the Second World War, helping drive demand for marine transportation and towing services. Oil was not the area's only growth industry; other forms of industrialization, urbanization, and growth in construction businesses were also creating demand for marine services. Vessel traffic in Port Arthur, Beaumont, and Orange was increasing concurrently.

Moran continued to operate under the D.M. Picton name for the next 10 years. Picton originally operated two tugs: the *E.M. Black* and the *Stella II*. Larry G. Eaves, a native Texan who got his start as a dispatcher for Picton in 1963, migrated to Moran when it bought the company later that year. In 1973, Moran renamed the division Moran Towing of Texas. Eaves, who had risen to the position of assistant general manager, met with continued success and was appointed vice president and general manager in 1987. He handled all aspects of the company, from administration, to sales, to crew training. He was succeeded by Steve Kelly, who, in 1981, accepted a transfer to Texas from Moran headquarters in New York. Kelly initially served in the positions of assistant operations manager and assistant vice president; he became vice president and general manager in 2000. In 2011, the division was again renamed, aligning it with Moran's unified corporate identity as Moran Port Arthur/Beaumont. Steve Kelly is the current vice president and general manager.

Moran Port Arthur/Beaumont's area of operation encompasses the Neches River, including the Ports of Beaumont, Port Neches, and Port Arthur; the Sabine River and the Port of Orange; the Sabine-Neches Canal; the Sabine Pass, and the Gulf itself. The division, which employs 40 to 50 crew-members and nine shoreside staff, has been faring well here, its people say; it has earned many awards for safety and environmental responsibility over the past few decades, and business continues to be robust. Crews and shoreside staff receive extensive in-house training in safety, first aid, hazard communication, and drug and alcohol awareness. Moran's heightened initiative in *near miss reporting* is being met with enthusiastic diligence

and solidarity, Steve Kelly says. The crews also receive off-site training in radar operation, advanced firefighting, certain types of license upgrades, and IMO Standards of Training, Certification and Watchkeeping (STCW). A majority of Moran Port Arthur/Beaumont's captains and crews live within a 30-minute drive of the dock, enabling flexible scheduling when the workload is light and quick responses when extra crew is needed. Unscheduled and challenging jobs, like pulling vessels out of the mud or off of riverbanks after hurricanes, sometimes crop up, Kelly says, and it's good to be prepared for them.

The Moran Port Arthur/Beaumont fleet, with its three Z-drive tractor tugs and two twin screws, is equipped to handle most any need. Demand for the services of its three high-horsepower tractors is expected to increase over the next 10 to 12 years, as the U.S. Army Corps of Engineers works to deepen the ship channel of the Neches River. The dredging will make the channel navigable by vessels with a draft of 48 feet, enabling very large Post-Panamax tankers to begin calling at Port Arthur and Beaumont.

According to the Texas Department of Transportation, substantial shoreside development is currently underway at the Port of Port Arthur, the Port of Beaumont and the Port of Orange. Beaumont's 2014 capital improvement program includes (among other improvements) a new, \$5.3 million mobile crane; a 650-foot cargo wharf with new rail and road access along the Sabine-Neches Waterway; and a \$16 million rail storage yard expansion. Port Arthur will be getting upgrades to one of its berths, shoreline stabilization, improved road and site access, and improvements to security. Under the DOT's 2012-13 program, Orange is undergoing similar improvements.

The Golden Triangle is currently the nation's number one receiving port for high sulphur-content Mexican crude oil, Steve Kelly says, by virtue of the large number of high-volume, secondary-conversion refineries in the area. (In 2013, EIA estimates ranked Mexico the fourth-largest supplier among countries that sold crude to the U.S.; America imported 829,000 barrels per day from Mexico that year.) Exports of diesel fuel and jet fuel from refineries in the Triangle have also contributed to Moran's tanker-assist business, Capt. Jeff Welch of the *Hayley Moran* says.

The Neches River in Beaumont is home to the U.S. Maritime Administration's (MARAD) Beaumont Reserve Fleet, an anchorage for ships of the National Defense Reserve Fleet (NDRF). The NDRF includes some deactivated U.S. military support ships in MARAD's Ready Reserve Force (which can be reactivated at any time, should the need arise); decommissioned U.S. Navy auxiliary vessels; and a variety of obsolete commercial vessels

Opposite page: The view astern from the wheelhouse of the tractor tug *Eleanor F. Moran* as it pulls alongside the *Reinhold Schulte* to assist with undocking. Inset, top, the *Eleanor* docked in Port Arthur; bottom, the *Schulte* on its way shortly after releasing the *Eleanor*.






awaiting disposal. Moran has towed numerous ships to and from the anchorage. MARAD cites

the Port of Beaumont as the Nation's busiest military cargo port, and it is the military's leading port for receiving vehicles and equipment that have been damaged in combat. The Port's roll-on/roll-off capability accommodates very large vessels, many of which Moran assists.

Opposite page: Top, a bulk carrier docked at a grain elevator along the Neches; bottom, oil refineries adjoining the waterfront in Beaumont.

Above: Top, Capt. Jeff Welch helping the tractor tug *Hayley Moran*; bottom, *Hayley* underway.

For more than 50 years, Moran Port Arthur/Beaumont has been a safe, efficient mainstay in this busy hub. At present, both the division and the ports it serves are growing. 

On Blue Water, the *Eagle* Flies

Moran Jacksonville VP & General Manager
Tom Craighead Sails aboard the Coast Guard's
Celebrated Tall Ship

The *USCGC Eagle*, a three-masted barque, is one of the world's most recognizable tall ships. A majestic square-rigger based at the United States Coast Guard Academy in New London, Connecticut, the ship has sailed to ports near and far, from North America to Australia. Its sleek white hull, bearing the Coast Guard's red, white, and blue sash insignia, has appeared in countless news photographs, like the iconic shot of the *Eagle* parading with tall ships in Operation Sail during the American Bicentennial celebration. Serving primarily as a training vessel for United States Coast Guard cadets, the *Eagle* also participates in search and rescue missions and environmental protection operations. In addition, it acts as an ambassador for the Coast Guard, calling by request at U.S. and international ports to participate in special events, state receptions, and ceremonies. It is the only active (operational) commissioned sailing vessel in the U.S. maritime services.

Tom Craighead remembers admiring the *Eagle* from a distance, on several occasions when the ship docked not far from his office in Jacksonville, Florida. Then, in 2012, while serving as a board member of the Jacksonville chapter of the Propeller Club, he received an invitation: the Coast Guard offered to take the club's board members on a short excursion aboard the *Eagle*, from the Jacksonville Sea Buoy to nearby Mayport Naval Station. The ship would use its auxiliary engine, a 1,000-hp Caterpillar diesel, for the short hop. Boarding the *Eagle* a few weeks later for the ride, Craighead walked around and was struck by a deeper understanding of the vessel and its mission. "It was a very impressive sight, even with the sails stowed," he says. The trip gave him a stimulating taste of a blue-water world that was new to him, he says, and it got him thinking about how life must have been on sailing ships. The thought of experiencing a voyage under full sail on a ship like the *Eagle* would certainly have

appealed to him, he says, but it seemed such a remote possibility that he never entertained it.

More the surprise then, when in May 2013, Mr. Craighead received an invitation to join an elite group of guest observers on an actual training voyage of the *Eagle*.

One of the ways the Coast Guard conducts the *Eagle's* mission of diplomacy is to invite individuals who it feels have demonstrated distinguished leadership in maritime affairs to accompany the ship's crew on a voyage. Many of these honored guests come from the maritime community, but anyone in any profession who meets the selection criteria is eligible. Aboard the ship, guests learn about the Coast Guard's cadet training program and cutter operations, and, reciprocally, help provide developing Coast Guard officers with an introduction to the maritime industry. Capt. Thomas Allan, the USCG's Captain of the Port for Jacksonville, served on the committee that selected Mr. Craighead. The Coast Guard looks for individuals whose leadership extends beyond their primary corporate or institutional affiliations, he says, and it had been aware of Mr. Craighead's professional track record. In an e-mail to *TowLine*, Capt. Allan listed some of Mr. Craighead's credits that the USCG considered in bestowing the invitation:

"...[Tom's] influence and leadership extend far outside of the Moran offices and tugs. [He] participates as a board member of the Propeller Club, and the Jacksonville Maritime Transportation Exchange; he is a member of the Area Maritime Security Committee, providing critical knowledge and information to increase the readiness of Northeast Florida to meet threats; he is a

Opposite page: Top, the *Eagle* off Mayport before the voyage; bottom, getting underway.





member of the Jacksonville Port Safety Committee, through which he brings forward critical safety issues and works hand in hand with stakeholders to develop and implement solutions; he helps to represent the American Waterways Operators locally in Jacksonville; and he volunteered as a member of [the Federally mandated] Region Response Team IV, which reviews and critiques the Jacksonville Area Contingency Plan to ensure that local responders are ready to properly react to environmental mishaps. ...Tom could have easily chosen to be singularly focused on managing Moran Jacksonville. Instead, he decided to reach out, build partnerships and share his time and talents to improve the safety and security of Florida's 'First Coast.'"

Mr. Craighead accepted the invitation before knowing where the trip's destination would be. "It didn't matter," he says. It turned out to be Bermuda, which was in fact a bonus: he could plan on being dropped off there on the first leg of the *Eagle's* voyage, to spend some time basking in the islands' serene splendor before flying home. On June 22, 2013, he boarded the *Eagle* in Mayport, Florida, with a group of six or seven Boy Scouts of America Sea Scouts and a few other guest passengers.

The *Eagle's* commanding officer, Capt. Wes Pulver, and its XO, Lieutenant Commander Jessica Rozzi-Ochs, were already aboard when Craighead embarked. The ship's permanent crew — four additional officers, three CPOs and 49 enlisted men — were also aboard, accompanied by a complement of additional USCG staff needed for training voyages. The temporary duty personnel consisted of four officers, two CPOs, and 13 enlisted men. They were a combination of Academy instructors, Coast Guard Auxiliary personnel and enlisted personnel right out of boot camp, Craighead says. 21 upper class cadets, 129 underclass cadets, and a group of officer candidates had also boarded previously, in St. Petersburg, Florida. The crew and trainees comprised both men and women; about a third were women, spanning in rank from executive officer to seaman first class. The words "passenger" and "observer," it should be noted, don't fully describe the status of guests aboard the *Eagle*. Guests are actually free to participate in most daily activities, including "all hands" evolutions; they can even go aloft and work the sails if they've got the mettle and the inclination. Some of the Sea Scouts, the oldest of whom might have been 14, climbed the rigging. "This was the experience of a lifetime for them," Craighead says.

A "navigation brief," attended by navigation staff and all of the senior cadets, preceded departure. Held in the mess deck (the Enlisted Personnel Galley Area, in Coast Guard parlance) it addressed the use of a sailing pilot and tugs; weather, tidal and current conditions; the planned course through the Mayport basin; local port navigation restrictions, such as right whale speed restrictions; anchorage restrictions; the pilot's point of departure; undocking assignments; and speed. The discussion amounted to a comprehensive risk assessment.

The ship motored out of Mayport at 1500, and continued motoring until the following morning. When it made the switch to sail power, Craighead says, he got a strong first impression: the depth, precision and coordination of teamwork needed to sail a ship like the *Eagle* are a formidable challenge. According to the Coast Guard, the crew must handle more than 22,000 square feet of sail and five miles of rigging to maneuver the ship under sail. The *Eagle* has 23 sails and more than 200 lines controlling the sails and yards; when crews are working them the deck becomes one big trip hazard, Craighead says, but the mariners he sailed with were adept at avoiding accidents. Every crew-member, cadet, and officer candidate must know the name, operation, and function of each line by heart, and that's just the book learning; the on-the-job practice is more demanding by orders of magnitude. Setting the sails, adjusting the yardarms, manning the helm, and making turn evolutions to gain a better wind are just a few of the tasks that require everyone pulling together with consummate precision.

The *Eagle's* regular crew is extremely dedicated to the ship and its reputation, and tries to work her under sail at every opportunity. The crew resorts to engines only when necessary to maintain the ship's busy schedule, and for port arrivals and docking maneuvers. In what is perhaps the most visible measure of this devotion, crew-members regularly climb 145 feet straight up the rigging to venture out on yardarms and work the sails or inspect rigging. Cadets join the regular crew in the rigging and every other aspect of the vessel's operation as part of their training. To keep themselves well-seasoned for the adventure, Coast Guard Academy instructors and Auxiliary personnel sail as often as they can on segments of the *Eagle's* summer cruises. The regular crew is assigned year-round, and often spends the winter months in the shipyard performing maintenance. All regular crew-members, from sail master to deck officers, are trained in the specialties of the vessel, which span multiple disciplines. Engine room personnel, for example, work hard at teaching, even as they shoulder the substantial demands of maintaining the ship's systems.

Opposite page: Top, shifting the headsail sheets; bottom, tight quarters.







The environment aboard the *Eagle* is tailor-made for training young mariners in the team-driven fundamentals of life aboard a ship, Craighead says. Cadets learn core skills like navigation, ship handling, damage control, first aid, firefighting, flood control, and safety. Much of what is taught aboard the ship is useful in all vessel oper-

and needs. Craighead had brought a camera that shoots both stills and video. He grabbed some memorable footage of a sailor climbing to the end of a gaff and around a stay wire to shimmy out on a narrow jack staff. The man's task was to fix a problem with the ship's flag. Perched about 40 to 50 feet up, he was hooked in with his harness, but



ations, regardless of how modern or dated the vessel. The Coast Guard is of course well-practiced in the art of teaching; the *Eagle's* instructors were, to a person, expertly direct and to the point, Craighead says. Their charges, eager to learn and participate, looked sharp themselves. "You could see the change in behavior as the voyage progressed," Craighead says. "Capt. Pulver, XO Rozzi-Ochs and the *Eagle's* 'ops' officers were constantly on hand to offer praise and guidance, and the instruction was always with a positive approach — they actually made it fun." The cadets got some practice in public speaking, too; they were responsible for conducting daily weather briefings of the captain, which were always attended by a large group of crew-members.

On the ship's first morning at sea, a deck crew of about six to eight people set sails in a strategic order; they continued working the sails throughout the day as winds began to pick up. The process continued steadily as watches changed, with the pace and complement of personnel changing fluidly in accordance with sailing conditions

the scene was still difficult to watch, Craighead says; the ship had a slight roll mixing with a fore-and-aft motion, which must surely have felt magnified from that height. After completing the job, the man climbed down and took a few moments to steady his nerves. Then he went back up into the rigging to handle some other tending.

"Watching the commitment and dedication of these young men and women was a deeply emotional and patriotic experience," Craighead says. "From the viewpoint of safety, they do a lot very well. What I saw was a very engaged, behavior-based safety program, with positive reinforcement and Captain's Mast as appropriate."

Craighead perceived in Capt. Pulver an ideal combination of leader and diplomat. As someone who regularly deals with officials from the Department of Homeland Security and the State Department — when he is not busy with USCG brass, crews, and trainees — Pulver is well-served by these strengths. On top of these duties, he and the crew become acting representatives of the United States when the *Eagle* visits foreign ports and receives heads of state and other dignitaries who come aboard to greet the ship. As a floating ambassador, the *Eagle* is currently in such high demand that the Coast Guard maps out its schedule three to four years in advance.

"How was the food?" a reporter asks. "Excellent," Craighead says, adding that he found this

Previous spread: Going aloft; inset top, a detail on bow watch; inset bottom, a view to the crew's nest. Opposite page: Catching wind; inset, Tom Craighead, photographed at the ship's stern. Above: Sunset off Bermuda.



unsurprising; he had heard that the training Coast Guardsmen receive in food preparation is very good. The *Eagle* has a particularly accomplished staff, which routinely caters state receptions and other high-toned events. The Coast Guard does not hire outside caterers for the ship; its own crew handles cooking, serving, and setting up the vessel in grand style for receptions. At sea, however, water may be rationed. In the days leading up to the trip, Craighead practiced taking sea showers at home, but the voyage to Bermuda turned out to be too short to necessitate rationing.


Craighead's quarters were in the officers' section and were comfortable, he says. "The ship rode nicely, but you had to be alert for strong winds and a steady heel to the ship — depending on which side of the vessel you live on, the list can either secure you against the bulkhead or help you out of your rack in the middle of the night."

During waking hours, there was time for congenial conversation. Craighead talked with Capt. Pulver and LCDR Rozzi-Ochs about cultural trends in the maritime industry and the Coast Guard, which have for decades been moving toward expanded, enhanced cooperation on a growing assortment of issues and roles. "Leading industry groups like American Waterways Operators have created a much better atmosphere of trust," Craighead says, "and the Coast Guard has expanded its role as a service agency in areas where it is the only recourse for sailors. The mutual participation in problem solving has made everyone's life a little easier." He also spoke with several Academy instructors, who were eager to learn what they could pass along to cadets about the maritime industry's relations with the Coast Guard. And he chatted with a fellow guest named Tony Falcone. Falcone, an award-winning painter of maritime subjects, was commissioned by the Coast Guard to paint a portrait of the *Eagle*. The admiral who hired him thought it would be a good idea to have him experience the vessel firsthand, and during the trip the artist produced a steady stream of pencil sketches and painted studies. The sounds of the ship's sailing and training operations buzzed ceaselessly in the background as these casual conversations unfolded.

A continuous stream of official conversation — briefings, debriefings, orders, lectures and demonstrations — flowed around the ship. Craighead sat in on the *Eagle's* post-event meetings and observed a shrewdly incisive protocol. Many of the same subjects that were discussed at the ship's navigation brief were addressed at the post-event

meeting, but with the analytical benefit of hindsight. The tugboat briefing, for instance, was now replaced by an analysis beginning with a question: "Why did we use that tug at that time?" Similarly, the pre-sail information regarding the use of pilots gave way to a critique — i.e., "How did the pilot that we used perform?" Other relevant questions were raised: "Did currents affect the evolution?" (They didn't.) "Did anyone see any whales?" (No one did.) A cadet adroitly presented the day's weather briefing. "You have to have a pretty good understanding of wind charts if you want to go anywhere on a sailing ship," Craighead says. He watched Capt. Pulver quiz the cadets in attendance, who, to no one's surprise, aced the answers.

At an average speed of about 5.27 knots, the *Eagle* made it to Bermuda in seven days. In open sea, the ship can drive at speeds up to 17 knots, the Coast Guard says. When the *Eagle* reached Hamilton Harbor, it was met by a pilot boat bearing the premier and the governor of Bermuda, who came aboard and rode with the ship into port. Bermuda, a British Overseas Territory, has a dual executive branch: the premier is the head of government, who manages the Territory's day-to-day affairs, while the governor represents the Monarchy, exercising a more titular, ceremonial power. On board the *Eagle*, both the Premier and the Governor took the time to talk to as many people as they could, Craighead says, and they were clearly delighted by this unique venue for diplomacy.

The reaction of the Bermudians was typical; the ship's nautical beauty and its rare amalgam of active duty and roving diplomacy have long fascinated V.I.P.s who have experienced it. As a well-publicized symbol of the Coast Guard's traditions, pride, honor, and skill, the *Eagle* is arguably peerless, Craighead says. The Coast Guard does have other public faces — most notably its coverage in the press and appearances in mass entertainment media — which have vividly captured frontline operations far removed from the *Eagle's* full-dress aura. Some of the USCG's more dramatic rescues, for example, have been portrayed with surpassing realism in best-selling books and films. In one especially memorable example, the film "The Perfect Storm" depicted the rescue of amateur sailors by the Coast Guard cutter *Tamaroa* in 40-foot seas lashed by 80-knot gales, a scene accurately based on real events. Millions of people read that same story in author Sebastian Junger's book of the same name, upon which the film was based. You are left to wonder: How many of the Coast Guard personnel depicted in those and other true accounts once strode the deck of the *Eagle* as trainees? "That's where it begins," Tom Craighead says. 

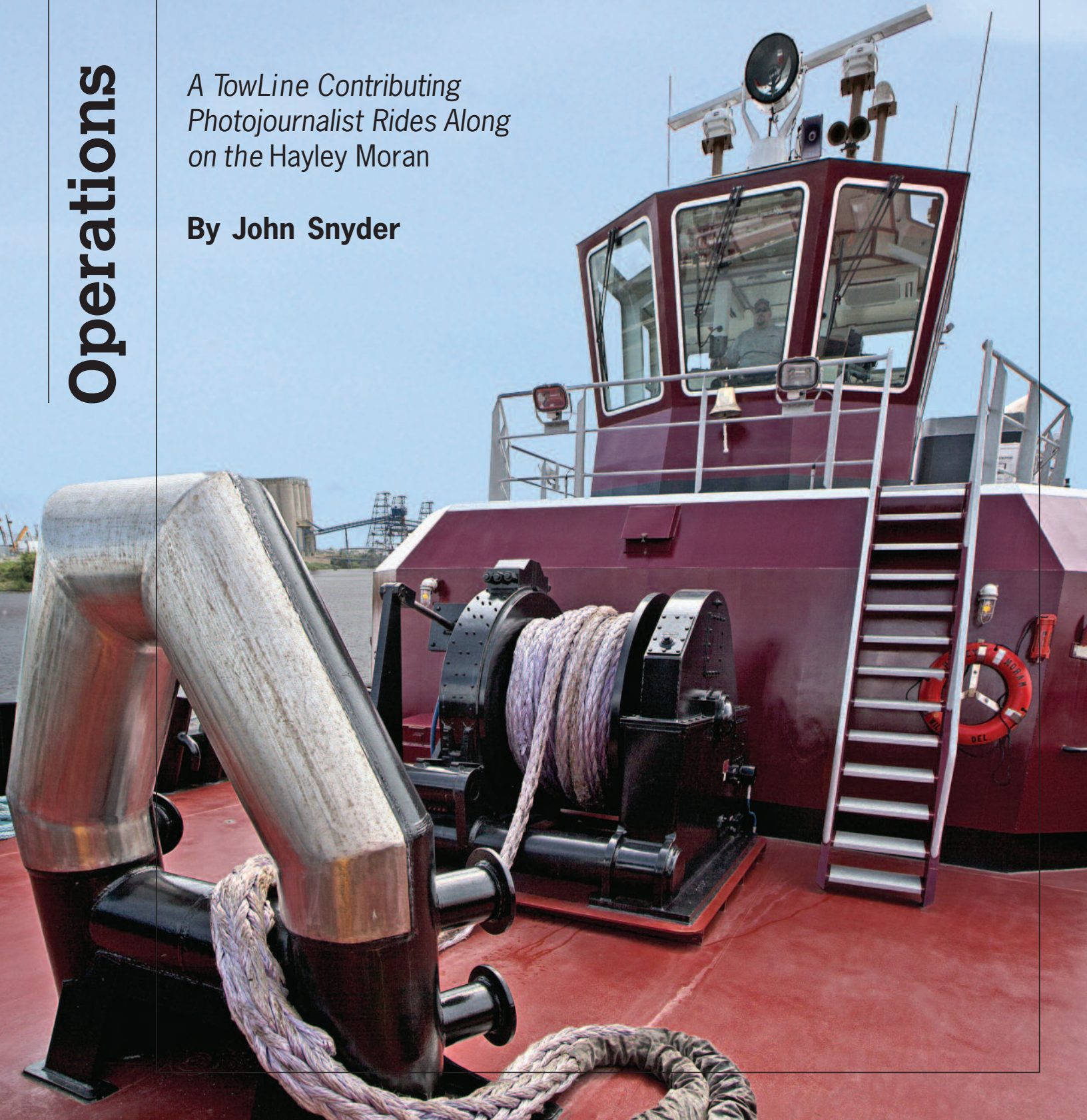
Opposite page: Top, training cadets on the ship's AFFF system; bottom, USCG Seaman Luis Escobosa signs a cadet's helm and lookout task list.

Operations

Working the Neches

*A TowLine Contributing
Photojournalist Rides Along
on the Hayley Moran*

By John Snyder



I boarded the *Hayley Moran*, a new *James A. Moran*-class tractor tug, on a Wednesday — crew change day — and was met by its alternating captains, Jeff Welch and Steve Kelly, Jr. Capt. Welch and his crew were relieving Capt. Kelly and his men. The two captains, who were wearing short-sleeved pullover shirts with Moran logos, welcomed me cordially. “We’re very pleased with the boat,” Welch told me affably.

We were in Port Arthur, Texas, the *Hayley*’s home base. The tug had entered service in Port Arthur/Beaumont/Orange, the area’s triangular cluster of ports, only a few weeks before I arrived, and was already earning its keep, Welch said. It was moored bow-in to a shoreside barge that serves as the Moran Port Arthur/Beaumont dock. Designed by Bruce Washburn, the *Hayley* makes a strong first impression; it *looks* like the avatar of power, maneuverability, and comfort that it is. Its spacious crew quarters, with their burnished wood trim and stainless steel appliances, border on the luxurious. The vessel’s architecture and machinery sleekly embody the latest advances in tugboat design and engineering, down to the smallest details.

I watched as Kelly unhurriedly briefed Welch on the vessel’s operational status. It was a short conversation; nothing unusual had occurred on Kelly’s watch. As the tug exchanged crews, Welch told me that the *Hayley*’s trip to Texas from the Washburn & Doughty shipyard in Maine had also been smooth.

With the debriefing completed, the captains departed for the Moran Port Arthur/Beaumont offices, for their weekly fleet briefing with Steve Kelly, Sr., the division’s vice president and general manager (he is Capt. Kelly’s father). Welch’s crew began bringing fresh provisions aboard the tug. Their food stores included fresh fruits and vegetables, meats, bread, milk, juice, and a generous supply of bottled water. Someone had a taste for Dr Pepper; a half case nestled among the other groceries in the refrigerator. The crew-members were setting up for a one-week hitch on the *Hayley*, organizing food and personal gear as they unpacked the boxes that came over the rail. Everyone pitched in. With the unloading completed, the galley remained spotless. Deckhand Jeremy Welch (he is Jeff Welch’s nephew) began preparing lunch for the gang.

While Capt. Welch attended the fleet briefing, chief engineer Jimmy Wriston, Jr., reviewed engine room data in his cabin and offered to show me around. “I can monitor a lot of the tug’s critical systems from the screen in my cabin. There are similar screens in the wheelhouse and the galley,” he said. Wriston began working for Moran as a yard hand at the age of 16, and “came

up through the hawse pipe,” working his way up to chief engineer. His father, Jim Wriston, Sr., is Moran’s port engineer in Port Arthur. The younger Wriston beamed as he pointed out some of the *Hayley*’s features: the backup battery banks for its electronics; individual climate controls in the cabins; WiFi; Ethernet connections; flat-screen TV; even wider bunks than those on Moran’s older tug classes. We made our way to the tug’s spacious engine room. *Hayley*’s twin 3,000-hp EMDs produce 6,000 horsepower, and despite their formidable size, they are easily accessible from all sides, and from above and below. This expedites maintenance and repair. The engine room also accommodates an electronic control station, a workbench with storage bins and shelving for spare parts, and a large tool chest. Wriston showed me a manifold of valves he had color-coded with paint to facilitate quick identification. Some of the less obvious features of the tug contribute significantly to the quality of the work environment, he said. For example, all of the cold water supply lines in the engine room are heavily insulated to keep them cool, ensuring the availability of cold water for showers and sinks. The *Hayley* also has a system that equalizes the air pressure in the engine room with that in the fiddley, which prevents the engine room door from flying open or slamming shut. In another nod to safety, critical areas aboard the tug are monitored by CCTV cameras, which stream to a monitor in the wheelhouse.

Wriston next took me aft to the drive room to see *Hayley*’s two Schottel 1515 Z-drives. This space too was roomy, well-lighted and immaculate. Satisfied that I had got the picture, Wriston handed me off to chief mate Tommy Placette.

Placette gave me a guided tour of his “office,” the wheelhouse. We stood next to the bridge console, and he walked me through the virtues of *Hayley*’s sophisticated helm controls, monitoring systems, and electronics for navigation and communication. Placette, like Wriston, is an amiable fount of information. He talked first about safety, describing a SIMS motion detector on *Hayley*’s bridge that will sound an alarm if no motion is detected in the wheelhouse (if, for instance, a lone helmsman were to become incapacitated). He explained the strategic redundancy in the tug’s banks of controls, instrumentation and equipment. To hear Placette tell it, ergonomics and Human Factors Engineering had emphatically guided the design of the wheelhouse; it was laid out for maximum efficiency, comfort, and visibility. Its extra-large windows afford outstanding exterior visibility. The tug’s “floating” floors reduce noise and vibration, factors that would otherwise be major contributors to crew fatigue.

When Placette finished his talk, we returned to the galley. Jeremy Welch had laid out lunch and





was starting to prepare the main course for that evening's dinner: pulled pork, slow-simmered in a barbecue sauce. It's the kind of dish that takes hours to cook; you need to get an early start. It looked and smelled delicious. Earlier, when the provisions were unpacked, I had noticed bunches of romaine lettuce and asparagus. Now, eyeing the pork, I concluded that the men eat well.

When Capt. Welch returned, he mustered the crew at the mess table to brief them on vessel business, safety issues, and company affairs, and to answer any questions or concerns they might have. The group discussed a diversity of subjects ranging from medical benefits to trash disposal logs. Welch, a quietly confident and highly respected captain, has a manner at once congenial and commanding; when he spoke, the crew listened with rapt attention. (Before reboarding, he had changed into a long-sleeved chambray shirt with a Moran logo.) Among other essentials, he discussed the Near Miss log, in which crew-members are encouraged to make note of potentially hazardous situations and near miss incidents. The near miss observations are not limited to the *Hayley* and Moran's other tugs; they could be anybody's near misses. Moreover, the practice yields more than just observations; many log entries conclude with crew-members' recommendations for safety enhancements inspired by the reported situations.

At the conclusion of the pre-sail briefing, we geared up to leave the dock and handle the first job of the day, a ship assist for a tanker sailing from Exxon Mobil, Beaumont. The crew donned their PFDs almost wordlessly, and made for their stations as we departed. We made our way under the Rainbow Lane Bridge and headed up the Neches River to meet the *Eagle Kinabalu*, an 800-foot crude oil tanker departing for the Gulf of Mexico. En route to Beaumont, we passed several petroleum terminals, turning basins, and anchorages. I was struck by the narrowness of the waterway; in some stretches the channel measures less than an eighth of a mile across, leaving about 100 yards of clearance on either side of a ship the

Pages 22–23: Top left, the crew of the *Eagle Kinabalu* heaves a line to the *Hayley*. Bottom left, Capt. Jeff Welch at the controls. Top right, easing the *Kinabalu* away from the wharf. Bottom right, the *Hayley* acts as a brake.

Below: Mate Tommy Placette relieves Capt. Welch at the helm after the *Kinabalu* assist.

Opposite page: Jimmy Wriston, Jr., at the engine room control panel.

size of the *Kinabalu*. To the west, the sprawling infrastructure of South Texas' petrochemical industry stretches to the horizon. To the east, the region's vast wetlands spread out, a labyrinth of marshy canals and hummocks filled with wildlife. The eastern shoreline is also lined with a number of anchorages and turning basins, including one that holds the U.S. Maritime Administration's (MARAD) Beaumont Reserve Fleet.

From my perch in the wheelhouse, I could see contract dredging crews hard at work deepening the channel to accommodate deep-draft Post-Panamax vessels. Funding for the project was provided partly by *The Water Resources Reform and Development Act of 2014*, a Federal law that mandates subsidies for the maintenance and mod-

ernization of U.S. ports and inland waterways. The improvement will make a difference, but it is clear that even when it is completed, the Neches will remain a tricky place to maneuver large ships, which will still require assistance from powerful tugs. As we steamed up the river, Welch explained that in the area's ports, it's the pilots who specify the type of tug needed for a job, and tractors have become the equipment of choice. Ships like the *Eagle Kinabalu*, he said, are referred to as "day-lighters" — vessels that are restricted to daylight operation as a condition of their porting authorization, due to their overall length, beam, draft, or tonnage. Even in daylight, the operational safety margin is narrowed by the vessels' sizes relative to the river's breadth.





STABLE PLACE TO BE
AT GREEN LIGHT IN
SEPT FOR GAS INLEAD
NO REPAIR OF TANKS

When we arrived at Beaumont, the *Kinabalu*, a bright orange vessel, quickly came into view. It was moored port side to Exxon Mobil Dock 5, just downriver from the Port of Beaumont. A Sabine Pilot was already aboard the tanker, and commercial line-handling crews in small boats were getting in position to retrieve and release heavy mooring lines. Capt. Welch maneuvered us in close. Dwarfed by the ship's stern starboard quarter, we awaited instructions from the pilot. Welch maintained the tug's position with the lightest of touches on the joysticks, his concentration unwavering. After a few minutes, the VHF radio crackled to life with the pilot's instructions to Welch. The brevity of their conversation told me that this was a dance they had done before, so to speak. On the foredeck, Jeremy Welch and an able-bodied seaman named Robert Johnnie were flaking out synthetic fiber pennant from *Hayley's* large render/recover winch. Johnnie, who is not a regular member of the tug's four-man crew, was on this day a fifth man, aboard to build sea time. High above their heads, a crewman from the tanker lowered a heaving line to the *Hayley's* deck. Welch secured it to the pennant, and the *Kinabalu* took *Hayley's* hawser aboard, the end of the braided violet line disappearing through a fairlead on the tanker's deck.

Then commenced a series of precisely executed maneuvers by Capt. Welch. He gently moved the stern of the *Kinabalu* off the terminal wharf and out into the flow of the river, slowly spinning the ship around until it aligned with the channel. With the positioning accomplished, the tanker

proceeded underway with the *Hayley* connected to its stern. The tug served as a brake and was also ready to assist the ship with steering should that become necessary. After we progressed what seemed to be no more than several ship-lengths, the pilot aboard the *Kinabalu* radioed again, thanking Capt. Welch and informing him that the tug's assistance was no longer needed. Gracefully, in perfect pace with the moving tanker, Welch moved *Hayley's* bow in toward the ship's transom to retrieve the tug's hawser. When it was safely aboard, the deck crew secured the winch. Tommy Placette relieved Welch at the helm and the crew busied themselves with ship's business.

Turning upriver, Placette headed for the Port of Beaumont, the northern terminus of the Neches' working waterway before the river becomes unnavigable. We docked at the Carroll Street Wharf and awaited a new assignment from Moran's dispatcher in Port Arthur. When the radio again sounded, it was Moran dispatcher Sean Kettl, with orders for us to return to Port Arthur and await an inbound vessel in the Sabine Pass.

Settling in for the run back to Port Arthur, I found myself reflecting on the number of times this crew has traversed the Neches, and

the number of vessels they have handled — a great many trips and ships, according to Welch. To a visitor, the work looks routine, but that is hardly the reality. There is an intense focus behind the calm, quiet manner in which these men conduct operations. It is centered on safety. Beyond the training, experience and teamwork that shape the process and mechanics of the thing, there are intangibles like vigilance and commitment. The mariners skillfully and diligently apply them, using high-quality equipment, and the result is safe, reliable service for Moran's customers. ⚓



Above: Top, mate Jeremy Welch cooks dinner in *Hayley's* galley; bottom, Welch's pulled pork.

Moran Has Three New ATBs Under Construction

In response to growing customer needs for petroleum and liquid chemical transportation, Moran is building three new Articulated Tug and Barge (ATB) units. The six vessels — three tugboats paired with barges — are slated for delivery over the next 14 months. Patti Marine, of Pensacola, Florida, is building the first of the six, a tug; the remaining tugs and barges are being built by Bay Shipbuilding Company, in Sturgeon Bay, Wisconsin.

The concept for the tugboats was designed by Ocean Tug and Barge Engineering, of Milford, Massachusetts. Guarino & Cox, a naval architecture and marine design firm in Covington, Louisiana, created the concept design for the barges.

The three new ATB tugs are *Pati Moran*-class vessels. They will have identical hulls, interior architecture and INTERCON pin connection systems, but their engine configurations will differ. Two of the vessels will be powered by twin 3,000-hp EMD 12-710G7C, Tier 3 main engines operating at 900 rpm, for a combined 6,000 hp; the third will be powered by twin EMD 12-710G7C Tier 3 engines, each rated at 2,650 hp, operating at 800 rpm for a combined 5,300 hp.

The two 6,000-hp tugs will be mated to double-hull petroleum tank barges with a capacity of 159,000 bbls. The barges, which are identical, are

also a new vessel class. They will each measure 491.5 feet in length, with a 78-foot beam and 41-foot sides.

The 5,300-hp tugboat will be mated with a 120,000-bbl, double-hulled tank barge, designed to carry certain liquid chemicals. This barge measures 468 feet in length, with a 78-foot beam and 41-foot sides; it too represents a new vessel class, though it is similar to Moran's existing *New Hampshire* class.

All three barges will be outfitted with advanced safety, anti-pollution, and cargo custody systems, including a vapor recovery system, a vacuum stripping system, the latest in ballast water treatment systems, and fully coated cargo tanks. The two petroleum barges will also feature a nitrogen-based Inert Gas System (IGS), fixed tank-washing, a thermal fluid cargo-heating system, and dedicated slop tanks.

The first of the new petroleum ATBs is scheduled to enter service in the spring of 2015; the second should begin operating in the fall of 2015. The units will work under contract to two different oil companies; one is likely to transport crude oil from Corpus Christi, Texas, to various locations

[Continued on page 29...]

Giving Back:

A Customer Relationship with ConAgra Leads to a Local Charity Partnership

In 2009, during a personal encounter that would prove fortuitous, Ernesto Rubio — an employee of a Moran client — had an idea that led to the founding of a charity benefit. The event, the Molinos de Puerto Rico Charity Golf Tournament, drew the involvement of Moran as a co-sponsor, a commitment that the company maintains today.

The relationship is rooted in a barging contract that began in the mid-1990s: ConAgra Mills, which was then Mr. Rubio's employer, contracted with Moran to have the

Moran dry bulk barge *Virginia* transport grain from New Orleans to its mill in Puerto Rico. The mill is operated by Molinos de Puerto Rico, Inc., a former ConAgra Mills subsidiary at which Mr. Rubio was sales and marketing director (Molinos is now an operating subsidiary of Ardent Mills, a joint venture of ConAgra Mills, Horizon Milling, and Cargill).

In May 2009, Mr. Rubio and his wife, Eileen, were looking to start a family, and were considering adopting a child. They happened to visit a shelter in Bayamon, Puerto Rico, called *Hogar del Niño El Ave Maria* (The Hail Mary Home for Children), and while there they learned that the home was facing closure due to financial hardship. Mr. Rubio, who is an avid golfer, wondered whether he might help by organizing a charity golf tournament — an event that would bring together colleagues,

business associates, and friends to benefit a good cause. He presented the idea to Jon Stuewe, Molinos de Puerto Rico's president, who enthusiastically embraced it.

Mr. Rubio next reached out to Molinos's suppliers, starting with Bruce Richards, Moran's vice president of marine transportation. Moran became the first company to make a large financial commitment, and became a co-sponsor of the tournament; it continues to support the event, now in its fifth year.

Hogar del Niño is an emergency shelter for abused and neglected children, aged birth to four years. It is run by an order of Catholic nuns, the *Hermanas Misioneras del Corazón de Jesús* (Missionary Sisters of Jesus' Heart). Aided by volunteers, the Sisters and the shelter's 22 employees care for between 35 and 75 children a year. Along with shelter, the home provides food, clothing, medical care, education, and emotional support. Molinos's first annual Charity Golf Tournament raised a modest gift for Hogar del Niño, but it was enough to keep the shelter open. Mr. Rubio and Mr. Stuewe helped the Sisters add a preschool area to the facility. During one of Mr. Rubio's visits, the Sisters told him that because of his involvement in the charity, he and Eileen would be blessed. Less than a year

later, Eileen gave birth to a baby girl, whom the Rubios named Alana. The couple today has two children, Alana and Alejandro.

Mr. Rubio currently works for Ardent Mills, which acquired the ConAgra milling division in 2014 and is headquartered in Denver, Colorado, but he continues to actively support fund raising for Hogar del Niño. He visits the shelter every time he returns to Puerto Rico, he says. In 2010, Moran rebuilt the *Virginia* and converted it to the company's first dry bulk ATB, the *Mary Ann-Virginia*. The vessel, named for Mary Ann Redmann, the wife of ConAgra grain merchandiser Gary Redmann, continues to transport grain to Molinos's mill for Ardent. In 2013, the fourth annual Molinos de Puerto Rico Charity Golf Tournament raised nearly four times the amount of its original 2010 donation to Hogar del Niño. ⚓

Below: Bruce Richards accepts a piece of artwork from representatives of Molinos de Puerto Rico. Left to right: Ramon Hernandez Guillermety, Jon Stuewe, Bruce Richards, Ernesto Rubio, and Ted Tregurtha, Moran's president. The artwork was made by children at Hogar del Niño and was presented to Moran in recognition of its continuing support of the shelter.



along the U.S. Gulf, and the other is intended to carry refined products, such as diesel fuel and gasoline, from refineries in the U.S. Gulf to markets in Florida. The new contracts reflect increased demand for U.S.-flagged vessels, driven by improved refining economics in the U.S. and the boom in domestic crude oil production from the Eagle Ford and Permian Basin fields in Texas and the Bakken fields in North Dakota.

The new 120,000-bbl ATB is expected to enter service in the spring of 2016, and will operate under contract to CF Industries, a Moran dry cargo customer since 2005. Moran previously fulfilled a long-term relationship with CF for the transport of phosphates; the new ATB will be used to transport Urea Ammonium Nitrate (UAN), a liquid fer-

tilizer, from CF's Donaldsonville, Louisiana, plant to Norfolk, Virginia; Wilmington, North Carolina; and other locations along the U.S. east and Gulf coasts. The new service dovetails with an increase in CF's volume of UAN production, a result of its Donaldsonville plant expansion. The ATB will replace conventionally towed Moran tank barges, enabling CF to deliver its own product to an expanded range of East Coast markets via a dedicated, state-of-the-art vessel. ⚓

Below and on next page: The *Scott-New Hampshire*, a Moran petroleum ATB, in the Verrazano Narrows. Moran's new 120,000-bbl petroleum barge will be similar to the *New Hampshire* class.







NEW HAMPSHIRE

Two Acquisitions Advance MER's Growth and Vision

Moran Environmental Recovery (MER) has continued to expand, acquiring two specialized companies that will strategically complement and broaden MER's service offerings. MER acquired Coastal and Ocean Resources Inc. (CORI), a coastal and marine geoscience company, in December 2012. Last April, MER acquired Eason Diving & Marine Contractors, Inc., a diving and marine services company serving identical markets to MER's.

The acquisitions reflect MER's growth strategy of vertical integration within its select markets, which comprise the energy and industrial, marine, rail, and government sectors. "The specialized services provided by CORI and Eason Diving will uniquely expand MER's capabilities, and at the same time integrate ideally in our family of companies,"

Brian House, MER's president and CEO, said last April. Both companies bring strong brand recognition from their respective markets, and continue to operate under their current names.

CORI, a provider of coastal and seabed habitat mapping and environmental consulting services, represents "a strategic entry point into an exciting new market," Mr. House said in 2012. The combination of CORI's scientific and technological capabilities with MER's tactical expertise is currently unique in the industry.

Headquartered in Vancouver, British Columbia, and now in its 26th year, CORI has historically operated in Alaska, Canada and the U.S. Pacific Northwest; under MER, it has expanded its services to include other parts of the United States. The company's services support a wide range of activities, including environmental assessment, oil spill response planning, port development, and conservation planning. Dr. John Harper, CORI's founder, remains with the company and is serving





as vice president of science applications.

CORI is a key developer of the ShoreZone coastal environment mapping and classification system, which inventories the geomorphic and biological features of coastal habitats by using a combination of high-resolution, oblique digital imagery and ground-based research. Using ShoreZone, CORI has to date mapped more than 107,000 kilometers of shoreline, including the states of Washington, Oregon, and a majority of the Alaskan coastline. The company has recorded more than 4 million digital still and video images of intertidal and nearshore zones, for which it has also compiled up-to-date, coordinated habitat data. To further verify its data, CORI conducts research interviews with First Nations indigenous peoples

in Alaska and Canada, whose eyewitness histories and knowledge of the region's wildlife add depth as well as veracity to ShoreZone's information. All of CORI's material is archived in a searchable, integrated database, serving as a valuable tool for scientists, educators, managers and environmental hazard planners.

The ShoreZone system offers key benefits to MER clients. ShoreZone images and data, for example, provide a spatial and factual framework for assessing environmental sensitivity and response actions in the event of oil spills. In 2012, interpreted ShoreZone information was a crucial resource in responses to several groundings along the Alaskan Coast. "The ShoreZone method can identify and document any number of characteristics...the geomorphology, terrain, geologic composition, tidal behavior, and what's living there," Mr. House says. "When MER's tactical ability is underpinned with that level of detailed knowledge, it creates a very powerful tool for our clients who operate in those environments."

Opposite page: CORI personnel aboard a helicopter taking aerial photographs of the Alaskan coastline. Above and on page 35, some samples of the company's work in Alaska.


In Alaska and Canada, where vessel traffic is increasing along the Northern Great Circle Route, and oil and gas development are undergoing tremendous expansion, the value of integrated service models like MER's can scarcely be overstated. The company is already a key provider of spill response and damage assessment services in the Pacific Northwest, and is involved in advising on a risk assessment for the Aleutian Islands. MER has long been a nationally recognized leader in the field of oil spill response, Mr. House says, and is equally proud of its evolving focus on assisting clients with planning and preparedness services. Since energy and transportation infrastructure do not yet exist in many parts of the North American wilderness, the region represents a unique opportunity to plan for environmental responsibility. On top of their own safety, preparedness, and response initiatives, companies that operate in the region will soon be dealing with a host of new regulations, Mr. House says, and MER is uniquely positioned to help them.

MER's newest acquisition, Eason Diving & Marine Contractors, is a Charleston, South Carolina-based provider of on-call diving and marine services. Operating in the U.S. Southeast, the company primarily serves the utility industry, and also has major railroad and marine clients. As such, the Eason Diving client base is a perfect fit for MER's existing business, and affords unique cross-selling opportunities. Tom Eason, Eason Diving's founder and former owner, will serve as vice president, continuing to oversee operations, contract management and client relations.

Eason Diving's work within the utility industry covers a broad array of services, including FERC inspections at hydroelectric facilities, power plant intake and outfall penetrations, and removal of silt, mussels, and debris. A truly unique aspect of Eason's business involves work within nuclear power plants, where divers perform maintenance and repairs on spent fuel storage rack systems. Eason is also highly experienced in contaminated diving services that are used to locate

and recover sunken petroleum products. Nearly all the company's work is performed for clients who value the risk-averse safety culture shared by Eason and MER.

Both Eason Diving and CORI have indeed integrated seamlessly in MER's business model, even as they've extended it. But the presence of a third advantage — the complementary relationship between CORI's and Eason's capabilities and those of MER's other subsidiaries — is what makes the acquisitions critical elements of MER's overall strategy, Mr. House says. This is true of all MER subsidiaries; the companies collaborate on a daily basis, sharing knowledge, personnel, equipment and other assets that help answer client needs. By way of example, when MER first acquired Drummac, its rail services company, MER had already been servicing Amtrak and other state-owned passenger rail systems with environmental services contracts; it subsequently coupled Drummac's mechanical maintenance, inspection, repair and cleaning services with the existing Amtrak contract, creating a unique, bundled-service approach. Today, MER provides an expanded range of rail-related environmental services to a national network of rail companies.

"As we continue to grow, we are focused on the need for MER to become increasingly flexible, adaptable and mobile in order to best serve our clients," Mr. House says. He believes that these virtues represent not merely aspects of MER's business strategy, but key parts of an evolving industry. MER, for its part, has evolved from a provider of environmental cleanup services into an integrated provider of industrial and environmental services. "It's one thing to understand clients' businesses and offer the advantages of cross-disciplinary expertise and problem solving," Mr. House says, alluding to MER's growing emergency response and preparedness business, "and yet another to add science and technology to the tactical skills and tools in that equation." Complex environmental and safety challenges demand that level of versatility, he says, and when MER talks about applying its culture of safety to its clients' needs, it's talking about big-picture thinking and expertise. To help clients effectively manage safety and environmental stewardship, MER has dedicated itself to offering an ever-widening range of options and solutions within its select markets. "If that means providing databases as well as oil booms, we do it," Mr. House says. "If it means working *under* the water as well as *on* the water, we do that. MER can create customized bundles of services, with across-the-board advantages, in which the benefit of our knowledge, skills, experience and assets is greater than the sum of its parts." 



Left: An Amtrak locomotive, one of many in the company's rail network served by MER.



Progress with BBS; an Ergonomics Review; a Cultural Survey; and New Hires

I. Moran Has Made Further Strides with Behavior-Based Safety (BBS)

[Editor's note: Portions of the following text were excerpted from the article "Towing the Safety Line," by Gail Snyder, by permission of Aubrey Daniels International.]

Moran continued to develop its Behavior-Based Safety program during 2013 and 2014, completing several incremental steps that moved the program closer to its ultimate goal of full implementation. An article by Aubrey Daniels International (ADI), the consulting firm assisting with the program, reported that Moran's tugboat captains have now attended workshops that trained them in coaching for BBS. "Even though it was a logistics nightmare pulling the captains from multiple ports, the end results were very positive," David Olson, Moran's safety culture trainer, told ADI. "The guys still talk about this opportunity to get together, talk, and share best practices. ... The workshops were mainly to get everybody speaking the same language, learning the science of behavior, and improving their leadership abilities," Olson said, referring to Moran's captains, crews and shoreside personnel.

The ADI article also described major progress with *near miss reporting*. "Moran has always had a near miss reporting process, but we were only getting a couple of near misses reported every month, if that many, and they weren't really near misses," Olson told the article's author. "So it wasn't as effective as it could be. We figured out what we needed to change, including educating people on what near misses were, why they were important, and that they were in fact happening. We also had to make it easier to report them, and — the big one — remove fear of repercussions or embarrassment." Surveys had shown that when it came to safety, Moran had been somewhat reactive (as opposed to anticipative) in its approach to dealing with incidents and near misses. That realization inspired a change in the way managers are evaluated: instead of evaluating them on how many accidents did or didn't occur — a "lagging" result — the company now expects its managers to foster conditions in which near miss sharing is encouraged, and it utilizes performance metrics that

include this requirement as a criterion. Currently, near misses are recorded anonymously on a form that allows the reporter to rate on a numerical scale the potential severity of the consequence if the near miss were to occur again.

Some may wonder why any organization would want to see a rise in the rate of reported near misses. But the causes of near misses constitute free learning opportunities, and if addressed, the stuff of serious incident prevention. "If you aren't getting a good amount of near miss reports, you should be worried; it means you have a blind spot," Olson said. Moreover, when an organization isn't aware of near misses that are happening, the underlying causes can never be addressed. Moran's management was therefore pleased to see the company's near miss report rate rise from two to three a month to a current average of 150 to 180 per month, Olson said. Moran has now developed behavioral checklists to address the causes of near misses.

The completion of the coaching workshops ushered in Moran's current stage of BBS development, in which crews and other personnel are working on developing a comfort level with using a behavioral process. The results that have been achieved to date are solidly encouraging, and are helping drive the company's evolving cultural change. At least one benefit that accrued from the increase in near miss reporting was wholly unexpected, yet highly significant: Moran discovered that when it came to near misses, many of the repeat offenders were not its own employees, but those of its contractors. "Our managers at the ports where this was happening are now clarifying expectations with contractors about how they get on and off the boats, for example," Olson said.

Another positive effect of the evolving BBS process has been the closing of what Olson calls "perception gaps." He defines these as "widely differing opinions on a given topic among employees in various groups or levels... The progress in near miss reporting helped close the gaps by showing managers what we're dealing with out on the boats on a daily basis," he said. "It has given a voice to the mariners that they previously didn't know they

had, and many unsafe conditions have been improved as a result.”

With patience moderating the process of change and the approach proving successful so far, Moran is now ready to move beyond near misses, further up the causal chain to behaviors, Olson told ADI. Moran Jacksonville has been chosen to field a pilot BBS team and observation system. In October 2013, a group of representatives from each tug in the Jacksonville fleet attended a BBS workshop with ADI’s Don Nielsen, in which they developed a behavior observation system and formed a local safety team. This was a formidable challenge, because there are ways in which the tugboat industry doesn’t fit the typical applications of BBS. The Jacksonville safety team has been judiciously overseeing the process, however, and its regular meetings have allowed it to modify observation criteria, report any barriers to implementation, and basically serve as a BBS template for other ports. Looking ahead, Olson expects each of Moran’s ports to customize the BBS process to suit its individual needs within a corporate framework. “The observation process [in Jacksonville] isn’t ideal yet, but they own it — they’re managing it,” he said. “Some of the comments I’ve heard are that we are really focusing on the positive — catching people doing things right.” That concept may sound “warm and fuzzy,” but it is rooted in a constructively cold-eyed objectivity: the safe behaviors that Moran Jacksonville’s people began observing in October 2013 in fact came from written checklists. Within two months of initiating the observation process, safe behaviors in Jacksonville rose from 70 percent to 90 percent. The division’s personnel have already expanded their focus to include seeking out other behaviors that can be improved, which they believe will prevent accidents. Olson, who spends a great deal of time on Moran tugs, sees this as a great sign. “It’s the sailors taking definitive ownership of their safety,

and a sign of leadership being exercised at every level,” he says.

II. Moran Has Undergone a Human Factors Engineering (HFE)/Ergonomics Review

In 2013, Moran engaged Atkins, a leading design, engineering, and project management consultancy, to perform an HFE/ergonomics review of representative vessels from Moran’s *Capt. Jimmy T. Moran* and *James A. Moran* tugboat classes. The two classes are Moran’s newest. The goal was to identify and document any design issues that might affect the performance of operations or maintenance tasks, as well as any hazards that could lead to accidents or injury.

Christopher Parker, an Atkins principal human factors engineer, performed the assessments and wrote the accompanying report. Parker spent four days, working eight to 12 hours a day, embedded aboard Moran tugs in Baltimore and Savannah. In Baltimore, he reviewed the 86-foot Z-drive tractors *Mark Moran* and *Annabelle Dorothy Moran*; in Savannah, the subject was the *James A. Moran*, a 93-foot Z-drive tractor. Parker conducted the reviews during both daytime and nighttime hours,

both when the tugs were underway and performing services for customers and when they were docked to undergo maintenance or stand by between calls. He made detailed observations of equipment and crew operations, and also interviewed crew-members, including deckhands, mates, engineers and captains. For guidance on Moran’s overall goals and history, he met with Ned Moran, the company’s senior vice president of harbor operations. To acquire background knowledge of operating policies and practices — for safety, work assignments, port operations and other basics — he spoke with Paul Swensen, Moran Baltimore’s vice president and general manager, and Ron Droop, Mr. Swensen’s counterpart in Savannah. For an orientation in main-



Able-bodied Seaman Robert Johnnie completes a Crew Change Test & Inspection Checklist aboard the *Hayley Moran*.

tenance and repairs, Parker talked with Jimmy Coyne, Moran's vice president in charge of those functions.

Ergonomics, which Dictionary.com defines as "the study of the relationship between workers and their environment, especially the equipment they use," is also linked to Human Factors Engineering (HFE). The latter discipline seeks to maximize the performance of humans and the systems they use by optimizing interactions between the two and reducing opportunities for error. The consideration of the end user in systems design and the acknowledgment of human error as a root cause of incidents and accidents are two of HFE's defining principles. Global utilization of HFE and ergonomics in engineering and all types of design has increased multi-fold in recent decades, reflecting a powerful and positive trend. The remarkable innovations that it has spawned so far — advanced safety features on cars and airplanes come to mind, for example — represent only a tiny fraction of what is possible.

Moran's Construction and Repair group has long utilized ergonomic and HFE principles, but wanted to delve deeper. In dispatching Parker to examine Moran tugs and crew/equipment interactions, it effectively put the vessels and their operation under a high-power design microscope.

Parker, whose HFE/ergonomics consulting career began with work for NASA on the International Space Station project, has for more than 15 years specialized in projects for the maritime sector. The co-author of an ASTM Standard Practice for Human Engineering for Marine Systems, Equipment and Facilities, he brought extensive experience and expertise to the Moran review.

In his report, Parker wrote that his methodology for assessing equipment hinges on the issue of how well the design supports the needs of the user. The inquiry entails at least two fundamental questions:

Does the design minimize the likelihood or consequences of errors? Does the design mitigate the consequences of error?

Parker's approach to overcoming issues that cannot be mitigated by design boils down to three basic recommendations:

Provide a warning of potential error; train

the user to prevent error; and write procedures to prevent error from occurring.

Wherever possible, Parker referenced vessel and equipment standards, regulations and best practices authored by the U.S. Coast Guard, ABS, ASTM, and other leading authorities, using these benchmarks as a baseline for comparison. These specifications define optimal (and in some cases mandatory) standards for safety, seaworthiness, and working conditions on U.S.-flagged vessels. For some of Parker's observations concerning potential gaps between vessel design and task requirements, no applicable standards for comparison existed. These findings were nonetheless deemed significant and were included in the report.

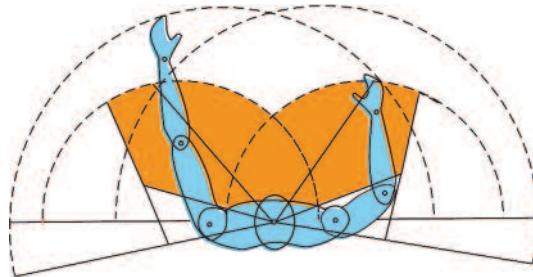
When the tugs were docked, Parker combed through the equipment and structures in the pilothouses, decks, crew quarters, engine rooms and other areas. Taking notes, measurements and photographs, he examined stairs, ladders, doors, gauges, controls, signage — the general categories, let alone the objects themselves, are too numerous to list here.

When the tugs were underway and working at performing ship docking and escort services, Parker observed specific interactions between crew-members and pieces of equipment and naval architecture. In this segment of the review, he was guided by six basic questions:

What are the user's tasks to use/operate/maintain the system? Who is the user? What is the worst case for the user? What is the physical operating environment? What training/skills does the user need or have? What is the consequence of human error?

Observing the crew-members as they handled the tugs' equipment and architectural elements enabled Parker to identify significant needs and opportunities that otherwise would not have come to light, he says.

Lastly, Moran requested that Parker facilitate a supplemental study of the layouts of electronics in the pilothouses of the two tug classes. For this assessment, he examined the required tasks of the tug captains, and the inherent relationships between the operator and the equipment. To arrive at a basis for the arrangement of controls and



other elements, he took into account key factors like frequency and criticality of use, modes of interaction (such as visual, auditory, or manual), and communication of relevant information. He was guided in the effort by universal ergonomic guidelines for angles and distances relating to sightlines, the human body's range of reach, placement of controls, heights of consoles and chairs, and other interfaces involving human factors.

"Results [of all the reviews] showed that issues identified were minimal and typical HFE design issues," Parker wrote in the report's executive summary. "Since Moran Towing demonstrated a strong safety culture and foundation of attention to designing their vessels to best support their crews, there are only a few noteworthy observations of opportunities for improvement, with others being just an added layer of protection."

"The Atkins report has given us a precisely detailed road map for vessel construction, modification and upgrades," Ned Moran said. Matt Baker, the manager of Moran's Quality, Health, Safety, Security & Environmental Group, said, "We want the crews on the boats to know that their input plays an important part in the improvement process." Moran is currently studying the findings in the report to determine how best to address them.

III. Moran Has Conducted a New, Updated Safety Culture Survey

Moran completed a new, self-administered Safety Culture Survey in 2013. With the exception of one new question, the survey was identical to the safety culture survey Moran had conducted in 2011, the first year the company had undertaken such a study. The survey results for 2013 reflected changing perceptions and opinions, providing an updated picture of where Moran stands, says David Olson, Moran's safety culture trainer.

The goal of the survey, which invited respondents to submit their answers anonymously, was "to get the unfiltered perceptions of the workforce with respect to desired organizational habits and values," Olson says, adding that the feedback enables Moran's executive leadership to identify strengths and opportunities, and formulate strategies around them. Olson and Moran's Quality and Safety Steering Committee used the 2011 survey results as a baseline, comparing them with 2013's responses to gauge the effectiveness of Moran's efforts at developing its safety culture. "The ultimate goal is to eliminate injuries and damages that are within our control," Olson says.

The survey questionnaire was distributed to shoreside and marine employees in 16 of Moran's ports of operation. 400 completed surveys were collected, representing the participation of approximately 92 percent of the sampled workforce.

Some part-time employees also completed the survey. The questionnaire asked respondents to indicate their level of agreement with various statements, using numbers from 1 through 5. "1" signified "strongly disagree," while "5" indicated "strongly agree" ("3" represented "neither agree nor disagree").

The survey measured people's perceptions about five categories: Immediate Boss; Personal Observations; Shoreside Management; Training, and Work Conditions. When the response numbers in any given category were averaged, any quotient higher than a 4 was considered a good score, Olson says. The questionnaire also included a few essay-style questions, which called for open-ended comments.

Overall, the survey results showed significant improvement; between 2011 and 2013, Moran progressed from "Needs Improvement" to "Good" in four out of five categories. "The leadership dimensions, Immediate Boss and Shoreside Management, showed substantial improvement from 2011," Olson says. "We had seen a need to work on these in 2011, and we targeted improvement through coaching/leadership training in the science of behavior and reinforcing desired leadership habits."

The Work Conditions dimension also showed a strong improvement, which Olson attributes in part to Moran's addressing of opportunities brought to light by near miss sharing and other mechanisms for mitigating at-risk situations. "It's extremely important that employees feel as if their work environment is safe and that we're doing everything we can to make it safer. If they don't believe this, it will negate almost any 'safety first' message we could contrive," Olson says.

The Training dimension showed little change, a result that Olson predicted. He had suggested in 2011 that by building the underlying cultural foundation first, future investments in training — already a strong facet of Moran's culture — would be made much more effective. Moran's leadership had agreed, and put further training innovations on a side burner in favor of focusing on cultural improvements.

The Personal Observation dimension, which measured employees' responses to events or conditions they witnessed or perceived around them, scored lower in 2013; at 3.79, it was more positive than "undecided," but below good. Olson conducted follow-up questioning in the hope of finding an explanation, and learned that the two most influential drivers of personal observations — awareness and expectations — had risen dramatically between 2011 and 2013. This is unsurprising, he says, when you consider that since 2011, Moran has been actively fostering a culture of heightened awareness and expectations with respect to safety. As a direct result, crews and managers have been more acutely observant, and they

are holding the company to a higher standard. That is a good thing, Olson says — a learning process that is fueling growth.

Moran's executive leadership has already begun to address some of the issues that were flushed out by the survey, and plans to continue with most of its strategies. In two organizational upgrades, the company has hired a corporate training coordinator and a preventative maintenance manager, whose jobs, respectively, will be to coordinate and expedite training and to marshal resources for continuously improving equipment and work environments.

IV. Moran Has Created Three New Safety-Related Management Positions

Last spring, Moran hired Kelly Curtin as manager of employee training and development; Joe Regan as fleet maintenance manager; and John Hunter as a naval architect. The men will help streamline and enhance safety and fleet management at Moran.

As manager of employee training and development, Curtin is overseeing the creation of a unified, umbrella program of training, educational development, and on-the-job learning opportunities at Moran. The program is being designed to further Moran's commitment to excellence by helping employees achieve their highest potential with respect to quality, safety, and environmental responsibility, Curtin says.

He started by observing Moran's training at its port facilities and terminals of operation, taking note of best practices and later codifying them into a uniform learning platform — a more structurally cohesive version of Moran's existing approach. The program incorporates core policies and practices from Moran's multi-pronged governance of quality, safety, and environmental responsibility, such as its Behavior-Based Safety program, preventative maintenance system, and safety management system. Its goals are to achieve curricular, administrative and logistical coordination and consistency between ports; to simplify training and educational processes for port managers; and to expand learning opportunities for employees. Designed to provide an expeditious management and career development resource, the program's strategy and components are

keyed to the individual operating requirements and job descriptions of ports and employees.

Where safety is concerned, this is expected to eventually lead to the establishment of uniform minimum qualification standards for marine employees, geared to specific jobs and the training people receive. Under the new program, training will be more conveniently available, easier to track, and more refined in its connection to Moran's day-to-day operations and equipment, Curtin says.

Coming to Moran from the United States Merchant Marine Academy (USMMA), Curtin brings top-notch experience and expertise to the job. At USMMA, he was an associate professor teaching tanker operations, navigation, and electronic chart display information systems. He has also taught navigation and seamanship courses at SUNY Maritime College, and was a division manager of nautical science programs at USMMA's Global Maritime and Transportation School (GMATS). At GMATS, he developed educational curricula designed for the shipping and workboat industries, including a Crew Advancement Program that gives deckhands the opportunity to advance to the wheelhouse by taking classes scheduled around their work schedule. He holds a masters degree in transportation management from SUNY Maritime College, as well as a Third Mate unlimited tonnage oceans license, and has sailed for several companies, primarily in oil/petroleum product tanker fleets.

Joe Regan, Moran's new fleet maintenance manager, is spearheading Moran's fleet reliability effort, acting as a catalyst and strategist for change. Building on extensive knowledge and experience he acquired in leadership positions at industrial

giants such as Westinghouse Nuclear and Georgia Pacific, he will start by overseeing the implementation of a Computerized Maintenance Management System (CMMS) for Moran's diverse fleet of tugs and barges. "Moran has a good maintenance program with effective practices in place," he says, "but in terms of industry leadership, there are technological tools we can adopt that will enable us to make a quantum leap forward."

One metric for gauging the success of the CMMS will be Moran's Mean Time Between Repair (MTBR) record, Regan says. "The objective is to increase reliability to the point where each tug in the Moran fleet goes from



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EMDEC - LUBE OIL PRESSURE	38 PSI
EMDEC - TURBO OIL PRESSURE	31 PSI
EMDEC - SOAKBACK PRESSURE	27 PSI
EMDEC - CRANKCASE PRESSURE	-0.63 "H2O
EMDEC - AIRBOX PRESSURE	16 PSI
EMDEC - ENGINE FUEL PRESSURE	59 PSI
EMDEC - FUEL FILTER PRESSURE	71 PSI
EMDEC - JACKET WATER PRESS. ENGINE IN	5 PSI
EMDEC - JACKET WATER PRESS. ENGINE OUT	2 PSI
EMDEC - SENDER ENGINE HOURS	402
EMDEC - LUBE OIL PRESSURE	31 PSI
EMDEC - START AIR PRESSURE	100 PSI

EMDEC - ENGINE SPEED	201 RPM
EMDEC - RPM SETPOINT	202 RPM
EMDEC - RATED LOAD	25 %
EMDEC - ENGINE R	36 %
EMDEC - HEARTBEAT	125
EMDEC - AIR TEMPERATURE ENGINE IN	98 °F
EMDEC - AIRBOX TEMPERATURE	122 °F
EMDEC - JACKET WATER TEMPERATURE	148 °F
EMDEC - LUBE OIL TEMPERATURE	132 °F
EMDEC - RECEIVER ENGINE HOURS	402
LOCAL - AFTERCOOLER WATER PRESSURE	5 PSI
LOCAL - ENGINE SPEED	202 RPM

- ENGINE OVERVIEW
- CYLINDER TEMPS
- CYLINDER TEMPS OVERVIEW
- READINGS
- SYSTEM
- FAULT HISTORY
- NO ACTIVE FAULTS**

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RE-LUBE OIL PUMP
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POWER AVAILABLE



one scheduled maintenance period to the next with no major incidents.” A related, equally important goal is to improve workforce utilization, using the CMMS to expedite and ensure the safe completion of the right maintenance tasks at the right times. “We will use one system across all operations to manage all maintenance-related work, including inspections, planned work, and corrective actions,” Regan says. “This will streamline the maintenance process and allow us to evolve to a reliability-centered maintenance organization, to include predictive maintenance and condition-based monitoring.”

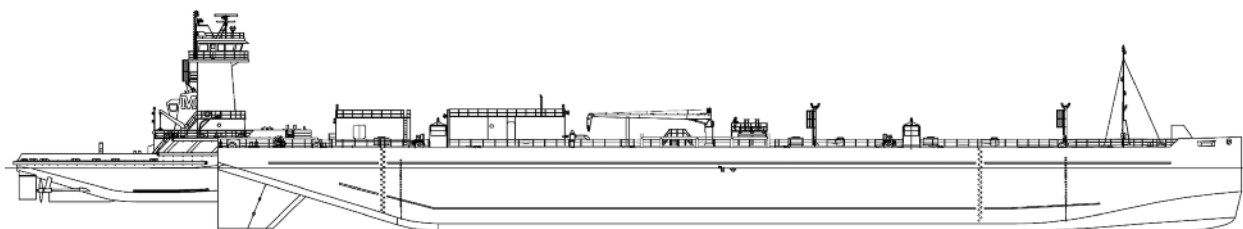
Achieving these goals entails finding the right software system and assuring that the correct data is loaded up front. This information includes the right combination of existing maintenance tasks, manufacturers’ suggested tasks, port-specific best practices, and industry regulatory requirements, Regan says. To that end, he is conducting a comprehensive audit of the needs and requirements of Moran’s fleet and engineers. He is using this research to define criteria for the maintenance system selection, he says, and is forming a fleet maintenance upgrade project team that will include Moran port managers, port engineers, IT personnel and representatives from the Construction and Repair group. To learn the specifics of Moran’s business, he is spending a lot of time at the company’s

fleet maintenance safer and more reliable, but also more cost-effective, Regan says.

Safety has always been a root concern in his work, he says; every company he has worked for has had a safety culture paralleling Moran’s, with a Behavior-Based Safety program complementing a safety management system. The approach is shaping the new fleet maintenance agenda along two basic lines: people’s safety as they perform maintenance tasks, and the safeguarding of vessel reliability to ensure the safety of marine personnel. In managing both aspects, Regan and a cross-functional team of Moran managers and engineers will methodically scrutinize processes, applied technology, and human factors. The team will then make recommendations based on its findings.

In Moran’s Construction and Repair Department, John Hunter began work last May as a naval architect assisting the department with engineering and design for existing and newbuild tugboats and barges. He also acts as a liaison with regulators, such as the U.S. Coast Guard and the American Bureau of Shipping.

The impetus for vessel modifications comes from both regulatory agencies and Moran itself, Hunter says. It can be driven by safety, environmental responsibility, performance issues, regulatory compliance updates, or a customer’s specialized operational needs. Often, multiple benefits are inter-



ports of operation, and communicating frequently with port personnel and overseers like Matt Baker, Moran’s manager of its Quality, Health, Safety, Security & Environmental Group.

The CMMS, for its part, will enable port engineers to view real-time data on key performance indicators and historical trending on a “dashboard” that displays on their computer screens. The port engineers will also gain instant access to vessel engineers’ logs and daily inspection reports. These and other capabilities will allow them to spot developing trends and track historical data as a framework for decision making and problem solving. Having these capabilities will not only make

twinning in a single upgrade. Sometimes, Hunter is tasked with helping determine when and why vessel modifications might be necessary, and what they might entail; in an assignment last year, for instance, he examined whether the Moran ATB *Paul T.-Massachusetts* would fit into a new pier that a tank barge customer wanted to use. Hunter, who worked for many years as a naval architect at Seaworthy Systems and Bath Iron Works, will be applying his experience to this and other projects that are expected to spring from BBS observations, regulatory requirements, Moran’s ergonomics review, and emerging innovations in the industry. ⚓

Progress with CO₂ Emissions Reduction and Oil Pollution Elimination


During 2013, Moran completed a benchmark environmental responsibility initiative that will reduce the company's carbon footprint, and made major strides in its oil pollution elimination program.

In the CO₂ emissions reduction move, Moran converted to new energy-efficient lighting fixtures at its New Canaan, Connecticut, corporate headquarters. The installation of the new fixtures was the culmination of an energy audit of the New Canaan building by Efficient Lighting Consultants (ELC) of Connecticut. ELC works jointly with Connecticut Light & Power to reduce electricity demand by identifying commercial buildings that are eligible for a state-sponsored conservation incentive. The ELC audit discovered more than 700 lighting fixtures that could be replaced with more energy-efficient high-performance fluorescent or LED fixtures. Moran replaced all 700 fixtures. The new bulbs will reduce the company's electricity usage by 121,805 kilowatt hours (kWh) annually. Assuming average CO₂ emissions per kWh of 0.754 lbs. —

the amount estimated for Connecticut by the U.S. Environmental Protection Agency (EPA) — the

121,805 kWh savings will translate to a 91,840-lb. annual reduction in CO₂ emissions attributable to Moran's New Canaan building.

In the Moran tug fleet, the company continued advancing its oil pollution elimination agenda by replacing conventional oil-lubricated stern tubes and seals with Kobelco Eagle Marine Engineering water-lubricated tubes and seals. This measure is eliminating the possibility of oil pollution resulting from damaged stern tube seals. Currently installed on 90 percent of Moran's twin screw tugs, the new Kobelco tubes and seals eliminate oil from the tube assembly altogether. They also solve the problem of *water*-lubricated seal leakage, by employing a system of composite bearings that prevents lubricating water from contaminating clean bilge water. The tube conversion program is a proactive measure; its inception at Moran predates current EPA regulations for Environmentally Acceptable Lubricants (EAL) on tugboats, and it surpasses current EPA minimum standards, which stipulate EAL oil. The program repre-

sents an investment of several million dollars over a five- to seven-year period. 

Kilowatt hour savings will translate to a 91,840-lb. annual reduction in CO₂ emissions attributable to Moran's headquarters building. In its tug fleet, Moran continued replacing conventional oil-lubricated stern tubes and seals with water-lubricated systems.

To the Limit

From an Era before High-Tech Met the High Seas, a Tugboatman's Story

By Capt. Russ McVay

[Editor's note: Some of the actions described in this story that were considered acceptable 40 years ago are now precluded by good marine practice, environmental stewardship, and, in some cases, regulation.]

On a cold February night in 1966, at around midnight, a ringing telephone in our home awakened my wife and me. The call was from my office; I worked for Moran Towing as a mate on tugs. I was 24 years old. I was told to get to Moran's yard in Staten Island as soon as possible to board the *Cathleen Moran* for a rescue mission: Meyer Line, a Norwegian shipping company, had a ship — the *MV Havlom* — that was wallowing in heavy seas after losing her rudder. She was 120 miles east of St. Johns, Newfoundland. Conditions were too rough to jury-rig a rudder, and the mariners were afraid that the farther offshore the ship drifted, the more the danger of capsizing.

My wife asked how long I'd be gone; I estimated three days up there and seven days to tow the ship back to New York. I told her to call the office in about 10 days to get an idea of when I would be back.

After a speedy drive to Port Richmond, Staten Island, I joined the *Cathleen's* crew and we spent the next eight hours lashing down the main hawser and loading supplies. These included a spare hawser; 2,000 feet of 10-inch nylon; grub; 10 sheets of one-inch marine plywood; and spare shackles. The task was accomplished using the entire crew of 10: the captain and two mates, three able-bodied seamen, three engineers, and one cook. We were to stand two four-hour watches per day, the same as aboard a ship. We also put aboard a line-throwing, 50-caliber rifle instead of the usual Lyle gun (the latter, named for its inventor, was a small, short-barreled cannon, designed to fire a projectile attached to a rope to a boat or person in distress). The *Cathleen* did not have a towing winch with wire.

The plan was to get to St. Johns as quickly as possible, top off fuel, and head out for the *Havlom*. It took us three-plus days to get there, because the weather was not cooperating; we ran into high winds and seas. It was especially rough

after we came out of the north end of the Cape Cod Canal. A week before we got to St. Johns, that city had gotten eight feet of snow dropped on it. We pulled into the fuel dock and found our 10-inch by 2,000-foot main hawser frozen solid and looking like a rat's nest on the stern. It took five hours of every man in the crew working to soften that line up with warm water before we could re-stow it up on the boat deck. Moving it was critical — the seas crashing across the stern were too much for even the strongest lashings to keep it in place. There was so much snow that the dock master had to use a sextant, getting angles off building corners, to pinpoint where to start digging to find fuel valves buried under drifts. We were finally able to top off our fuel tanks.

When all was prepared, I borrowed the dockman's snowshoes and trudged up to the office to get the latest position of our quarry. When the office relayed the latitude and longitude of the *Havlom*, I was aghast: it wasn't 120 miles east of Newfoundland; it was 1,200 miles east, and being blown farther still by 50- to 80-knot westerly winds. As we passed out of the breakwater of St. Johns harbor, we met a large gray vessel inbound. We talked; it was the Canadian Coast Guard ocean station weather vessel. She was inbound due to conditions that made it too rough for her to stay on station. 80-knot winds and 55-foot seas will do that. And there *we* were, outbound... youth and stupidity! Yet we knew that a ship might sink with all hands if we didn't help, and we set sail.

Have you ever been on a small boat moving along with a following sea? The waves lift the stern, and it's like you are surfing down the front of the wave, accelerating. Doing that on a 105-foot, 3,500-hp, twin screw boat displacing more than 700 tons is the thrill of a lifetime — if scariness is your idea of a thrill — and it's exhausting. Between the *AB* and myself, we did one half hour on, one half hour off. It was too rough to use the autopilot, so we had to hand-steer to prevent a broach (a dangerously sudden change in heading), which would have certainly caused a rollover. When the stern lifted, it would bring the two 11-foot propellers out



CATYLEEN

of the water, and the tug would rattle like a freight train until they caught the wave again and shot you down the front. You had to fight the vibrating wheel on the way down, making adjustments to keep the stern directly perpendicular to the wave. When you reached the bottom of the trough, green water would be propelled onto and over the pilothouse windows. The propellers would dig in again, their vibration feeling like it would rattle your teeth out as the tug tried to rid itself of tons of water, and then the stern would lift again. At the end of the four-hour watch, we were beat. If we were to find the ship, we'd be turning around and going right back into this roaring mess with her.

While the wind whipped up waves, distant storms induced swells, creating huge and confused seas that threw the tug about so jarringly that sleep was next to impossible. You would get into bed — a bunk that was basically a steel pipe rack — and then tie three lines through the pipe sides: one at the ankles, one at the waist and a final one at the chest. Without these restraints, you'd be guaranteed of getting tossed out of your bunk.

I remember that the cook had a very difficult time trying to do his job. So many meals were started only to wind up as slop, with pots thrown around on the top of the stove. One morning, the fellow was determined to cook eggs for us. After two sets of fried eggs wound up flipping out of the pan and sliding down the bulkhead, he gave up; it would be dry cereal for all.

This is all pre-GPS; the best we could do was to try to get a noon sun line to help with the navigation. I was out in front of the pilothouse, feet jammed up to the railing, stopwatch in one hand, sextant in the other, trying to find the horizon from a 26-foot height of eye in 50-foot seas — dead reckoning at best. They didn't teach *this* at Kings Point.

When we got close to where we thought the ship would be, we tried to activate our Radio Direction Finder (RDF). We had told the *Havlom*

to broadcast a signal at 2182, so we could home in on her. But our antenna was broken from the foul weather, so we reversed it, sending out a signal that would enable the ship to home in on *us*. We didn't have satellite radios back then, but we did have

single sideband radios that allowed us to talk to our own office. The *Havlom* could use its sidebands to radio its position — and the reciprocal course to our signal — to its home office, which would call our office, which would in turn call us.

After a day of maneuvering around trying to find the ship, we were in a weather situation with a very low ceiling and cloud cover. We were actually close enough to contact the *Havlom* via VHF, and we told its crew to aim all their deck lights up and turn them on at exactly 2100 hours. At 2100 we scanned the horizon, saw a glow on the low clouds, and raced toward it.

At about this time, my wife called the office to get an idea of when I would return. It had been 10 days, after all. The dis-

patcher at Moran laughed at her inquiry and told her, "Your husband is now off the coast of Ireland."

As daybreak emerged, we were greeted with a cheering ship's crew, happy that we were there. The wind was so strong that the tops of the waves were being blown off as spume. With our deck gang about to start working, we released a little oil into the water to try to calm it down a bit. The net effect of that move was to create an even more slippery deck, and we almost lost one of the ABs overboard.

We explained to the *Havlom's* Captain how the tow was going to be rigged: He was told to "hang off" his port anchor — that is, to run several parts of one-half-inch wire from the anchor shackle to the nearest bit, have the crew secure the anchor in the hawsepipe, and then disconnect the anchor chain and run it through the "bullnose" (for you engineers, that's the forward-most fairlead at the stem). The ship's crew was to let out about a one-half shot (45 feet) and bring the end of the chain

**I was aghast:
the *Havlom*
wasn't 120
miles east of
Newfoundland;
it was 1,200
miles east,
and being
blown farther
still by 50- to
80-knot winds.**



back on deck over the rail. We used the line-throwing gun to get our hawser over to the ship. The projectile was attached to 600 feet of string, which was attached to 600 feet of half-inch line, which was attached to 600 feet of three-inch painter that was used to haul the hawser aboard. This was done successfully, and our hawser was connected to the ship's anchor chain.

After the *Havlom* let out another four shots of chain (360 feet), we were ready to begin the tow. The idea was to add extra weight to the catenary curve (the concave arc) of the towline, and to avoid chafing worries at the bullnose. Our 10-inch nylon hawser was like a rubber band, and with the anchor chain, we were not worried about breaking the towline. On the tug end, we used a long-enough piece of anchor chain from the "H" bit aft to clear the stern rail and alleviate the worry of chafing.

Given our position close to Ireland, we thought for sure we'd be towing the *Havlom* to Southampton or some other repair facility in the U.K. When we were told to head for New York because all the ship's cargo was needed there, it was heartbreaking. At least at this juncture we had the superior navigation capabilities of the ship, and would be able to steer a better course for home. But in the first 24 hours of heading directly back into turbulent seas, we went exactly 25 miles. At this rate, we'd run out of fuel before we got halfway there.

You had to hand it to Moran's chief engineer and his assistants. The company's offshore tugs were designed with plenty of fuel tanks; when one tank emptied, it would be filled with seawater and sealed off. This maintained the stability needed in rough seas. With the crew keeping track of these adjustments, the *Cathleen's* engines ran smoothly.

Conversing with the *Havlom's* captain, we decided that since he had lost his rudder but still had power to his propeller, he should flop the ship's wheel over at 10 revolutions to take some of the strain off the tow. With that assist, we got up to four knots. We then told him to put the wheel at 15 rpm and hold it there, which boosted our progress to over 120 miles a day. For several days, this configuration produced excellent results.

One evening, I went to the bridge to relieve the watch a few minutes early, so I could get my eyes used to the dark. In very rough conditions, you would wait until the tug got to the top of a wave, take a quick look around for traffic, and then drop down into the trough to wait for the next crest. On one crest, I looked to the starboard and saw a ship's running lights. I told the mate that we had traffic nearby, but he didn't see it, so we waited for the next crest. Sure enough, there was a ship to starboard. The thought dawned on us, "Oh my God, that's our tow." I quickly radioed the *Havlom*


and asked how many revolutions they were doing. The ship's mate proudly offered that he had got her up to 62 revolutions. She was passing us! The hawser became taut, and with the ship right on our starboard beam, the forces involved laid the tug over almost 90 degrees—right, over a cresting, confused sea. The aquatic impact blew out all the windows on the starboard side of the wheelhouse, not to mention the inch-and-a-half solid oak door on the boat deck. Green water came pouring through the openings, sloshing down the companionway to the main deck interior. Crew-members came running out of their rooms with life jackets on, screaming that we were going to die.

When we righted, we were being dragged stern-first until the ship shut down her engines and came to a stop. The *general alarm* was sounded, though it was ultimately not needed. But it was February. It was night. We were freezing, exhausted and scared.

It soon became apparent that we were not sinking, and we still had engines and generators. But we needed to move quickly to board up the broken windows and door. Thank heavens it was standard procedure to stock up on sheets of marine plywood; we had put them aboard back at the Moran yard. By daybreak, we were ready to go again. There was no use in screaming at the ship's captain at this point, but it was made perfectly clear that 15 rpm means 15 rpm.

There was no letup in the weather, but our hopes to be diverted to Halifax never materialized, so we continued on to New York. After 23 days of living hell — lashing seas, cold food, a near capsizing and utter exhaustion — we sailed into New York Harbor under the Verrazano Bridge. The bridge never looked more beautiful. When we disconnected from the *Havlom*, the ship's entire crew assembled on deck and gave us a roaring cheer of gratitude.

We brought the mighty *Cathleen* back to the yard, where she had to undergo about \$60,000 worth of repairs — about \$432,000 in today's dollars. Later, the management of Meyer Line sent a check for \$1,500 to each of us crew-members, with hearty thanks for saving their ship.

I was thankful that I got to experience this when I was so young, because it was an experience that served me well when I went on to fleet operations management later in my career. And it was now obvious to me that the thought behind the design and construction of Moran's offshore tugs was gleaned from highly seasoned mariners with decades of experience — people who knew how to prepare for all eventualities because they had first-hand knowledge of what those eventualities were. Their wisdom had been instrumental in keeping us alive and getting the job done. 

“A Project So Unique”

A shipping leader played a vital role in supplying artificial harbors for the Allied invasion troops at Normandy 70 years ago.



By A. Denis Clift

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The headline announced: “Edmond J. Moran Is Dead at 96: Admiral Led Tug Fleet on D-Day.” It marked the passing of one of the most influential figures in 20th-century U.S. shipping history.¹ The U.S. Naval Institute conducted a series of interviews with Rear Admiral Moran in 1977 and published his oral history in 2004.² In it, he traced his childhood in Brooklyn, New York, and his joining the Moran Towing Company in 1915 as a teenager. He worked on board the tugs during summer vacations and then launched a 69-year career that

would take him from office boy, to president, to chairman of the Board of Directors. The company had been founded in 1860 by his grandfather Michael, an Irish immigrant who had had his start in the United States driving mules on the Erie Canal.

Moran’s father died at a young age, and Edmond was greatly influenced by his stepfather, Thomas

Above: Naval Reserve Captain Edmond J. Moran receives urgent and specific instructions from Supreme Allied Commander Europe General Dwight D. Eisenhower on board the destroyer USS Thompson after D-Day. The general ordered Moran back to the United States “for more supplies and equipment to keep the invasion going.”

Reynolds, a Moran seagoing tug master whom he crewed under and greatly admired, a man who taught him much about seamanship, navigation, and the handling of tug men, which would serve him well later in his career.

On 6 April 1917, the U.S. Congress declared war on Germany. A month later, Moran enlisted in the Naval Reserve as a quartermaster third-class. He was 5-feet-6, weighed 114 pounds, and, by his account, took two tries to pass the physical exam. His first assignment was to a “break-down gang” relieving crews on merchant ships taken over by the Navy.³

Next, Moran received his reserve commission via 90-day officers’ training school, joined the coal-burning reefer ship *Ice King*, became navigator, and headed out on transatlantic runs delivering tons of frozen meat to the troops in France. When the war ended, he returned to Moran Towing. His new Navy credentials served him well as he ascended the company ladder. The Moran tug fleet was expanding. There was good growth in the tug and towing business between East Coast ports and in the Port of New York with its 1,500 square miles of waterfront, more than 700 linear miles of docks and wharves, and nonstop arrivals, departures, and inner-harbor comings and goings of thousands of merchant ships, liners, and barges. In the late 1930s, the Department of the Navy’s Bureau of Ships consulted with him on the design of a new ATF fleet ocean tug, “inquiries with respect to the hull, as to deck fittings, towing apparatus, navigational equipment, the power plant, and propulsion machinery. ... The ships, the tugs, were built on the East Coast and on the Lakes and turned out very satisfactorily.” He would also consult on the Navy’s plans for the new ATR rescue tug.⁴

Small-Craft Acquisition

In spring 1941, by then in charge of the towing company, Moran again took leave and headed to Washington, D.C., at the request of retired Rear Admiral Emory S. Land, chairman of the U.S. Maritime Commission, to become a special assistant in charge of acquisitions of small craft for the Army, Navy, and the British. This was a business that would grow quickly. Requests and instructions came via the Office of the Chief of Naval Operations. He and his staff negotiated with civilian boat owners, from yachts, to tugs and barges, to 75- to 80-foot sea boats of the West Coast sardine fleet. Where necessary, three Circuit Court of Appeals judges ruled on just compensation.

“Harold Vanderbilt had a yacht, *Bara*,” Moran recalled, “and we requisitioned it. It was in an unfinished state, and we determined \$300,000. So he said, ‘Do you ever come to New York? I don’t like to go down to Washington.’

“I said, ‘Yes, I do.’

“And he said, ‘Let me know when you are coming to New York; give me a ring.’ So in due course, I gave him a ring, and I met him at a club over there — downtown. We sat down and he said, ‘What do you think that thing is worth?’

“And I said, ‘We determined \$300,000.’

“And he said, ‘That’s all right; I’ll take it.’ So we finished lunch, and when he got the check [for \$300,000] he signed it over to the USO. He just endorsed the check over, the whole thing, which was very fitting.”⁵

In May 1942, while serving under Rear Admiral Land, Moran returned to active duty as a Naval Reserve lieutenant commander, and six months later was promoted to commander. He kept moving, always upward, next serving a brief tour on loan from the Maritime Administration. At this point in the war, German U-boats were still taking a heavy toll on Allied merchant shipping. Moran became rescue officer for the Eastern Sea Frontier, in charge of the operations of rescue tugs going to the aid of torpedoed and shelled merchantmen.

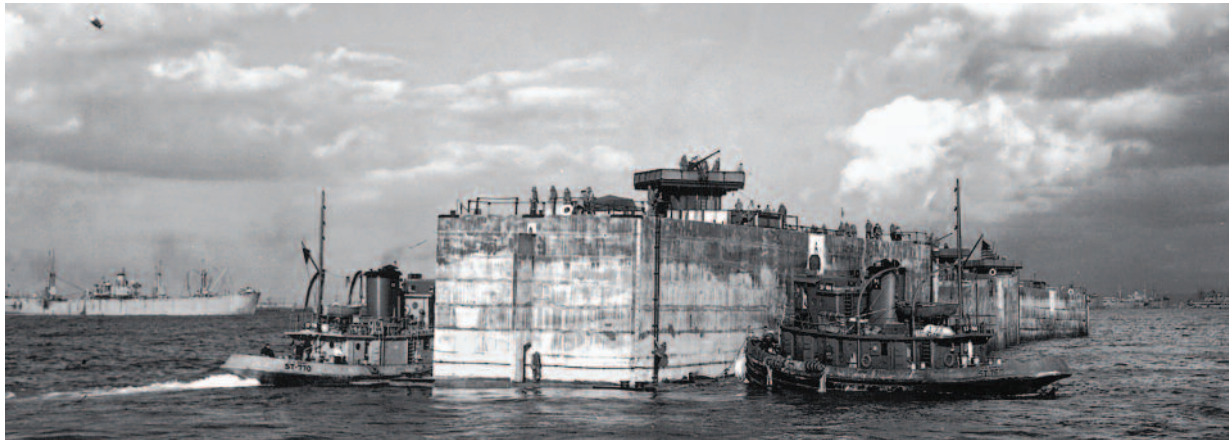
A Call from Admiral King

One day in 1943, a member of Chief of Naval Operations Admiral Ernest J. King’s staff called on him. “He asked me a lot about ground tackle and beach operations, but he didn’t tell me why he was asking the questions. He asked me about unloading on beaches. He was a naval officer, and I told him all I could.”

In late 1943, Admiral Harold R. Stark, Commander, U.S. Naval Forces Europe, got in touch with him. “He said, ‘I might like to have you come over and take a look at a plan that is being considered. You come to London and spend a few days. Give me your opinion of certain aspects of it and go home...’ The next thing I knew, the Army called and asked for a type of unit that could get up on the beach and be discharged when the tide was low.”⁶ The Army and the Navy did not then have the craft required.

At the outset, while Moran did not know that the precise challenge would be to put 10,000 tons of gasoline, ammunition, and K-ration meals on the beaches of Normandy, he thought through the problem with some of his seafaring colleagues. They first thought that railroad-car floats — very long at 220 feet with very low 7- to 8-foot sides — might do the job. They could go up on the beach and when the tide dropped the barges would be high, dry, and ready for off-loading. But the railroad barges’ lack of longitudinal strength was a worry. They wondered if oil barges might be better. “They were flat, they were a little deeper, and they had better sides so that they were more immune to the dangers of breaking in half on the way over to France.”

They hedged their bets and requisitioned both



Above: A major component in supplying Allied troops at the Normandy beaches were synthetic harbors consisting of scuttled ships dubbed “Gooseberries” and breakwaters called “Mulberries.” Here, tugs push the components of a Mulberry harbor into position. Of Moran, the British officer in charge of the towing operation told his superiors: “This guy can do this job better than I can do it. Let me out and put him in.”

railroad-car floats and oil barges. To solve the longitudinal-weakness problem, they stacked two floats on top of another in drydock and welded them together. Each had the capacity to lift 1,000 tons. A convoy of stacked floats and eight oil barges towed by tugs steaming at six knots departed the United States in late April and crossed the Atlantic with the loss of a single tug. “We took them to Cardiff, where the barges were dismantled and put afloat on their own bottoms and brought to Plymouth, where they were loaded with ammunition, K rations, and gasoline. ... On June 6 we took them across the Channel, and they were a lifesaver.”⁷

Moran was already in England in April when the barge and float convoy arrived. He had signed secrecy agreements, and in meetings with new U.S. and British colleagues he was working his way into what would be his next, far greater assignment. General Dwight D. Eisenhower, Supreme Allied Commander of the Allied Expeditionary Force, had been studying the issue for many months. He had a clear appreciation of the near countless challenges he would face in the D-Day landings. The beaches of Normandy had been chosen in the greatest secrecy, with the knowledge that the Germans would expect the landings to be at the ports of Cherbourg or Calais. At the same time, he would write: “The history of centuries clearly shows that the English Channel is subject to destructive storms at all times of the year. The only certain method to assure supply and maintenance was by capture of large port facilities. ... To solve this apparently

unsolvable problem we undertook a project so unique as to be classed by scoffers as completely fantastic. It was a plan to construct artificial harbors on the coast of Normandy.”⁸

“Two Large Synthetic Harbors”

In his 7 June communication to Soviet Marshal Josef Stalin on the Allied landings, British Prime Minister Winston Churchill wrote: “Most especially secret. We are planning to construct very quickly two large synthetic harbors on the beaches of this wide sandy bay of the Seine estuary. Great ocean liners will be able to discharge and run by numerous piers supplies to the fighting troops. This must be quite unexpected by the enemy, and will enable the buildup to proceed with very great independence of weather conditions.”⁹

The artificial harbors would consist of Gooseberries — outer lines of ships scuttled bow to stern to form breakwaters — and 146 Mulberries — inner, fixed breakwaters, each displacing from 1,600 tons to 7,000 tons and made of giant concrete caissons ranging up to 5 stories high, 200 feet long, 69 feet in beam, and with a draft of 23 feet. More than 330,000 cubic yards of concrete and 31,000 tons of steel were involved in their construction, and thousands of workers were brought in for the job.

As every British shipyard building way and drydock was already fully occupied, the Allies improvised. Close to the banks of the Thames River, excavators dug 12 large holes. With pumps draining water that was seeping in, the Mulberries were constructed in the holes. When they were at a point where they could be floated, the strip of land between them and the river was removed, and they were launched.

There would be two Mulberry artificial harbors, one for the British landing at Gold Beach and one for the Americans at Omaha Beach. The British naval planning staff had to arrange, taking into account precise water depths, for the sinking of the right caissons in the correct offshore positions. The Mulberries, when submerged and connected, provided piers for troop and cargo ships and had

more than seven miles of attached, flexible, floating roadways and pontoon bridges leading straight to the shore.¹⁰

Moran thought the idea of creating Mulberry harbors was reasonable. But he had been going aboard U.S. and Allied tugs and was concerned that some of the planning for the tug men might not yet be adequate to allow correct delivery of the in-shore caissons. Although he was carrying out several other assignments for Admiral Stark at the time, he discussed the problem with the British officer in charge of the towing operation, who went to his superiors and said, "This guy can do this job better than I can do it. Let me out and put him in." The issue was taken to Royal Navy Admiral Sir Bertram Ramsey, Operation Neptune Naval Commander-in-Chief of the Allied Naval Expeditionary Force. After Ramsey and Stark conferred, Ramsey told Moran that he was to relieve the Royal Navy captain who had been charged with being the controller of the operation.¹¹ Naval Reserve Captain Edmond J. Moran was now in charge of the tugboat fleet, 150 to 160 strong.

Moran kept circulating among the tug crews on the British coast, refining plans, moving equipment, keeping morale high; "they never knew when we might get an air raid or we'd get one of these buzz bombs." He selected a Dutch tug as the lead boat for the cross-channel operation, thinking a crew whose country had been overrun would have the right esprit for the return to the continent. "The next fellow I sent was an American. ... I just talked to him; he [later became] president of one of our companies in Baltimore. He was a game sort of guy."¹²

"90 Caissons in Tow"

The D-Day assault took place early morning on 6 June. Moran had 90 caissons to tow. He recalled in his oral history: "We started across with the tows on the morning of June 6. The tows proceeded at a rate of five to six knots, and the distance was approximately 100 miles, coming from Portsmouth, Selsey, and Plymouth." All of the tug crews "were civilians, and they were capable of doing it all right. And, of course, there were patrols there that would lead them in, because they were under constant fire from the shore batteries. ... [I]t all worked according to plan; we brought the equipment over, all of it, and the British engineers and the American engineers had the job of locating them where they wanted them."¹³

Mulberry A at Omaha was in operation on 16 June. The contrast between Omaha on 6 June and 12 days later, in Samuel Eliot Morison's words, was amazing:

This lonely three-mile stretch of beach, where nothing bigger than a small fishing boat had ever landed, was now a major port

of entry. Through 18 June it had received 197,444 troops, 27,340 vehicles, and 68,799 long tons of supplies. With the aid of *Mulberry A*, Omaha had now become the most active port in northern France, with the greatest capacity. And, for the moment, it was the most active port in Europe, with British Beach Gold a good second.¹⁴

While *Mulberry A* would be severely, irreparably damaged in a violent storm in late June, it had played its part in establishing the Normandy beachhead and facilitating the initial U.S. moves inland. *Mulberry B* would continue in a major artificial-harbor role for months.

I don't think the assault on France could have been accomplished without it, Admiral Moran reflected: I don't think there was a possibility of going on open beaches without the protection that these harbors afforded. I don't think it could have been completed in half the time that it took for the whole adventure to be completed if you hadn't done it that way. It would have taken twice as long. These troops were going ashore over the caissons, over the road. In seven days, the bridge had been completed. The LST could have gotten them up onto the beach, but the LST would have been shot to pieces, and the crews did very well getting them over the pontoon bridges. They had lots of artillery, and they didn't have to worry about stepping into water over their heads. We landed them and got them on the bridge, and they walked ashore and went where they were supposed to go and got there safely.¹⁵

Breakfast with Ike

In mid-June, Moran, now back in London, was ordered to report to the destroyer *USS Thompson* (DD-627) in Portsmouth, and as it was 0500, he went down to the wardroom for breakfast. "Pretty soon a fellow came along, sitting alongside me ... and it was Eisenhower. So I said, 'Good morning, General.' He said, 'Can I get some breakfast here?' I said, 'Sure, just a minute. Mine's coming.'" The *Thompson* had been providing gunfire support during the landings and on the 12th had carried General Eisenhower, General George C. Marshall, Admiral King, and General Henry H. Arnold to take a look at the invasion beaches. After some food, Eisenhower pulled Moran aside on the destroyer, told him how desperate he was for more supplies and equipment from the United States to keep the invasion going, and ordered him back to the United States — nothing in writing — to carry that message to all the right people and right places. "Then I saw Marshall and King," Moran recalled. "King said to me, 'I saw that place you built there at Normandy, and I must say it was a great job.'"¹⁶

While Moran personally downplayed his D-Day role, he was awarded the Legion of Merit; the Honorary Commander, Military Division, Order of the British Empire; and the French Croix de Guerre with gold stars. He departed for Guam and when the war ended was guiding the preparation of Mulberries for the invasion of Japan. In 1953, he was promoted to Naval Reserve rear admiral. He returned to Moran Towing, was elected chairman of the board of directors in 1964, and retired in 1984.¹⁷ ⚓

1. *The New York Times*, 17 July 1993.

2. *The Reminiscences of Rear Admiral Edmond J. Moran, U.S. Naval Reserve (Retired)*, Interviewed by Dr. John T. Mason, Jr., (Annapolis, MD: U.S. Naval Institute, 2004).

3. *Ibid.*, 15.

4. *Ibid.*, 32–33.

5. *Ibid.*, 50–51.

6. *Ibid.*, 62.

7. *Ibid.*, 64–66.

8. Dwight D. Eisenhower, *Crusade in Europe* (Garden City, NY: Doubleday & Company, Inc. 1948), 234.

9. Winston S. Churchill, *Triumph and Tragedy* (Boston: Houghton Mifflin Company, 1953), 8.

10. CDR Kenneth Edwards, RN, *Operation Neptune* (London: The Albatross Library, 1947), 60–63.

11. Moran, op. cit., 71.

12. *Ibid.*, 78

13. *Ibid.*, 72–75.

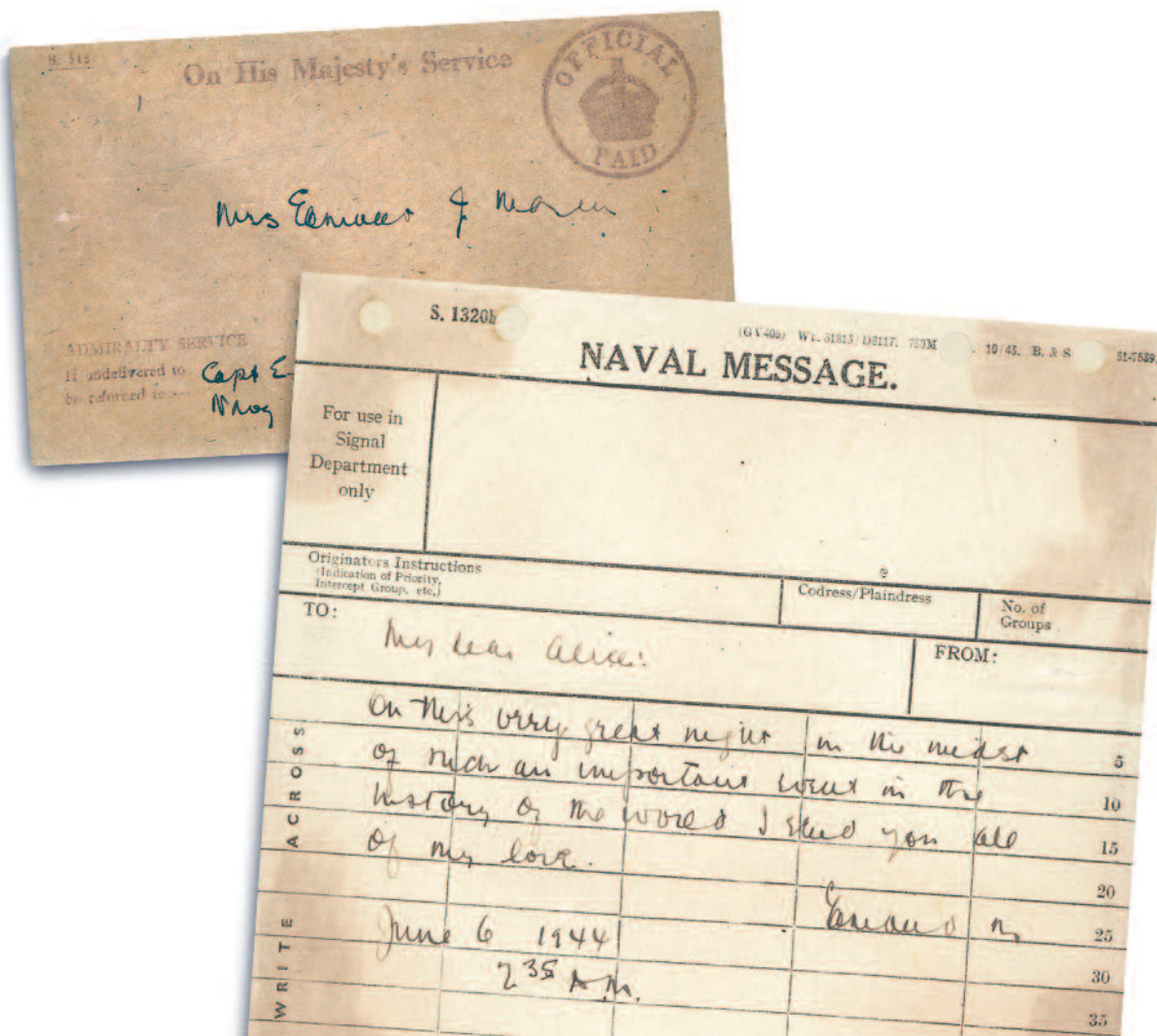
14. Samuel Eliot Morison, *History of United States Naval Operations in World War II, vol. 11, The Invasion of France and Germany 1944–1945* (Boston: Little, Brown, 1953; Naval Institute Press Edition, 2011), 166.

15. Moran, op. cit., 76.

16. *Ibid.*, 84–85.

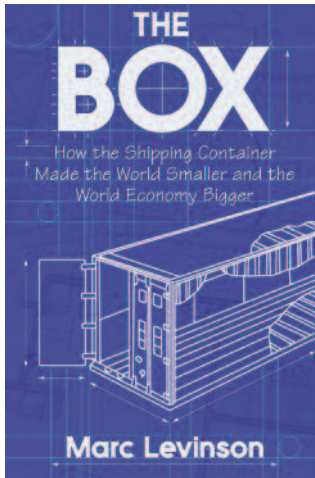
17. *Tow Line* magazine, vol. 46 (Winter 1993–94), 5.

Below: In the early morning of 6 June, as Moran was preparing to depart England with 90 caissons to tow, he took time to send this message home to his “dear Alice” prior to “such an important event in the history of the world.”



Visionary Voyagers

Journalistic Books by Marc Levinson and Lori Ann LaRocco Go Behind the Scenes in Today's Shipping Industry



The Box

How the Shipping Container Made the World Smaller and the World Economy Bigger

By Marc Levinson

The computer, we learn in Marc Levinson's riveting history of containerization, was not the only box to transform global commerce in the waning decades of the twentieth century. The shipping container may have, in Levinson's words, "all the romance of a tin can," but it too sparked globalization. *The Box*, first published in 2006, was one of the first book-length studies of the container revolution and its economic impact.

The book is now in its ninth printing, not least because Mr. Levinson's richly detailed account of containerization's rise is full of surprising twists and turns, human folly and nobility, and eye-opening insights. The material is impressively well researched; Levinson, a former editorial director of the *Journal of Commerce*, was also finance and economics editor of *The Economist*, and a writer for *Newsweek*. An economist and journalist, he scrupulously qualifies his anecdotal histories and central arguments with supporting facts and references. And he is a master of explanation, deftly weaving together the story's dense assortment of players and events into a smoothly flowing chronology.

The discussion sometimes gets sidetracked by technical explanations, but they are necessary to understanding events and motivations, and Levinson handles them with breezy clarity, as if he were telling you this story over a beer.

Many *TowLine* readers will be familiar with the story's broad outlines: how, after more than seven decades of evolving solutions to cargo handling, containerization's masterstrokes of business modeling and logistical engineering remade the shipping industry. How the path to progress was marked by setbacks, turf wars, maze-like deal making, blind strategic blunders and unforeseen consequences. How the call for standardization ignited resistance that ranged from obstructionist tactics to all-out commercial warfare. And how, in the 1970s, standardization finally prevailed, paving the way for the rapid growth that turned container shipping into a competitive juggernaut. But Levinson offers more. Even the most knowledgeable readers, including those who lived some of these events, might be surprised to learn the full extent of containerization's economic ripple effects — the exact ways in which it altered trading patterns, manufacturing methods, consumer prices and even national cultures. Never before, for instance, have manufacturing strategies for Toyotas and Barbie dolls played so significant a role on the world stage.

The book's crowning achievement is its vividly illuminating portrait of how the process of innovation unfolds. Containerization, Levinson shows, exemplifies a phenomenon that has come to be known as "creative destruction." Technological revolutions that trigger vast and disruptive economic changes, we discover, seem to proceed in three basic stages: germination; confluence; and a tipping point. According to Levinson, the large shipping container germinated for more than a few decades under the noses of populations who remained largely oblivious to its potential. Its earliest known predecessors, dating as far back as the late nineteenth century, were designed primarily for truck and rail transportation, and offered substantial advantages in portability. But the geography and timing of these inventions were essentially

random; far-flung parties created them, often unbeknown to one another, in answer to specialized proprietary needs. Interchangeability and standardization were at first almost nonexistent.

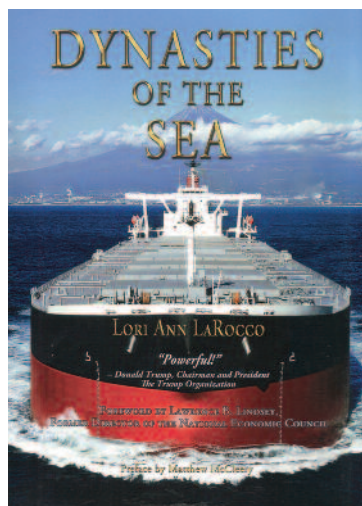
Confluence — the flow, on a massive scale, of organized, coordinated actions toward a common goal (think of the construction of the internet) — proceeded erratically for the shipping container. It started as a trickle, when some companies randomly began experimenting with containers to save time and money. It began forming a tidal wave after a trucking company owner named Malcolm McLean had what Levinson describes as containerization's central insight: that the shipping business is not so much about managing ships as it is about managing the movement of cargo. From this principle sprang the realization that immense amounts of time and money could be saved if the size, fittings and handling of shipping containers were standardized. (The latter idea was not McLean's alone.)

Then came the tipping point. Technological progress, we may learn from the rise of containerization, is sometimes made up of small triumphs that feed huge innovations. These are random at first, and then increasingly purposeful, focused, coordinated and cooperative. They accumulate, expand in scale and importance, occur with increasing frequency, and drive one another. Eventually, they give rise to a revolutionary product or idea that creates huge and irrefutable benefits — the tipping point — and the pressure to adopt it becomes irresistible. The wave of change sweeps over whole populations — or, as happened with containerization and computerization, the globe — demolishing the old way of doing things. Therein lies the creative destruction.

So what did it take to push containerization over that line? Apart from the perfection of the technology itself, here's a partial list from Levinson's catalog of triumphs, boondoggles and remarkable reconciliations: competitive cooperation among rivals; wise compromises on the part of regulators; high-stakes trial and error; the involvement of the military; fierce tactical jockeying by competitors for market dominance; receptive political climates; judicial interventions; rancorous labor disputes and grudging accords; complex financial coups and concessions; operational and management innovations; and the creation of new kinds of businesses. Levinson dishes up colorful portraits of the principal players in this real-life drama, whose personality traits, abilities, and decisions range from visionary to shortsighted.

It's thought-provoking stuff, and readers can expect to come away pondering big questions. Are there ways to make the process of innovation itself more efficient? Are there inventions germinating in workshops, offices and laboratories right now

that might embody as yet unrecognized solutions to energy consumption or other pressing challenges? *The Box* won't provide the answers, but its many object lessons will leave readers with an informed perspective on the nature of progress.



Dynasties of the Sea

The Shipowners and Financiers Who Expanded the Era of Free Trade

By Lori Ann LaRocco

In *Dynasties of the Sea*, Lori Ann LaRocco sheds needed light on another aspect of globalization: contemporary shipowners and the financiers who have helped them build shipping into a giant industry and powerful economic force. Published in 2012, this work nicely bookends Levinson's concentrated study, updating it and providing wider insight into the business and finance side of the industry.

Not much has been written for the general reader on the subject of shipping magnates. Research it on Amazon.com, and your first hits will be the two books reviewed here, followed by some gossip-laden biographies of Aristotle Onassis and a hard-cover biography of Mærsk Mc-Kinney Møller that retails for the astounding price of \$3,587.55 (that number is not a misprint; Amazon offers no explanation).

Enter Ms. LaRocco, who was granted access to 21 of the industry's leading CEOs, financiers, and other high-level executives. A journalist and television producer, she is senior talent producer at CNBC, where she produces the show "Squawk Box." In *Dynasties of the Sea*, she accomplishes in print what business-focused cable news shows do on television: she gives business leaders a platform from which they can weigh in on their industry's issues, history and prospects, and she supplements their commentary with her own. Absent television's severe time constraints, she is free to provide more than sound bytes, and her subjects talk at length

about their personal stories as well.

Dynasties of the Sea is thus two books in one. Readers who are merely curious about the professional lives and thinking of shipping industry luminaries can skip over the book's jargon-heavy financial explanations and still find plenty of interest. Through interviews and research, aided by the cooperation of her subjects, LaRocco largely succeeds in putting a human face on a part of the industry that tends to operate under the radar of the general public, and it makes for fascinating reading. Those readers who wish to delve into the intricacies of high finance, business modeling and growth strategies will find a feast here; *Dynasties of the Sea* is filled with valuable advice from some of the most brilliant and experienced shipping minds on the planet.

Either way, LaRocco's subjects prove to be congenial company, whose observations and insights are delivered with clarity and a commendable degree of candor. Not everyone in the book is a shipowner; some are managing agents, heads of leasing companies, or bankers. But as a group, they share common traits: they are by turns committed leaders, wise business philosophers, shrewd horse traders, self-professed tea leaf readers, sharp-eyed strategists and ferociously hard workers. The paths that led them to shipping vary from individual to individual. Some, like Nicholas Pappadakis, Angeliki Frangou, and Niels G. Stolt-Nielsen, joined their family businesses. Others came up through banking or law, and switched to shipping or ship financing. Some started out as young mavericks like John Fredriksen, who got his start working for a ship broker at the age of 16. More than one member of this elite group spent years at sea, as a seaman or officer on ships, before climbing the ladder to the executive suite. In the end, all of these men and women were captivated by the industry's traditions, value, romance, and adventure, and here they are.


To the book's credit, it presents a balanced picture of its subjects' financial philosophies; they don't all agree, for instance, on what role, if any, investment banking and complex investments should play in financing the shipping industry. On other fundamental issues, we see gratifying unanimity in their vision. Each person, for example, says in so many well-chosen words that the shipping business is and always will be about material value: jobs, assets (e.g., ships and cargo), and the concrete

exchange of goods and services that consumers depend on every day. The group also universally agrees that the business is people-centric and asset driven. To make money as a shipowner, we are told, you need to make extremely smart decisions about when and why to buy or sell ships. More importantly, you must do so without ever losing sight of the cardinal goal of the whole enterprise: to provide jobs and vessels for your company's people.

To hear Ms. LaRocco's group of eminent strategists tell it, this is easier said than done. The shipping business is cyclical and volatile — put another way, it can sometimes feel like the business equivalent of navigating a ship through the alternately calm and treacherously choppy waters off Nantucket. The list of factors that affect business outcomes

is too long and detailed to recount here; suffice it to say that the discussions regarding them in *Dynasties of the Sea* are among the book's most compelling revelations. Moreover, LaRocco's industry leaders inspire confidence with their heavyweight credentials and clear-eyed insights. Angeliki Frangou, for example, is multidisciplinary; she possesses a masters degree in mechanical engineering from Columbia University, as well as extensive experience in the shipping business and training in finance that she received on Wall Street. Ted Petrone,

the president of Navios Maritime Holdings and Frangou's right-hand man, had this to say to LaRocco about his boss: "She is always looking towards the future. We are always keeping up with her. What I have found over the years is that she has extraordinary vision, she sees the turns in the road ahead well before most, and leads her team. I joke around saying the last man standing in shipping will be a woman."

Dynasties of the Sea, it should be noted, is not exhaustive in scope; its discussions of the cultures of the companies it profiles are mostly limited to boardroom-level leadership and the activities of upper management. This is understandable, however: Matthew McCleery — the president of *Marine Money*, the book's publisher — writes in its preface, "Our hope for the book was neither to create a bestseller nor to win the Pulitzer Prize, but simply to do our part in recording the extraordinary personalities, challenges and achievements of some of today's leading shipping entrepreneurs." In that aim, *Dynasties of the Sea* has succeeded admirably. 



Containerization affected trading patterns, manufacturing methods, consumer prices and even national cultures.

George T. Moran, a New James A. Moran–Class Harbor Tug, Is Christened

The *George T. Moran*, a.k.a. Hull No. 109, was christened on May 17, 2014 at the Washburn & Doughty shipyard in East Boothbay, Maine. It is the third *James A. Moran*–class tractor tug to be built by Washburn & Doughty Associates. The christening ceremony was followed by a cocktail reception and lobster bake at Coastal Maine Botanical Gardens in nearby Boothbay.

George T. Moran is named for George Thomas Marcou, who is the son-in-law of James R. and Kaye Barker; Mr. Barker is the vice chairman of Moran Towing Corporation, Moran Transportation Corporation, and Mormac Marine Group. In his remarks at the christening, Mr. Marcou said he could not have been more pleased that in addition to his own name, the tug's name evokes that of his late father, George Themistoclis Marcou. His mother, Margaret Carmody Marcou, was among the honored guests at the christening.

Born in Illinois in 1957, Mr. Marcou grew up in Washington, D.C., the second of five children. He holds a bachelor of science degree in mechanical engineering from MIT, and a J.D. degree from Georgetown University, where he served as editor of the *Georgetown Law Journal* before graduating with honors.

He is currently a partner and principal at Johnson, Marcou & Isaacs, LLC, a law firm specializing in patent law, and is also active in the D.C. Volunteer Lawyers Project. The latter group recruits attorneys to provide pro bono assistance to low-income victims of domestic violence or other problems that need the recourse of family law. Since its founding, the D.C. Volunteer Lawyers Project has donated more than 50,000 hours of free legal aid; Mr. Marcou has personally handled more than 25 domestic violence cases. He previously held management-level posts at several major law firms in Washington, D.C., including Kilpatrick Stockton, LLC and King & Spalding. He served from 1985 to 1987 as counsel to the chairman of the Federal Maritime Commission.

He is married to Karen Barker Marcou, who

performed the traditional champagne christening on the *George T. Moran*. (Ms. Marcou, also an attorney, is the founder and co-executive director of the D.C. Volunteer Lawyers Project.) The couple has two sons, George James, 17, and John (Jack) Themistoclis, 14, both of who attend Sidwell Friends School in Washington, D.C. The young men accompanied their parents and maternal grandparents, Mr. Barker and his wife, Kaye, to the christening ceremony and reception.

Also present were Paul R. Tregurtha, CEO of Moran Towing Corporation, and shipyard owners Bruce Washburn and Bruce Doughty.

Like her sister ships the *James A. Moran* and



Hayley Moran, the *George T. Moran* is 93 feet overall, with a beam of 38 feet and a draft of 15 feet 6 inches. This tug is powered by twin 6,000-hp EMD 12-710G7C Tier 3 marine diesel engines driving two Schottel SRP 1515FP Z-drives. Auxiliary power is provided by twin 99-kW John Deere Model 4045 AAFM85 generators. The tug accommodates a crew of seven and will serve Moran's fleet in Norfolk, Virginia. ⚓

Above right: George T. Marcou with his family aboard the *George T. Moran* at its christening.

Hayley Moran, a New Harbor Tug, Is Christened in Maine

Moran's fleet of reverse tractor ship-assist tugs expanded once again last January 31 as the newly built *Hayley Moran* slid down the greased ways at the Washburn & Doughty shipyard in East Boothbay, Maine. Moran and Washburn & Doughty employees and their families were gathered at the yard for the traditional christening ceremony, celebrating the tug's namesake and those who were involved in its design, construction and commissioning.

The *Hayley Moran* is named for Hayley Child, the daughter of Tracy and David Child, of Rockville, Maryland. Hayley is the granddaughter of Lee and Paul R. Tregurtha (Mr. Tregurtha is Moran's chairman and chief executive officer).

A senior at Thomas S. Wootton High School in Rockville at the time of the christening, Hayley began attending Cornell University College of Arts and Sciences this past fall; she is following in the footsteps of her grandfather Paul (Class of '58) and her uncle Edward J. (Ted) Tregurtha (Class of '85), who is Moran's president. At Wootton, Hayley was a member of the National Honor Society, the Latin Honors Society, and Quill and Scroll, an international honor society for high school journalists. She earned four varsity letters for playing on the school's field hockey, lacrosse, and swim teams, and was also an assistant editor



of the *Wootton High School Yearbook*.

Outside of school, Hayley was co-chairperson of Get Into Gear, a sports equipment club serving underprivileged youth in the Montgomery County, Maryland, area. She also served on the Montgomery County Teen Court as a teen juror, and has interned at the George Washington University Global Women's Institute. She spent two summers working as a lifeguard at a local pool.

Hayley invited her younger sister, Kirby Child, to christen the *Hayley Moran*. The sisters were born on the same day a few years apart, and are very close, Hayley says. Kirby, a sixth grader at Cold Spring Elementary School in Potomac, Maryland, broke the ceremonial bottle of champagne over the *Hayley's* stem.

The *Hayley Moran* is 93 feet overall, with a beam of 38 feet and a loaded aft draft of 17 feet.



The tug is powered by twin EMD 12-710G7C, Tier 3 engines driving Schottel 1515 drives for a combined 6,000 hp. Auxiliary power is provided by twin John Deere 4045AFM85, 99kW generators. Deck equipment includes a Markey DEPC-48 bow winch with 400 feet of 9-inch Plasma line and a 120-foot, smaller-diameter pennant. The stern capstan is a Markey CEW-60.

Hayley has two sister tugs, the *James A. Moran* and *George T. Moran*. The *James A.* has MTU engines but is otherwise identical to the *Hayley* and *George*. *Hayley* will serve in the Moran Port Arthur/Beaumont fleet, in Texas. Port Arthur is one of the U.S.'s leading petroleum ports. ⚓

Left: Kirby (l.) and Hayley Child (r.) on the bridge of the *Hayley Moran*; above, the *Haley* during sea trials on the Damariscotta River.

Dave Beardsley, Moran's Vice President of Construction and Repair, Retires

Before retiring last May, Dave Beardsley spent a lot of time in the engine rooms of tugboats, where he could often be found troubleshooting with chief engineers, conferring with shipyard designers, or negotiating with manufacturers. Beardsley, a hands-on kind of guy, has a killer memory and an engineer's affinity for complex machinery. He has been known to reel off cascades of detailed facts and astutely simplified explanations about tugboat parts — all of them — with the cheerful nonchalance of someone turning on a faucet.

This is not unexpected, of course, from a man who spent a lot of time immersed in blueprints, spec sheets, and manuals housed in big, thick binders. When he was not reading specs and instructions, he was writing them, or hashing through details with some of the world's best shipbuilders and maintenance personnel, on the phone or on site.

He retired some 40 years after joining the company.

Beardsley grew up in Bergenfield, New Jersey, a kid interested in sail and powerboats, he says. He developed a fascination with automobiles, too, and started rebuilding British sports cars and motorcycles in high school. His avocations drew him to engineering, which led him to attend SUNY Maritime College at Fort Schuyler; he graduated with a bachelor of science in engineering in 1974.



His first maritime job was with Circle Line Sightseeing in New York City, as an engineer aboard Circle Line #8. The boat was actually a modified landing craft from the Second World War, he says. "The power plant was operated from the engine room; the pilothouse used a telegraph to communicate ahead and astern orders to us." The Circle Line pier was located at the foot of


42nd Street on the Hudson, and Beardsley could see Moran tugs tied up at the passenger liner piers nearby. During a break one day, he strolled over to the *Patricia Moran* for a closer look, and the crew invited him aboard for a tour of the vessel. He was so impressed with it that he applied for a job with Moran, which promptly hired him. His first assignment was as an engineer trainee on the Tampa-based tug *Esther Moran*. Having scarcely arrived before the *Esther's* chief engineer got called away to sail a tug to Korea, Beardsley suddenly found himself promoted to third assistant engineer. He was a fast learner, and the job suited him. Three months and one letter of recommendation later (from Moran to the Coast Guard), the USCG upgraded his license to first engineer. A year later, he earned his chief engineer's license.

He served as chief engineer on the *Amy Moran* for a time, until Moran Captain Leonard Goodwin called one day asking if Beardsley would be interested in a port engineer's position in New York. He accepted. At the Moran shipyard on Staten Island, he spent most of his time overseeing tug and barge dry-docking and repair in outside commercial shipyards.

"After a few years, I was asked to manage the shipyard," he says. He took the job, overseeing the yard's 22 workers. The team provided overhauls and topside electrical, diesel, and welding repairs to Moran's New York fleet.

In 1981, Beardsley left Moran. He needed time off to put an addition on his family home and rebuild a wrecked Phil Rhodes fiberglass sailboat, he says.

When he returned to the industry, it was with Exxon Shipping. He sailed aboard the *Exxon Pelham* as chief engineer, then on other Exxon vessels. Three years passed, and Moran offered him a position as assistant manager of its construction and repair department. He returned to the company and rose through the ranks to become vice president of construction and repair.

Asked about his retirement plans, Beardsley floats a contented grin. He will continue to work for Moran as an on-site consultant at outside shipyards, he says. He plans to travel with his wife, and will also spend time sailing his Herreshoff 12.5 sloop. He hints that he might finally get around to restoring an old Beetle Cat sailboat that's been languishing in his yard. It's a far cry from a tractor tug, but "a project is a project," he says; "the success is in the details." 

Above, Dave Beardsley at a tug launching in 2014.

Captain Gary Biggs Retires

Capt. Gary Biggs, whose sure-handed command of the *Grace Moran* and other tugboats in the Moran Philadelphia fleet earned him a reputation for outstanding seamanship and leadership, retired last July after a 17-year career with Moran. He had captained the *Grace* for the past 13 years, and had previously commanded the tugs *Caroline Moran*, *Valentine Moran*, and *Cape Cod*.

“He was one of the few who had a deft touch with the *Grace Moran*,” Nathan Hauser, Moran Philadelphia’s vice president and general manager, says of Gary’s long and productive command of the tug. Both Gary and Nathan, his boss, recall that in certain conditions the *Grace* could be a handful. Nicknamed “The Beast of the East” by Moran’s mariners, the 101-foot-long, 2,875-hp single screw tug has a 13-foot, 8-inch-diameter propeller — the biggest wheel of any East Coast tug built in 1967, according to Gary. “The tug is big and powerful, and the seamen used to joke that ‘it took down every pier on the East Coast,’” Nathan says. Such humor sprang from vigilance, however, and under Capt. Biggs, the *Grace* maintained an excellent safety record. “We would put up two or three lines to keep her tight, and to help with backing,” he says.

Gary Biggs began his career in the dredging business, and joined Moran during a period when he was laid off, he says. A mate he had trained had begun working on a Moran tug, and asked him whether he would be interested in filling in for a mate on another Moran vessel. (The mate who recruited Gary later became a captain.) Gary ended up becoming a mate on the *Reedy Point*, a Moran tug commanded by Capt. Greg Newman. Capt. Newman is now a docking pilot, and Gary went on to earn his captaincy.

In his career with Moran, Gary handled numerous types of ship assist and docking assignments. Docking pilots and customers often specifically requested him for jobs, Nathan says, and he spent much of his time assisting Crowley barges, which during the 1960s and 70s were some of the biggest in the world. “We would assist on the stern, helping to steer the barge,” Gary says. An executive at Crowley happened to request Gary for a

job last July, Nathan says, and when told of his retirement asked if he could phone him and ask some questions.


“I believed in leadership by example,” Gary says, “and would never expect my crew-members to do any job that I myself wouldn’t do. ... Every man was different,” he adds, “and I made a point of listening to each one.” At some point — he does not know when — he acquired the nickname “The Admiral.” He remembers hearing it for the first time on the radio, and wondering how it got started. “Gary was a sought-after mentor to many of the men when I first arrived in Philadelphia,” Nathan says, “and we worked on syncing our respective leadership roles. He was an old-school captain with a big heart, who was at times fatherly and, occasionally, gruff. I’ve always thought very highly of him.”

Moran, the marine towing industry, and the U.S. Coast Guard all expanded and became more influential during his years with the company, Gary says, placing increasing emphasis on safety, environmental responsibility, streamlined management and effective leadership. The governance in these areas generated more rules, regulations, paperwork, and drills than he could have imagined, he says, “but it was all worth it. The boats are much safer, and people are more aware of



Above right: Capt. Gary Biggs, a.k.a. The Admiral, is presented with an admiral’s cap by Nathan Hauser, vice president and general manager of Moran Philadelphia.

safety. ... Moran is a great company,” he says — “nothing in the industry came close to the programs and initiatives we had in place.”

Now that he is retired, he is spending more time at home in Chesapeake City, Maryland, with his wife, Carol, he says. He has always wanted to own a Jeep, and just bought an ’83 model that he plans on restoring. His property needs a new fence, he adds, and he will put it up himself. 

Sophie Schleicher Receives a Moran Towing Corporation Scholarship



In 2012, Sophie Schleicher, a student at Red Rocks Community College in Arvada, Colorado, was awarded the first annual Moran Towing Corporation Scholarship to The Maritime Studies Program of Williams College and Mystic Seaport. Ms. Schleicher received the 2012–13 award in December 2012, and completed the program, which spans a single semester, in the spring of 2013.

Dr. James T. Carlton, the director of the Maritime Studies Program, said that the scholarship “is awarded to the most deserving students,” and was based on a review of Ms. Schleicher’s academic record, application essay and interview.


The Williams-Mystic program comprises courses in maritime history, literature of the sea, marine sciences, and marine policy. Its campus is part of Mystic Seaport, in Connecticut. In addition to classroom and laboratory studies, the semester Ms. Schleicher completed includes hands-on field seminars, conducted in Seattle, the Strait of Florida, and along the Louisiana coastline and Mississippi River. The Florida trip is a voyage on a tall ship, during which students attend lectures, participate in oceanographic research, read classic literature, and crew in the ship’s evolutions, going aloft when required.

Ms. Schleicher hails from Georgetown, a small town in the Colorado Rockies. Nestled in a valley roughly 8,500 feet above sea level, the town is the very definition of “landlocked,” she said. Yet, growing up, she was always fascinated by the ocean and tall ships. At the same time, she developed a love of history. Her godfather was the president of the Georgetown Historical Society, and the town — which sprouted around a mining camp established in 1859 — is home to numerous

historical attractions. One of them, The Hotel de Paris Museum, is a National Trust Historic Site. Ms. Schleicher was working there as a docent in October 2012 when, during a break, she thumbed through a copy of *Preservation* magazine and saw an article about the restoration of the whaleship *Charles W. Morgan*. The ship, a magnificent and storied wooden sailing vessel built in 1841, is permanently moored at the Mystic Seaport museum. It was declared a National Historic Landmark by the U.S. Department of the Interior, which says it is the last of its kind in the world. “I was intrigued,” Schleicher said. She began researching the *Morgan* online, hoping to find internship opportunities at the Seaport museum. She came up empty-handed, but stumbled upon the Williams-Mystic maritime studies program.

What most attracted her, she said, was that the program offered something she had dreamed of her whole life: the chance to go to sea on a tall ship. The Williams-Mystic curriculum would also enable her to combine her love of maritime history with her interest in historic preservation. At Red Rocks, she was a history major; were she to attend Williams-Mystic, she could devote a semester to studying the sea, including its history. She filled out a financial aid application and hoped for the best.

Asked last year to comment on her experiences in the program, she eloquently recounted her newfound perspectives on whaling, the construction of Seattle on what was formerly water, *Moby Dick*, and people who live with hurricanes. Amid anecdotes, she offered a summary: “[Williams-Mystic] takes you out of the books and into the real world, into the people and places and experiences that make up all the stories. It puts into perspective just how important the ocean is to all life on earth, and how important it has always been. ... I can’t begin to thank Moran enough for making it possible for me to be a part of it.”

As of February 2014, Ms. Schleicher was finishing her associates degree at Red Rocks and planning to transfer to a four-year college to pursue a teaching degree. She has more or less decided that she would like to teach history at the secondary-school level, she said. 

Above: Sophie Schleicher with her American Maritime History Prize certificate, and aloft on board the *SSV Corwith Cramer*.

Crozer Martin Retires



Crozer Martin — “Cro,” as co-workers, friends, and family know him — retired last March after 28 years of service to Moran. He worked as an accounts payable clerk at Moran’s New Canaan headquarters.

Jeff McAulay, Moran’s vice president of finance and administration, said that Mr. Martin is a hard worker who excelled at his job and was a delight to work with. During Martin’s years with Moran, the company’s workforce and fleets grew significantly, and Moran went from having zero personal computers to utilizing hundreds. Cell phones and then smartphones came along, and Moran moved from Greenwich, Connecticut, to New Canaan.

Mr. Martin blazed a convivial path through the changes. “During the Holiday season, Cro wasn’t satisfied with buying a box of Hallmarks to give out to his office mates,” Mr. McAulay said. “He would find a different card for each person, tailored to that individual’s personality. [The cards] were often very funny — people couldn’t wait to get them.” Mr. Martin’s banter with certain of his co-workers was memorable for its flinty wit, Mr. McAulay said, and was known to draw appreciative laughter from associates who witnessed the men trading zingers. Martin was also the office’s go-to amateur food critic; his at first casually delivered reviews of area restaurants had to be given on demand after word of his knowledgeability and taste spread through the office grapevine.

At some point, he and Mr. McAulay discovered that they both drove Hondas, and they occasionally gave each other rides to the dealership when their cars needed to go in for servicing.

An avid concertgoer and theater fan, Mr. Martin said that since retiring, he is enjoying “catching up on a lot of stuff.”

Christina Baviello Auditions in New York Mets Singing Competition

In 2013, the New York Mets decided to stage an “American Idol”-style talent competition for the club’s season ticket holders. The team’s front office

was looking for something specific: someone to sing the National Anthem at the Mets’ 2014 season opener. About 300 contestants signed up, including Christina Baviello, the daughter of Joe Baviello, Moran’s director of information systems (Moran sponsored Ms. Baviello). Caroline Baviello, Christina’s mother, accompanied her to Citi Field for the auditions.

The Mets had outfitted the press box with a stage and microphone for the occasion. A table for the competition’s three judges replaced the first few rows of seats in the room. Contestants were required *not* to sing the “Star-Spangled Banner”; instead, they came prepared with single songs of their own choosing. Christina chose “A Change in Me”, from the Broadway musical “Beauty and the Beast”.



Christina, a high-school freshman, was not exactly a stranger to this kind of thing. She has performed with the Lighthouse Youth Theatre, in Armonk, New York, for the past six years, and is in her third year of voice lessons. At 14 years old, she stands five foot two and sings in a vibratoless soprano. She has strong pitch and intonation, and can belt out a song or coo as required, Caroline says. Christina enjoys many types of music, but especially likes singing show tunes because of their emotive range — you have to act each song as well as sing it.

Christina’s fellow contestants in the Mets sing-off ranged in age from 13 to 18 years old. A majority were young women. Just as on “American Idol”, contestants had been instructed to “dress appropriately,” and people interpreted this differently. Some wore elegant street clothes, others more stylized stage garb. A few singers wore outlandish outfits, Caroline Baviello says, intended to reflect rock ’n’ roll or hip hop culture, but they were hard to get away with if you were much younger than the real Lady Gaga or Beyoncé. Contestants had to sing *a capella* (without accompaniment), and there was no “equalization” (reverberation or other sound enhancement) on the microphone; everyone had to sing “dry.” As might be expected at amateur and semi-pro auditions, some “American Idol”-like moments did occur. One contestant forgot the words to her song. Another was flummoxed by

nerve, and asked to start over. Some of the voices were impressive enough to inspire passionate ovations from the judges and spectators alike. This was, after all, New York, a mecca for vocal talents of every stripe. *Unlike* “American Idol”, this competition did not include any snarky comments from judges, Caroline says; the judges graciously thanked each singer and offered brief words of praise when warranted.

“How do you think you did?” Caroline asked Christina after her performance, which had gone smoothly. Christina, like many talented performers, gave a perfectionist’s answer; she dissected her performance the way her worst nightmare of a critic might. (Ella Fitzgerald is known to have done this when she listened to takes of her songs played back in the studio control room; everyone present thought they were hearing pure genius, but Ms. Fitzgerald insisted she had to do it again.) Her penchant for self-criticism notwithstanding, Christina is a seasoned trouper, her mother says; she handles the pressures of auditioning and performing with philosophical grace, and has won some plummy roles at Lighthouse. She learned within 48 hours that she did not get a callback from the Mets, but like the thespians of Broadway, she was already keenly engaged in her next project.

In Memoriam: Ray Carrano



Raymond (Ray) Carrano, who was for more than 20 years a Moran New York/New Jersey dispatcher, died this past January 7. He had retired from his dispatcher’s job in 2006 but continued to work as a billing supervisor at Moran headquarters in New Canaan, Connecticut, until illness forced him to stop. His wife, Helaine works for Moran in New Canaan as well. She and Ray were often seen together at company functions and in stolen moments around the office, and they liked to pose together in work-related photographs.

The basic job requirements for a marine towing and transportation dispatcher include the ability

to juggle fast-moving information and deadlines, a courteous and tactful disposition, sound professional judgment, and good organizational skills. Some essential underlying virtues, like intestinal fortitude, are not listed in the official job description. Ray demonstrated this quality and all the others, said Peter Keyes, Ray’s boss throughout his long career. “He also had exceptional knowledge of the geography of New York Harbor and its surroundings, and he got along well with customers and mariners.”

As jobs go, dispatching is long on priorities and short on glamour — Ray arrived at the office at 7:00 A.M. and left at 7:00 P.M., Mr. Keyes said — but he knew that people were counting on him, and his dedication was a core part of who he was. A dapper, pull-no-punches manager, he scheduled, coordinated, communicated and documented an average of 12 to 24 ship and tug connections a day. He knew a boatload of job-specific facts from memory. Without looking at notes, he could tell you the precise capabilities of every Moran New York/New Jersey tug, barge, and crew; the specialized needs of particular ships; the preferences of individual harbor pilots and customers; certain relevant fundamentals of tug and barge maintenance, oil transportation, and terminal operations; and the choke points in the harbor. “Ray would have been the first to tell you that the tides are not the only thing that ebbs and flows in New York Harbor,” Mr. Keyes said.

Another thing Ray surely knew was that, to a crew returning home from a long and arduous voyage, or a tug idly waiting for a call, the radio squawk of a dispatcher’s familiar voice is a singularly welcome sound. Ray’s voice sounds no more, but the *man* will live on in fond memory.

Moran Jacksonville Honors Its Own with a Crew Appreciation Picnic

Moran Jacksonville crews, shoreside staff and management gathered in May 2013 for a Crew Appreciation Picnic at the division’s yard. The event celebrated the success of the Jacksonville crews and staff in achieving outstanding safety results in 2012. “It gave our people a chance to come together and share some well-earned recognition,” commented Tom Craighead, Moran Jacksonville’s vice president and general manager.

Jacksonville crews had had no Lost Time Injuries (LTIs) since 2011, and the division logged a stunning 90 percent drop in damage claims expense for 2012. “The credit goes to our crews and managers,” Mr. Craighead said. “They really ‘get it’ — people have been very open, mutually supportive and geared to the ‘big picture.’”

Asked how he and his staff hit upon the idea of a picnic, Mr. Craighead said that the group want-

ed to do more than just hand out symbolic gifts. (Moran's branded paraphernalia is widely prized among crews, and logo-emblazoned flashlights, duffel bags, and gloves *were* distributed at the picnic.) "We thought our crews should hear the appreciation spoken out loud by people from Moran's leadership, in person, in a more public setting than a conference room," Mr. Craighead said.

Ned Moran, Moran's senior vice president in charge of harbor operations, and Matt Baker, manager of the company's Quality, Health, Safety, Security & Environmental Group, were happy to oblige, and flew to Jacksonville to attend the picnic. Representatives of Crowley Liner Services, one of Moran Jacksonville's biggest customers, attended as guests. Mr. Moran and Mr. Baker gave speeches summing up the Jacksonville results and illuminating their significance.



Mr. Craighead said that he believes that while the crews have been the key factor, group risk assessments and near miss reporting have also been transforming the division's culture. "We've been doing spot checks, and 98 percent of the time they don't turn up so much as a stray bucket of trash on the deck of a tug," he said. "The methods are good tools, but at the end of the day, it's who's using them that counts."

Moran Miami Celebrates Its 20th Anniversary

Moran Miami, Moran's stalwart provider of ship docking and towing services in the growing Florida gateway port, celebrated its 20th year in business in February 2013.

"Moran began operating in Miami in 1993," recounts Jamie Scott, the division's general manager, "at the urging of a customer who had a relationship with us at other ports." Mark Vanty, currently the vice president and general manager of Moran Norfolk, was Moran Miami's first port manager. He oversaw a fleet of two twin-screw tugs. The Port, while lively, was then a quieter destination than the emerging hub it has become today, Ms. Scott says; two twin-screw tugs provided adequate muscle to handle the vessel traffic Moran serviced at the time.

Times have changed. According to PortMiami, more than 12 of the world's top shipping lines now

call at Miami. Many of these — giants like CMA CGM, Maersk, Hapag-Lloyd, Evergreen, and NYK — are Moran Miami customers. The Moran Miami fleet now comprises two Z-drive tractor tugs: a 4,400-hp and a 5,100-hp. Most of the fleet's regular customers are Panamax container ships, and Moran Miami tugs have to date assisted two Post-Panamax ships. More of the jumbo ships are expected.



Reflecting on Miami's prospects for growth, Ms. Scott remembers when the Port had three container cranes; today it has 13, six of which are Super Post-Panamax scale. The Port is installing an "ondock" intermodal container facility, which will connect with a new rail facility in downtown Miami (and by extension, 70 percent of the U.S. population, PortMiami Director Bill Johnson said in his 2013 State of the Ports address). 20 years ago, Miami had a 36-foot channel depth; today it is 42 feet, and PortMiami has signed a contract with the Army Corps of Engineers to dredge the channel to a depth of 50 feet. The deepening is scheduled to be completed in time for the opening of the Panama Canal Expansion in 2016.

Moran Miami crews and shoreside personnel have received numerous Environmental Achievement Awards from the Chamber of Shipping of America, and the crews have established an outstanding safety record in terms of environmental incidents, accidents and injuries. Over the last five years, Miami's crews have completed over 7,100 jobs without customer damage; logged nearly 15,000 engine hours without an oil spill; and averaged less than one injury per year despite working over 300,000 man-hours in that time. Two of the division's captains have been with Moran Miami since its inception 21 years ago, and one of its chief engineers has been on the job in Miami for 14 years.

New York City JROTC Cadets Share a Tugboat Adventure

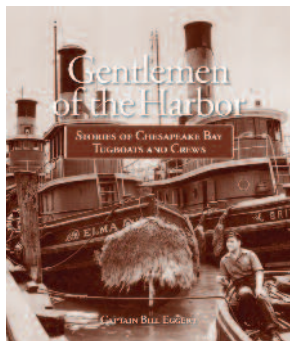
In Staten Island, New York, 31 cadets from Port Richmond High School's Junior Reserve Officer Training Corps (JROTC) got a taste of the tugboat

life when they visited the Moran New York/New Jersey yard last May 14. The group, known as the Raider Battalion, was accompanied by Battalion Senior Army Instructor Colonel John Friendlander and two sergeants. Moran President Ted Tregurtha and Vice President/New York & Offshore Operations Peter Keyes hosted the event.



The students, who marched in formation with a color guard, presented Mr. Tregurtha with a scale model they had built of the *Carol Moran*, a *Grace Moran*—class twin screw tug. The perfectly detailed replica equaled anything Moran’s own model makers have crafted, Mr. Tregurtha said. The battalion then boarded the *Miriam Moran* for a tour of the tug, followed by an excursion around Upper New York Bay. Moran is a continuing supporter of Richmond’s JROTC program.

Captain Bill Eggert Publishes *Gentlemen of the Harbor*



Capt. Bill Eggert, who spent 20 years working in Baltimore Harbor running charter boats and water taxis, has written and published *Gentlemen of the Harbor: Stories of Chesapeake Bay Tugboats and Crews*, an 80-page illustrated history. A longtime tugboat enthusiast and himself a former holder of a 100-ton Coast Guard Merchant Marine Officer certificate, Eggert came to know many of Baltimore’s most celebrated tugs and crews during his years of active service in the area’s maritime industry. *Gentlemen of the Harbor* records some their stories, which

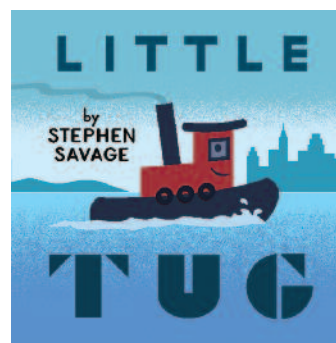
are accompanied in the book by crisp black-and-white photographs.

“*Gentlemen of the Harbor* gives an interesting and informative picture of the famous tugboat industry and its colorful and entrepreneurial people in the Baltimore Harbor,” Mick Blackistone wrote in a review of the book in the *Waterman’s Gazette*. Mr. Blackistone, the *Gazette*’s editor and a longtime leader in the Maryland maritime industry, said that the book “... explains, through interesting stories and photographs, how the industry works in tandem with the foreign and U.S. barges, the Bay Pilots, and the tugboats.”

In writing the book’s historical vignettes, Capt. Eggert drew on both his personal experience and historical research. He has previously written and photographed for *Sea History*, *Chesapeake Bay*, *Lekko*, *Soundings*, and *Sea Classics* magazines. *Gentlemen of the Harbor* includes photographs taken by Eggert himself and by Hans Marx, an award-winning photographer for the *Baltimore Sun*, as well as photos gleaned from the *Sun*’s archives.


To order copies of the book or to learn more, visit www.gentlemenoftheharbor.com.

Stephen Savage’s *Little Tug* Is Published



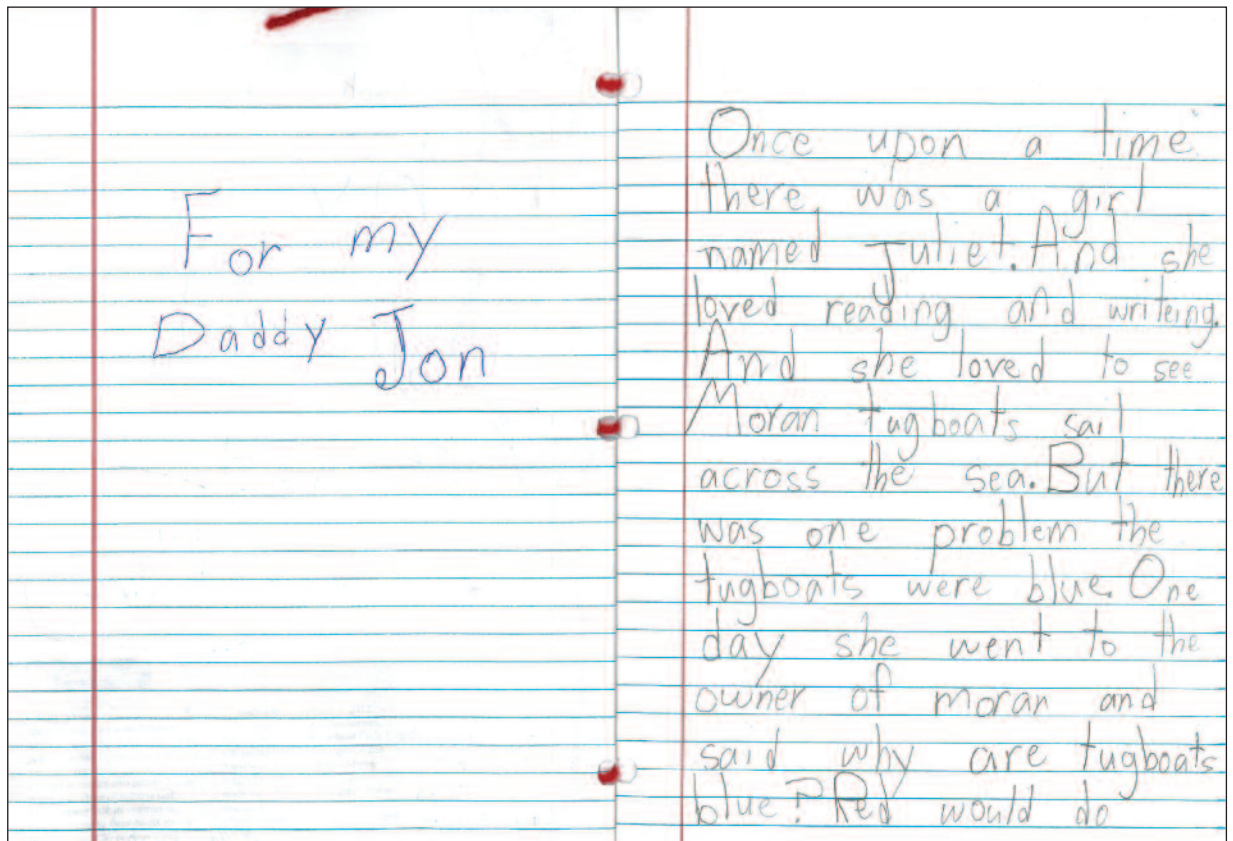
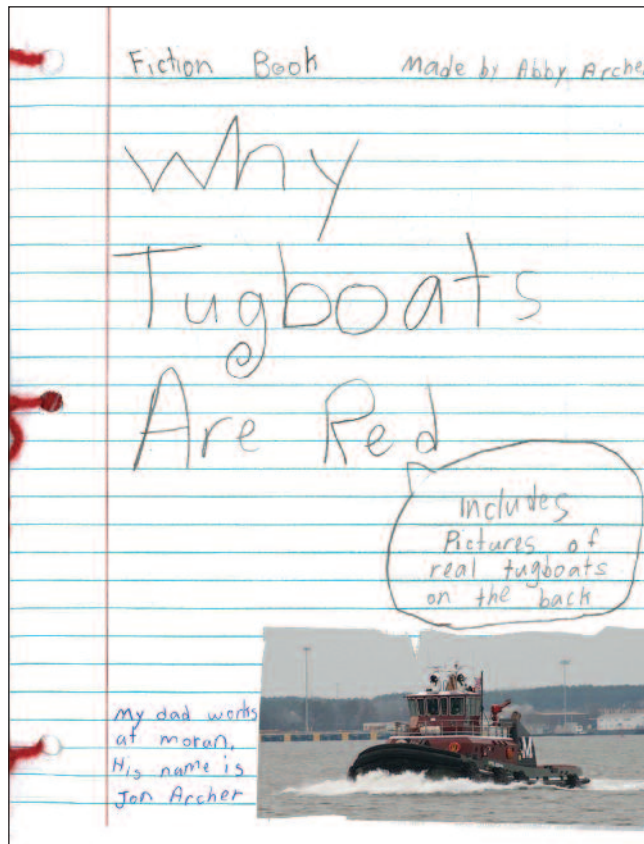
Stephen Savage, an award-winning author and illustrator of children’s books, has created *Little Tug*, a superb new hardcover published by Roaring Brook Press (a Macmillan imprint).

The book, geared for young children who are first learning to read, tells the story of Little Tug, a respected and beloved member of the harbor community. A short, simple tale, it is nonetheless replete with serenely encouraging messages for tykes, brought dazzlingly to life by Savage’s sumptuously atmospheric illustrations. The book’s artwork and typography are beautifully conceived and executed; Savage is a first-rate colorist, compositional master and graphic translator, and some of his spreads have the moody visual economy of well-designed posters. All of it is faithfully reproduced by the book’s excellent printing quality.

Little Tug is available at Amazon.com and at bookstores everywhere. 

Shoreside Comment

[Editor's note: The essay on these pages is by Abby Archer (aged six when she wrote it), who is the daughter of Moran Charleston Vice President/General Manager Jonathan Archer. The views and opinions expressed herein are those of the work's author, and do not represent for the record those of TowLine's editorial board and publisher.]



better you know. Then he said well I don't know. Then she went home and made signs of red tugboats. She also said blue is bad red is better. She passed every sign out to every person. Then the next day they all marched over to moran with there signs. They stayed there day and night

until they made the first ever red tugboat in the world. Then they made more. Then so much they had to ship some to other places. Now that is why tugboats are red.

Shipshape

The End

Milestones

Retirements

Dave Beardsley

Moran Vice President of Construction and Repair

[Story on page 59]

Capt. Gary Biggs

Tug Captain, Moran Philadelphia

[Story on page 60]

Patricia Boncoraglio

Operations Coordinator, Moran New York/New Jersey

Ms. Boncoraglio, who retired in 2011 and then decided to stay on as a part-time employee, officially retired on February 28, 2014. She joined Moran in 1998, when it purchased Turecamo Maritime, with whom she had had a successful 30-year career. Many Moran employees know her affectionately as “Miss Patty.”

Vincent Borello

A Moran Port Engineer

Mr. Borello continues to consult for Moran as a port engineer.

Thomas Chumley

Dispatcher at Moran Baltimore

Deaths

Raymond Carrano

A Retired Moran New York/New Jersey Dispatcher

[Story on page 63]

Harold J. Champagne

A Chief Engineer, Retired, with Moran Port Arthur/Beaumont

Harold Champagne, a longtime Moran Port Arthur/Beaumont employee who retired in 1995, died on September 18, 2014. He was 82. An Army veteran, he was chief engineer of the *Helen Moran* at the time of his retirement.

His son Clifton (Cliff) is chief engineer of the *Eleanor F. Moran*, and has been with Moran for more than 30 years.

In addition to Cliff and his wife, Sharon, Mr. Champagne is survived by his daughter, Roxanne Becker, and her husband, Rickey; his son, Mark Champagne; and numerous grandchildren.

Nadine Honeycutt

A Moran Jacksonville Retiree

Ms. Honeycutt was a bookkeeper for Moran Jacksonville. She was 85 at the time of her death.

(Deaths, continued)

Francis J. Kieseewetter

Moran Baltimore

Joseph F. Meseck

Moran New York/New Jersey

John J. Mitchell

A Moran Jacksonville Retiree

Mr. Mitchell died on September 12, 2014; he was 92. A U.S. Navy veteran of the Second World War, he retired from the Navy in 1968 and worked as an office manager for Florida Towing. He began working at Moran Jacksonville in 1986, and was its office manager for more than 10 years.

May A. Odell

Moran Port Arthur/Beaumont

Kevin J. Walsh

A Chief Engineer with Moran New York/New Jersey

Kevin J. Walsh, who served for 20 years as a chief engineer aboard tugs for Moran New York/New Jersey, died on October 17, 2013, at the age of 56. The cause was ALS, his family said.

At Moran, Mr. Walsh’s attention to detail and refusal to cut corners earned him the nickname “The Chief.” When not at sea, he volunteered his time to many worthy causes, including the Goffstown food pantry, the bookstore at St. Marie Church, and as a Eucharistic minister at the Catholic Medical Center. When he wasn’t volunteering, he enjoyed tinkering, hunting, fishing, and giving free billiard lessons at American Legion Post 65.

He held a degree in mechanical engineering from Wentworth Institute of Technology, and served for five years as an engineman in the U.S. Navy, touring much of the world and earning his honorable discharge in 1979. At the time of his death, he lived in Weare, Massachusetts.

He is survived by his wife of 31 years, Catherine Ricardo; his mother, Clare Walsh; his son, Kevin C. Walsh, and Kevin’s companion, Keri Belanger; brother, John; and sisters Clare, Elizabeth, and Mary, and their spouses; his aunt Mary Lowe; and numerous cousins, nephews, and nieces.

Service Anniversaries

10 Years of Service

Todd Barber
Arthur Booth
Roy E. Crook III
George Friant
John Gilson, Jr.
Terry Ray Grainger
Carolyn Havelka
Douglas Hawkes
Charles Hutton
James Jones
Stephen Kelly
Matthew Lee
Walter Lyon, Jr.
Donald Moore
Chad Reed
Julian Roberts
Luis Rodriguez
Christopher Taylor
Huey Wattigney
Joshua Whitely

20 Years of Service

Gary Cormier
Jonathan Donnelly
Peter Empey
Scott Grosjean
James Moran
Stafford A. Short III
Carl Stroud
Edward J. Tregurtha

30 Years of Service

Thomas Holland
Robert Johnson
Ryan Riggins
Robert Scott, Sr.

40 Years of Service

Clifton Champagne



Seen and Noted



At left, the split-screen feed from the CCTV camera system aboard the *Hayley Moran*. Designed to bolster safety and security, the system enables the captain or anyone else viewing the monitor to keep an eye on most areas of the tug. The feed is supplied by nine cameras placed around the vessel, and is recorded by a “blue box.” The screen displays several other programs as well, including one that monitors the statuses of engine systems; the user can toggle back and forth between programs as needed.

TowLine

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