

BI-MONTHLY PERIODICAL ON THE LATEST GREAT LAKES SHIPPING NEWS

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- □ USCGC ALDER TO DEPART GREAT LAKES
- □ Unprecedented second printing of Know Your Ships
- □ Shepler's William Richard Christened
- ☐ IN THE DESIGN: FUELS AND EMISSIONS



M/V NUKUMI LAUNCHED FOR CANADA STEAMSHIP LINES

MAY 20, 2021

Canada Steamship Lines' latest vessel, the *Nukumi*, was named and launched in China on May 20, 2021. The new ship was constructed as a result of an agreement made between K+S Windsor Salt and Canada Steamship Lines in September 2019. *Nukumi* will be owned and operated by Canada Steamship Lines, but will be chartered for scheduling by Windsor Salt.

The contract for the new vessel was signed with Chengxi Shipyard in August 2019, and was designed to specifically carry salt, used as a deicing agent on roadways. She will feature a unique conveyor system to allow the loading of the ship from a single point on deck, not requiring her to shift at the loading dock as typical to conventional ships.

Nukumi is expected to commence operation in early 2022, and will be engaged in the transport of salt from Windsor's mine in the Magdalene Islands in Quebec to western Quebec and east Ontario ports. □

ALGOMA SIGNS CONTRACT FOR ANOTHER EQUINOX SHIP; CAPTAIN HENRY JACKMAN ARRIVES IN CANADA

May 31, 2021

Central Corporation Algoma announced on May 31 that they had signed a contract with Yangzijiang Shipyard in China to construct yet another Equinox class ship. The new vessel will be the first of the "Equinox 2.0" class, a modified design from previous Equinox class self-unloading vessels. She will be constructed to the 740' Seaway-Max dimensions, and will be equipped with self-unloading equipment, and most likely will be similar in appearance to the Algoma Conveyor, Algoma Niagara, and Algoma Sault.



USCGC Alder [WLB-216] on the St. Marys River, July 26, 2009. Photo by Roger LeLievre

⇒A few design improvements have been made that will distinguish the new ship from her previous sisters. The hull design has been slightly altered to enhance fuel efficiency and speed, with increased deadweight capacity. The stern and accommodations block have also been reconfigured, and a dual rudder design has been included on the vessel. The shape of the cargo hold has also been altered for improved handling of sticky cargoes.

The new Equinox vessel is scheduled to replace the aging *Algoma Transport*. Construction will begin in late 2022, with delivery anticipated by the spring of 2024.

Algoma's most recent addition, the *Captain Henry Jackman*, arrived in Montreal on her delivery voyage on June 23, and is currently undergoing fitout in Hamilton, ON. She is expected to enter service very soon.

USCGC ALDER TO DEPART GREAT LAKES, WILL BE REPLACED BY USCGC SPAR

JUNE 18, 2021

The U.S. Coast Guard announced recently that the USCGC Alder will depart the Twin Ports for her final time in July 2021. She will be heading to the USCG shipyard in Baltimore, MD, for a year-long refit before being restationed in San Francisco, CA. The refit and restation is part of the Juniper Class Buoy Tender Midlife Maintenance Availability (MMA) program. Alder has spent her entire 16 year career stationed in Duluth, which began on her commissioning date of October 17, 2004. She will be replaced by her sister USCG Spar [WLB-206] in the spring of 2022, which will take up station Duluth. Spar was commissioned in August 2001, and stationed at Kodiak, AK, until fall of 2020 when she departed her home bound for Baltimore to begin her MMA. Both vessels are Juniper class Seagoing Buoy Tenders and Icebreakers, and were constructed by Marinette Marine Corp.

SOURCES:

"Algoma Central Corporation Announces Contract to Build a New Equinox Class Self-Unloading Vessel". Algoma Central Corporation, 31 May 2021.

Accessed 8 June 2021.

"Boatnerd Shipping News". Great Lakes and Seaway Shipping Online, Boatnerd.com, "Building MV Nukumi". Building MV Nukumi. 20 May 2021. Accessed 8 June, 2021.

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SHEPLER'S WILLIAM RICHARD CHRISTENED

Field Guide to Boats & Boatwatching Great Lakes & St. Lawrence Seaway

On May 29, 2021, Shepler's Mackinac Island Ferry hosted a small christening ceremony for their newest member to the fleet, the *William Richard*. At the ceremony, Tom Moran of Moran Iron Works, with Dave Lorenz from Travel Michigan, gave remarks prior to Bill and Chris Shepler. Bill, otherwise known as William, is the son of William H. and Margaret Shepler, founders of Shepler's Mackinac Island Ferry and namesakes of the ferries *Capt. Shepler* and *Miss Margy*. Afterwards, Bill Shepler smashed the traditional bottle of champagne across the bow of his namesake, officially christening her *William Richard*. Then, crews lowered the vessel into the waters of the Straits of Mackinac, where they went for a short cruise following the ceremony.



Above: Chris Shepler at the podium during the christening ceremony for the *William Richard*. Left: Bill Shepler after smashing the bottle of champagne across the bow of his namesake. Photo's courtesy of Shepler's ferry

accommodations block and

pilothouse section was placed

on deck on the stern of the

vessel. She is expected to enter

service in early 2022.

PORT OF MONROE STEERS TO THE FUTURE

MICHIGAN'S "BIGGEST LITTLE PORT" CONTINUES TO ADVANCE JUNE 29,2021

Wind tower components lay on the dock near the Happy River at the Port of Monroe. Photo by Paul LaMarre III



The Port of Monroe was recently awarded the Robert J. Lewis Pacesetter Award by the Great Lakes Seaway Development Corporation, the agency of the U.S. Department of Transportation responsible for overseeing and managing the U.S. portion of the Great Lakes and St. Lawrence Seaway system. The Port of Monroe continues to grow and adapt, and has earned the Pacesetter award 6 out of the last 8 years. The most recent award marks their third consecutive. The award is given to Ports across the American part of the Seaway system who create new cargo opportunities, as well as increase cargo volume and vessel calls.

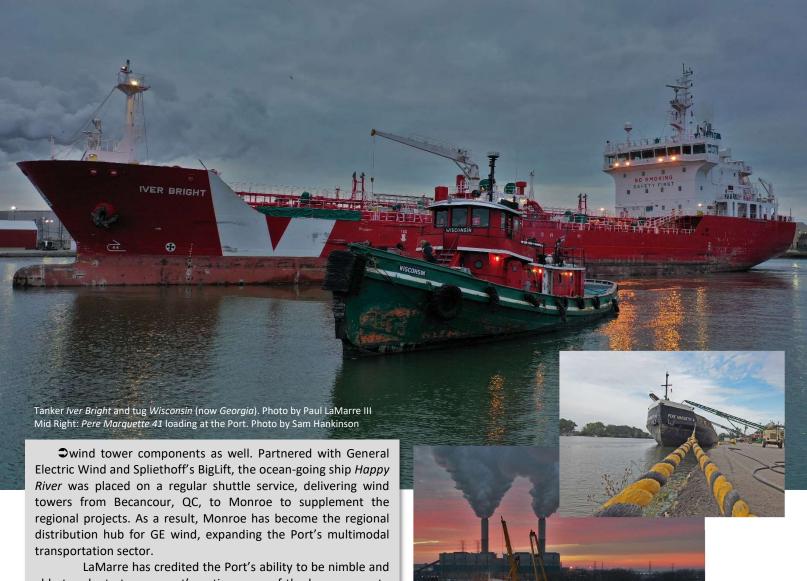
Port Director Paul LaMarre III states that the Port of Monroe is more than just the Pacesetter Award. "It is the rebirth of the Port since 2012 and establishing our identity as an active and major seaport on the Great Lakes". LaMarre said that the Port is refocusing on maritime and transportation commerce to better the Great Lakes and St. Lawrence Seaway system, as well as the community of Monroe, providing revenue and jobs. He has nicknamed Monroe the "Biggest little port", and wants the Port of Monroe to serve as an example of putting a port back on the map, to carry on the legacy of the original ideals of shipping on the Great Lakes by industry magnates in the late 19th and early 20th centuries. "If I could describe the port in one word, it would be resilient", stated LaMarre.

"Since its inception in 1932, the port was always identified with lots of potential", LaMarre noted. There is a shelf full of port development and feasibility studies in alignment with this potential, but the port never reached the level of potential until recently. By identifying cargo opportunities locally, the port has gone from a relatively inactive seaport to a leader in the community and in the Great Lakes Seaway system. \Rightarrow

"If you create the relationship, the cargo always comes later" remarked LaMarre. And that's what the Port of Monroe has done. They have built relationships with carriers, cargo origins, and other ports across the system. They have changed the mentality of turning to a feasibility study before making a move to just making the move. The port shown that they can do the work feasibly, economically, and have proved themselves. Monroe also has the honor of being home to the world's oldest active tugboat, the *Georgia* of 1897, which is owned and operated by the Great Lakes Towing Company. "Having the tug *Georgia* there is one of the most rewarding parts of the job", LaMarre said.

Paul LaMarre III took over at the Port of Monroe in 2012. He previously conceptualized the idea of the National Museum of the Great Lakes in Toledo, and oversaw the transformation and restoration of the museum ship Willis B. Boyer back to her original glory as the Col. James M. Schoonmaker. He continues to serve at the museum as the Vice Chairman at the museum, and has oversight of both museum ships. This, he does in his spare time. "My goal is to preserve the Great Lakes, past, present, and future" said LaMarre. LaMarre also previously served at the Toledo-Lucas County Port Authority. At the Port, he is assisted by Sam Hankinson, a recent Central Michigan grad and Port Development Coordinator, among others. The people come first at Port of Monroe.

The Port of Monroe happens to be home of one of 4 wind tower manufacturers in the United States, Ventower Industries. In 2019, the Port served as the manufacturing and staging location for Ventower, and assisted in the export of wind tower components to Peru in 2019. In 2020, demand from regional wind projects helped the port expand into the importation of



LaMarre has credited the Port's ability to be nimble and able to adapt at a moment's notice some of the key reasons to their success. Last year's focus was on wind at the port, and this year, the focus turns to steel coils, which will be imported from Nanticoke, ON. The Port is also working to make it possible for Michigan agricultural products to be exported from more Michigan ports. "I don't see us in competition with any other Great Lakes port", added LaMarre. "Though we are a smaller port, we are often able to have a greater impact on those that we serve". Even with their growth recently, Port of Monroe has lost more cargo than they have handled since 2012. This is primarily due to ongoing issues with U.S. Customs & Border Patrol, who have prevented and refused the Port from handling certain international cargoes requiring detailed inspection and screening.

Of all of the ports in the State of Michigan, Port of Monroe is one of two public ports, the other being the Detroit-Wayne County Port Authority. Interestingly, the State of Michigan has more ports than any other state on the Great Lakes-Seaway system, but does not have any single entity representing the ports of Michigan. Paul LaMarre is working with the state government to help develop a much more thorough awareness to what the ports contribute to the state economy, as well as help generate financial support for the ports. Of the state's multi-million-dollar annual transportation budget, currently \$0 goes towards marine transportation.

Harvest Spirit unloads at the Port of Monroe. Photo by Paul LaMarre III

⇒After all of this, what is next for the Port of Monroe? The Port plans to continue to aim high and improve. They strive to build a more harmonious relationship with US Customs and Border Patrol. Port of Monroe is currently on track to be a full service and highly advanced container port by the spring of 2023, with the capability of screening containers and handle more international cargo. Above all, they will continue to be resilient and relentless. □

Special thanks to Paul LaMarre III and Sam Hankinson from the Port of Monroe for providing their time and resources for this article.

In The Design: Fuels and emissions

A LOOK INTO PROPULSION FUELS AND EMISSIONS ONBOARD GREAT LAKES SHIPS

James R. Barker displays her steam plume from her scrubber system on a cool day on the St. Marys River. Photo by Jack Hurt



INTRODUCTION

Fuel and propulsion systems aboard ships have been slowly evolving since the conception of the boat itself. Early vessels on the Great Lakes harnessed the wind, drawing power from large sails hung from tall masts. The steam engine was introduced on the Lakes in 1817, being fueled by coal-fired boilers. Coal-fired boilers later evolved into oil-fired boilers in the mid-20th century, and by the 1970's, diesel took the crown. With more environmental awareness in the modern age, even diesel is faced with being dethroned as the modern fuel and propulsion system.

PROPULSION SYSTEMS FOUND ON THE LAKES TODAY

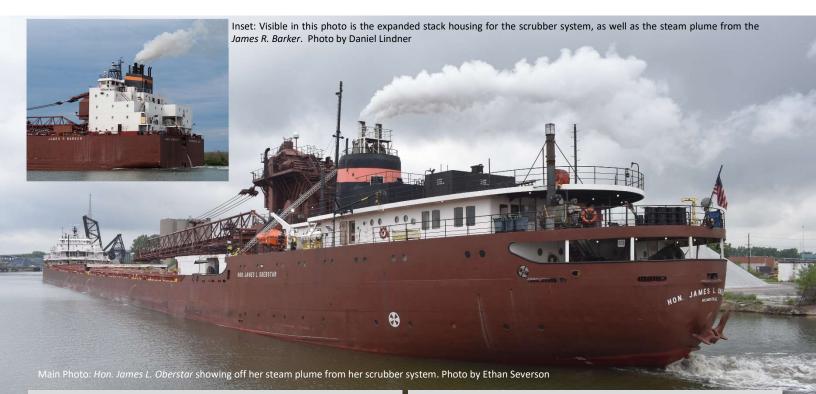
At this time, diesel still stands as the most common propulsion system present on Great Lakes ships. The number of steamships on the Lakes went from hundreds only a century ago to a handful surviving today. Only one vessel, the S/S Badger, remains coal-fired. Diesel has proved to be much more costeffective and efficient to install and operate, and can be operated in a more environmentally-friendly way today. Steam engines and turbines are fueled by boilers that burn #6 diesel oil, otherwise known as Heavy Fuel Oil (HFO), which is a less-refined diesel fuel, with the consistency of tar. Diesel engines, on the other hand, can burn HFO or #2 diesel oil, a more refined oil with a much lower sulfur content than its counterpart #6. In the United States, the EPA requirements are pushing to phase out HFO in the next couple of years. Ships will no longer be able to burn #6 fuel oil unless they have an exhaust gas scrubber (EGS) system installed onboard.

THE RISE OF ALTERNATIVE FUELS

In our current situation, with environmental policies becoming ever-constricting, alternative fuels become increasingly popular. Currently, Canada Steamship Lines is experimenting with biodiesel onboard some vessels in their fleet. The switch to biodiesel requires very little modification to the current diesel power plant onboard the vessel, and has

⇒ significantly less emissions when compared to burning regular diesel fuel in the engine. Thus far, the experiment has been successful, but an issue common with all other alternative fuels in the region has come into play: supply. Since the Great Lakes region is small geographically, it is very hard to obtain a supply source for new and alternative fuels in the region.

Other alternative fuels include ammonia, liquified natural gas (LNG), compressed natural gas (CNG), hydrogen, diesel-electric propulsion, and even sails. LNG is likely the most probable form of these alternative fuels to gain popularity in the Great Lakes region in the near future, but likely on a limited scale, as it will not likely meet IMO 2050 requirements, and would rather be used as a transition fuel. LNG is currently used as a fuel onboard several tankers in the Desgagnes fleet, but it almost became more highly used in the Great Lakes industry in the mid-2010's. As diesel prices increased and environmental regulations closed in, Interlake Steamship looked for alternatives for fueling their vessels. In 2013, they began a project to convert some of their 1,000-Footers to LNG power, with Mesabi Miner as the first in line for the conversion. But Interlake's fuel supplier decided not to carry out plans to construct their bunkering facility, so the project fell through. Now, the price difference between HFO/diesel and LNG is small. Cost is the biggest driver in fuel sources. One of the challenges posed with conversion to LNG and ammonia-powered engines is their efficacy as compared to diesel. LNG and ammonia are far-less energy-dense than diesel, meaning there has to be about twice as much fuel volume to get the same range as compared to diesel. This is why the development of fuel cells has intrigued shippers, as the same amount of power can be generated with less mass.



Severe damage to the human lungs and body. Onboard the vessel, expanded fuel tank capacity must be installed, as the ship will need more fuel to travel the same distance as it could on diesel. The conversion of the engine itself is possibly one of the simplest parts. Many diesel engines on the market today can be easily converted to ammonia/LNG fired. The difference comes down to the sparkplugs.

IMPROVING WHAT WE HAVE

With all of the necessary changes to operate with alternative fuels, there are some simpler methods to make due with current fuels on the Lakes for the time being. Using diesel engines in more efficient operating profiles will help reduce wasted fuel and cut down on carbon emissions. Diesel engines are designed to be ran at higher rpms to get maximum power and efficiency, so putting an oversized diesel in a smaller ship would not be very effective. Other solutions include use of fuel additives or exhaust gas scrubbers (EGS). Even without changing current systems, Great Lakes ships are 7 times as fuel efficient as trucks, and emit 19% less than trains and 533% less than trucks.

EXHAUST GAS SCRUBBERS

Exhaust gas scrubbers (EGS) have proved to be a cost-effective and simpler way to make moves towards being more environmentally friendly. EGS systems remove the sulfur content from exhaust, reducing harmful emissions. Wet scrubber systems spray the exhaust with a chemical solution to remove pollutants, while dry scrubbers, mostly found on shoreside facilities such as power plants, utilize a filter system. There are two types of "wet" scrubbers, open-loop and closed-loop. Closed-loop systems are found onboard Great Lakes ships. Onboard Interlake Steamship's vessels that are fitted with scrubber, the systems utilize caustic soda to treat the exhaust. Caustic soda is very basic on the pH scale, and is dangerous to humans if come in contact with, as well as very corrosive. Almost all of the equipment used to handle caustic is made of stainless steel to help reduce the carrion effects. The caustic soda is sprayed on the exhaust.

Das it travels through the scrubber tube. There, a chemical reaction takes place between the caustic and the exhaust, yielding water in steam form, and water droplets attached to sulfur molecules. The steam exits the stack, while the water with the sulfur oxides is collected in the bottom of the scrubber unit. The sulfur oxide and water mix is then transferred into a waste collection tank, where it is later discharged onshore. These systems allow Interlake's ships to continue to burn HFO, which is cheaper, and more energy dense than low-sulfur #2 diesel oil. The scrubber systems themselves and the installation costs quickly pay for themselves in savings on fuel.

When it comes to installing a set of EGS onboard, the existing engine setup does not have to be changed. The infrastructure around the stack housing and support structure has to be expanded to house the EGS units. The units themselves are 20-25' tall cylinders, several feet in diameter, and were installed in the stack housing aboard the Interlake vessels. On the Interlake ships, caustic soda storage tanks were located aft on deck, and waste tanks were constructed into voids in the hull. Space in the lower engine room was modified to house the filtration equipment, and the pumps and related piping were run between the scrubber units, pumps, and tanks. Most of the system infrastructure was prefabricated before the ships arrived at the yard for installation. Safety alarm systems were installed, and as a safety, the overflow line for the caustic tanks was routed to a specific overflow tank. As for maintenance of the system, caustic soda must be refilled and waste discharged. Sailors onboard continuously monitor the system.

Fuels and propulsion systems will continue to evolve into the future as they have in the past, and new technologies will be developed to help manage emissions to protect our Great Lakes and environment for future generations.

Special thanks to the naval architects who provided their time and resources to help me write this article. Thank you to Travis Martin, Fred Koller, and Ryan Dow from Bay Engineering, Eric Helder from Interlake Steamship Company, and Nick Hunter from NETSCo.—Brendan Falkowski

ALPENA



Before the United States officially became involved in World War II, officials at U.S. Steel began preparing details for the construction of five new ships. The new class would essentially be duplicates of the Ralph H. Watson and John Hulst of 1938, but on a larger scale. On a set of plans for the Watson and Hulst, dated March 4, 1938, a member of the fleet construction office penciled in a new length and beam. The length, beam, depth, and equipment were enlarged in the new plans for the class, with improvements also made to the coal bunkers, as well as the aft cabin and engine room ventilation. The new class would be the first ships to use mechanical fans to force air through the vessels. The class, now classified as the AA class for internal accounting purposes at U.S. Steel, would be 639' long, 67' wide, 35' deep, with a capacity of 19,150 tons. The AA ships would also be powered by a single De Laval 4000 SHP steam turbine, giving them a speed of nearly 16 mph. their large size and speed earned the ships the nickname "Supers" and "Super Dupers". U.S. Steel contracted Great Lakes Engineering Works of River Rouge, MI, for the construction of three ships and American Shipbuilding of Lorain, OH, to construct the last two.

The keel for the first vessel, then known as GLEW Hull #287, was laid at Great Lakes Engineering Works in River Rouge. She was launched on February 28, 1942, and christened as *Leon Fraser* for U.S. Steel's Pittsburgh Steamship Company. The *Fraser* entered service on June 21, 1942, sailing for Duluth, MN, to load iron ore. She went on to break the Duluth ore loading record with a cargo of 17,033 tons in her first season of service. *Leon Fraser* was followed into service by her Great Lakes Engineering Works sisters *Enders M. Voorhees* and *A. H. Ferbert* on July 29 and August 29, 1942, respectively, and later by her American Shipbuilding sisters *Benjamin F. Fairless* on September 15 and *Irving S. Olds* on October 6, 1942.

Beginning in the summer of 1962, U.S. Steel ships began sailing in the Seaway ore trade. *Leon Fraser*, and a dozen of her fleetmates, were among the ships that participated in the program. She usually loaded ore from Labrador Mines at Sept-Iles and Port Cartier, QC, for delivery to U.S. Steel's mills on the lakes. Minor modifications were made to the vessels for a



Leon Fraser, Sault Ste. Marie, MI, 1971. Roger LeLievre



Leon Fraser, St. Marys River, July 1973. Roger LeLievre



Alpena, unloading at Cleveland, OH, October 1991. Jim Hoffman



⇒Portion of the voyage in saltwater, with the installation of extra water tanks for crew and engine water. The last time the *Fraser* passed through the Seaway was on August 3, 1977, with a load of Labrador ore for the Lakes.

In 1967, both the Bradley Line and the Pittsburgh Steamship Division were merged into a single fleet, USS Great Lakes Fleet, under U.S. Steel management. During winter layup in early 1970, a bow thruster was installed on *Leon Fraser*, and her boilers were converted to oil-firing by American Shipbuilding in Lorain, OH.

Through the late 1960's and early 1970's, U.S. Steel Great Lakes Fleet conducted a winter navigation experiment to test the feasibility of year-round navigation. In 1972, Fraser Shipyards installed a special hull bubbler system on *Leon Fraser* for this experiment. The winter navigation experiment was concluded in 1979 with the implementation of an annual closing and opening date of the Soo Locks, with year-round navigation proving largely unfeasible.

Leon Fraser was laid up on December 20, 1981, at Lorain, OH, remaining there for the next 8 years. In 1985, Fraser was sold to Spitzer Marine for use in a shoreline redevelopment project in Lorain, but the sale fell through, and she was sold to Fraser Shipyards in 1989 with the intention of conversion to a cement carrier.

On October 29, 1989, Leon Fraser was towed out of Lorain for Fraser Shipyards in Superior, WI, where she was placed in drydock to have her hull shortened. A 120' section of her midbody was cut out, floated out of drydock, and her bow and stern sections welded together and strengthened. Her cargo hold was reconfigured for carry powdered cement, with slopes and an airslide system installed to feed a centerline unloading belt that led to a forward bucket elevator. From there, cargo was fed to either an airslide boom on deck or a pair of Fuller-Kenyon cement pumps. She was sold to Inland Lakes Transportation in early 1991, and renamed Alpena, being managed by Inland Lakes Management, a subsidiary of her owner.

Alpena sailed on her maiden voyage as a cement carrier on June 6, 1991, departing Superior for Alpena, MI, to load cement. She was christened in her namesake port on June 10, 1991, prior to loading her maiden cement cargo. In 1996, Inland Lakes Transportation and Management were acquired by Andrie Inc. of Muskegon, MI.

On December 11, 2015, *Alpena* suffered a major fire in her stern section while in drydock at Bay Shipbuilding in Sturgeon Bay, WI. The fire damaged her crew's quarters and a portion of the engine room, but she was quickly repaired and returned to service in early summer of 2016. *Alpena* continues to actively serve the cement trade, visiting Lafarge terminals across the Great Lakes.



Alpena, St. Marys River, September 8, 2009. Roger LeLievre



Alpena, St. Marys River, June 28, 2019. Daniel Lindner



Alpena, Sault Ste. Marie, MI, Summer 2020. Jack Hurt



Alpena, unloading at St. Joseph/Benton Harbor, MI, September 11, 2020. Isaac Pennock

Sources



BRENDAN FALKOWSKI

Is a Great Lakes ship enthusiast who shares his passion for the freighters through his newsletter and his artwork. He is currently pursuing his high school education in mid-Michigan before graduating and moving on to college, where he plans to attend to the University of Michigan to study Naval Architecture and Mechanical Engineering. Brendan is an avid musician, and is a drum major in his high school marching band. He enjoys sailing and spending time with his friends and family.

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MUSKEGON, MI



Cover Photo: Calusa Coast and barge Delaware on the River Raisin in the Port of Monroe. Happy River is unloading at the Intermodal dock to the top right. Photo by Sam Hankinson

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