FREIGHTERS

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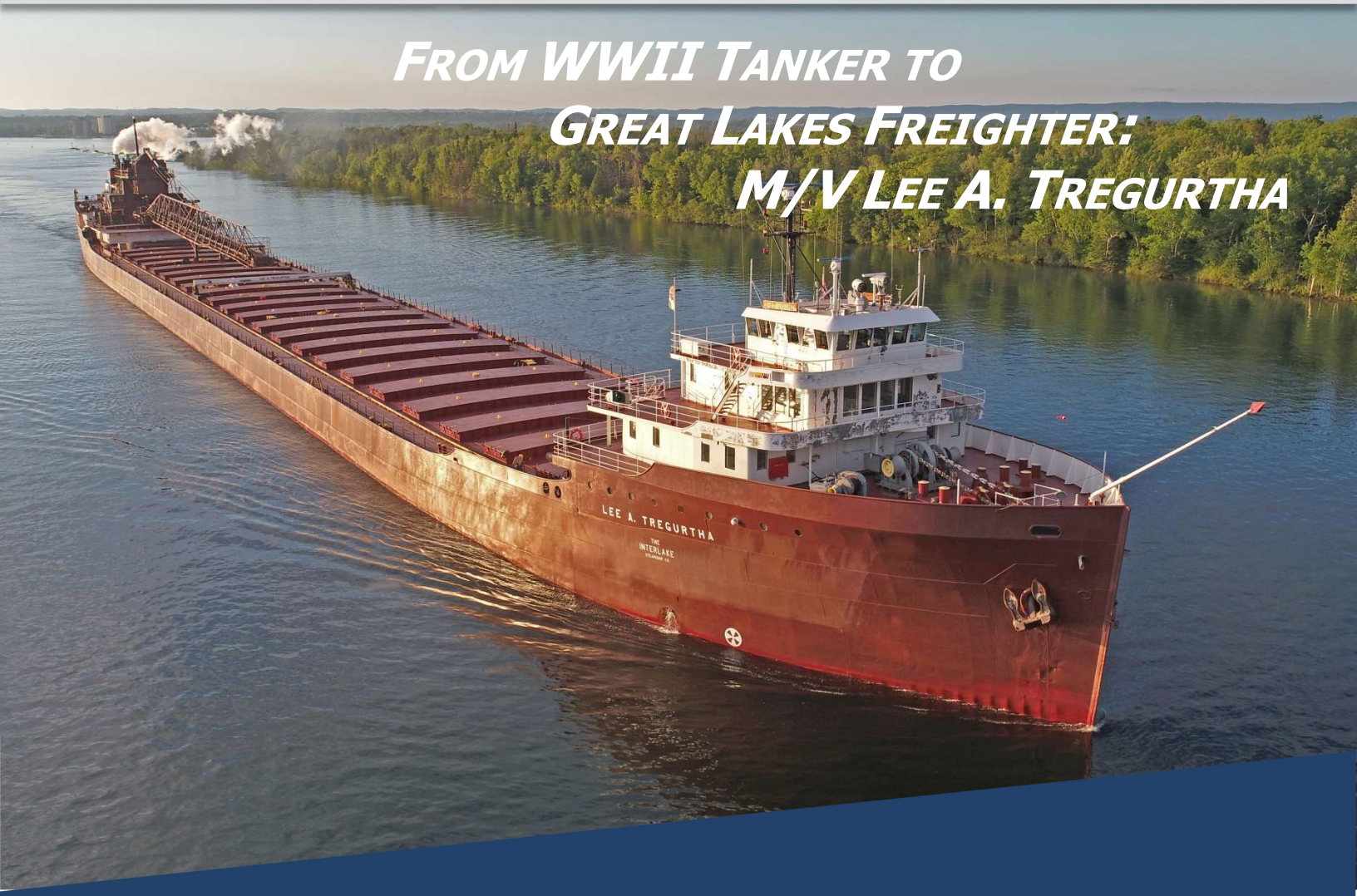


From WWII Tanker to Great Lakes Freighter: M/V Lee A. Tregurtha

- A look at the M/V St. Clair fire report
- In the Design: A look behind the concept of self-unloading technology
- 2020 Season gets underway
- Coronavirus shocks the shipping industry

Assorted News

Various happenings from around the Lakes

Algoma Conveyor runs aground in Green Bay

March 26, 2020

While inbound at Green Bay on March 19, the *Algoma Conveyor* lost propulsion and ran aground near harbor entrance Channel light 14, about 5 miles north of the mouth of the Fox River. Her bow went off to the side of the channel which is quite shallow. Her stern was partially blocking the channel.

The *Conveyor* was reported in stable condition with no pollution, and all 18 members of her crew were safe. The *Algoma Conveyor* was inbound with a cargo of road salt.

The tugs *Barbara Andrie, Erika Kobasic,* and *Nickelena* worked to assist in freeing the *Algoma Conveyor*. Approximately 3,000 metric tons of road salt were offloaded from the *Conveyor* to a barge to help free the vessel. The *Algoma Conveyor* was freed and proceeded into Green Bay on March 26.

Algoma Conveyor at Milwaukee, preparing to unload salt on March 7, 2020. Photo by Isaac Pennock

2020 Season gets underway

April 1, 2020

The cement carrier *NACC Argonaut* made her way through the Welland Canal on March 24, on an unusually quiet day, especially for it being the official opening of the Welland Canal for the 2020 Season. Due to coronavirus concerns, the Top Hat festivities were cancelled this year. This is in part to prevent the spread of the virus and to help keep the Seaway system in business amongst this crisis.

"The St. Lawrence Seaway provides an essential transportation service that literally feeds nations around the world, including Canada and the U.S., and supplies the inputs which keep many of our industries operating. We will strive to do our part during this difficult ➲ Period," said Terence Bowles, President and CEO of the St. Lawrence Seaway Management Corp.

The Soo Locks at Sault Ste. Marie opened on March 25, with the *H. Lee White* passing upbound as the first vessel through for the 2020 season. The parks surrounding the Lock facilities were closed off as well due to the coronavirus. During the 70 day layup period in the Great Lakes Shipping season, the Poe Lock received gate and valve repairs, as well as a cleaning of debris in the bottom of the lock. The MacArthur Lock opened on April 21.

"Enabling navigation on the Great Lakes by maintaining and operating these locks are the District's most critical tasks," said Lt. Col. Greg Turner, District Engineer for the Detroit District of the U.S. Army Corps of Engineers.

On April 1, the *Baie St. Paul* headed up the St. Lawrence Seaway from Montreal, being the first ship through for this season. ➲

➲The opening of the Seaway is usually much earlier, but due to higher water levels, the International Joint Commission decided to allow more water through the Moses-Saunders Dam, closing navigation. Ceremonies for the seaway opening were cancelled as well. ◘

Tank barge Albert/ Margaret runs aground in Lake St. Clair

April 16, 2020

On April 13, the tank barge/tug pair *Albert/Margaret* ran aground on a soft muddy bottom in Lake St. Clair. The barge was laden with roughly 3.9 million gallons of diesel fuel for Green Bay. No pollution or damage was reported.

About 936,000 gallons of the diesel fuel cargo was transferred to her fleetmate *Michigan/Great Lakes* in order to free the barge. She finally came free on April 16. ◘

New salt brine mining operation coming to Bay City

April 24, 2020

There is a large salt brine deposit laying a few thousand feet beneath Bay City. Wilkinson Minerals has recently announced plans to tap into this deposit, constructing a mining operation on the banks of the Saginaw River. Wilkinson plans to drill 4,000 feet below the surface to the deposit, where salt brine will then be pumped to the surface.

The Salt Brine can be processed into a variety of products, some of which, such as road salt, will be shipped out on freighters.

"The main uses for the product are fairly simple, it's used for ice melt on roads. That's the biggest market by far is for winter use," said Bill Sonnier, representative of Junction Capital, parent company of Wilkinson Minerals.

The company selected Bay City because of its close proximity to the Saginaw River and the connection to the Great Lakes shipping industry.

"That being the Saginaw River going right into the Great Lakes, it was a good location logistically," said Sonnier.

The project is currently in the permitting and engineering stage, with construction expected to start in 2021.□

Coronavirus shocks Great Lakes shipping industry

April 24, 2020

With the recent coronavirus outbreak, the economy at large has been hit very hard. The effects are showing themselves in the Great Lakes shipping and tourism industries as ships layup and cruises cancel sailings.

Recently, American Steamship Company laid off 175 workers. Victory Cruise Lines cancelled over half of their planned cruises for this season. Arcelor Mittal has idled blast furnaces at Burns Harbor, Indiana Harbor, and Cleveland. U.S. Steel has idled blast furnaces at Gary and has idled parts of plants across the nation. AK Steel temporarily shut down their Dearborn Works. Construction has halted on Cleveland-Cliffs new Hot-Briquetted Iron plant in Toledo. Mines have closed across the Minnesota and Labrador Ranges. Great Lakes Maritime Academy moved classes online. It is clear, the virus not only is affecting our health, but our economic system.

Ships are laid up across the lakes due to lack of demand, which has been lowered due to shutdowns.

"We're a service industry, and we need a cargo in order to keep the ships moving, and we are hopeful the cargo will be there to bounce➲ back, soon," said Jim Weakley, President of the Lake Carriers' Association. One of the biggest unknowns is when the economy does bounce back. Currently, it is projected that with plants idled down now, there will be more demand when plants open up again, which is expected in late summer to early fall.

"The challenge will be, are we going to have enough time and capacity?", said Weakley. It is worried that the Coast Guard's already insufficient icebreaking capacity could cause more problems this winter with the possibility of more demand, especially if it is an icy winter.

Throughout this pandemic, maritime workers have been considered essential. It was stated in a Department of Homeland Security report that "Port workers, mariners, equipment operators, employees who maintain marine vessels and the equipment and infrastructure that enables operations that encompass movement of cargo and passengers" are listed as essential workers.

Meanwhile, on the ships, crews are not allowed to leave the boat. The liberty of shore leave has been temporarily taken away in hopes to prevent the spread of coronavirus to the ships. Physical contact with the outside world is being limited as much as possible. Docking and line handling is being taken care of by shore side crews. Pilot changes are being kept to a minimum.

Before the ships even set sail, crews were tested before being allowed to board their boat. The Number 1 goal for all of the operators is to keep their crews safe.

"It could be the safest place to be in America," said Jim Weakley. With minimized contact and careful precautions, the crews have very limited exposure.

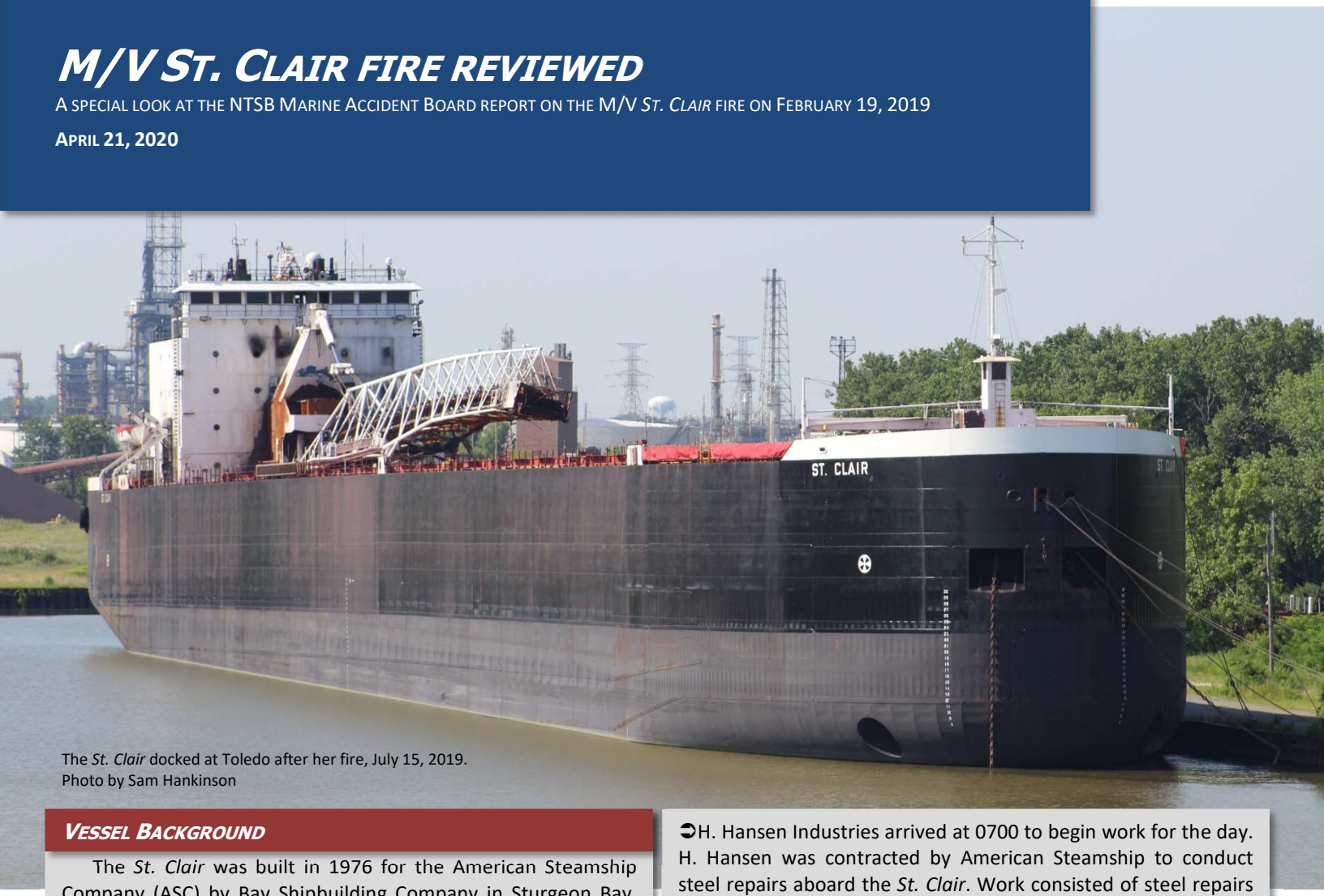
Only time will tell what will happen in the upcoming future and the overall effects of this pandemic. □

Tug Albert and barge Margaret on Lake St. Clair, August 31, 2019. Photo by Isaac Pennock

M/V St. Clair fire reviewed

A special look at the NTSB Marine Accident Board report on the M/V *St. Clair* fire on February 19, 2019

April 21, 2020



The *St. Clair* docked at Toledo after her fire, July 15, 2019.
Photo by Sam Hankinson

Vessel Background

The *St. Clair* was built in 1976 for the American Steamship Company (ASC) by Bay Shipbuilding Company in Sturgeon Bay, Wisconsin. She was built to haul coal from Superior, Wisconsin to Detroit Edison power plants in St. Clair and Detroit. After her 1,000-Footer fleetmate *Belle River* entered service in 1977, the *St. Clair* was quickly made obsolete in this trade. She found service in the ore, stone, and occasionally coal trades, but saw sporadic layups due to her awkward size. She spent most of the 2018 season in layup at Erie, Pennsylvania, where she received major internal steel work. She returned to service in October. She laid up for the winter on January 14, 2019, at Toledo, Ohio, where she would receive more steel work, and eventually, suffered a major fire that would end her career on the Great Lakes.

Summary of the Event

At approximately 2010 Eastern Time, on February 16, 2019, a fire broke out on the *St. Clair* while the vessel was in winter lay-up status at the CSX TORCO Iron Ore Terminal at Toledo, Ohio. The fire was extinguished approximately 36 hours after the initial report, with no pollution or injuries. Damage to the vessel is estimated to be over $150 Million.

Events of the Night

On the morning of February 16, the shipkeeper aboard the *St. Clair* confirmed that there was no water ingress in the sea chests and that the heat lamps and bubblers were operating correctly when he made his routine morning inspection. Workers from➲H. Hansen Industries arrived at 0700 to begin work for the day. H. Hansen was contracted by American Steamship to conduct steel repairs aboard the *St. Clair*. Work consisted of steel repairs to the conveyor belt port side tunnel in the No. 2 hold and the aft end of the No. 6 port ballast tank, which was located within the lower level of the engine room.

The shipkeeper departed at 1030, not to return until the following day. The H. Hansen crew had a fire watch present while hot work was being conducted in the No. 6 tank.

At 1645, a H. Hansen worker noted that there was a light white smoke in engine room. He thought that the smoke was from burnt paint from the bulkhead of the No. 6 tank where hot work was going on. As a result, he started the starboard side engine room exhaust fan, which was reported as regular practice.

H. Hansen workers departed at 1800, and it was noted that there was a light haze still present in the engine room, so the exhaust fan was left on for the night.

At around 2010, smoke was observed on the *St. Clair* by the chief engineer on the barge *Great Lakes Trader*, which was docked at the same complex. The chief engineer reported the smoke to the H. Hansen foreman who was onboard *St. Clair* earlier that day. The foreman passed it on to the *St. Clair* shipkeeper, who was at his home. He contacted the shipkeeper aboard the *Indiana Harbor*, another American Steamship vessel which was laid up at the nearby CSX coal docks.

The shipkeeper from the *Indiana Harbor* arrived at the *St. Clair* at around 2030, to find smoke and fire on the aft deck behind the deckhouse. ➲

The *St. Clair* underway on April 25, 2015
Photo by Isaac Pennock

The lights on the *St. Clair* were still on, so shore power was still connected to the vessel. The *Indiana Harbor* shipkeeper went aboard through the portside engine room door via gangway, the only way on and off of the ship. The door led to the third deck in the engine room, which is where the engines, steering gear, workshop, and control room were located. The shipkeeper found stacks of lumber on fire and the engine room to be filled with smoke. He returned to the gangway due to the intense heat and smoke, before attempting to go back in to activate the fire extinguishing system located on the main deck (two decks above). He was not able to reach the main deck, and departed the vessel leaving the door open.

Simultaneously, the H. Hansen foreman called a friend who was a fire fighter to inform them of the report. The fire fighter contacted 911 emergency dispatch at 2042 to report the fire, with fire trucks arriving on scene at 2055, 45 minutes after the first report of smoke. Since the portside gangway was the only access to the ship, fire fighters could not get onboard. Instead, they focused on cooling the exterior of the *St. Clair* and protecting the surrounding ships. Adding to the struggle, fire hydrants were frozen at the dock, and there was ice in the slip, so water could not be pulled from the lake.

The fire spread throughout the engine room spaces, the entire accommodations block and superstructure, the two self-unloading belt tunnels under the cargo hold, and the self-unloading boom on deck. While the fire ravaged the ship, shore power failed, allowing parts of the lower engine room to flood. The sea chests were open for layup, and the sea valve was electrically controlled, and designed to fail open during a loss of power. Divers were not able to reach the interiors of the ship until eleven days later, when they temporarily plugged the main sea chest and closed other internal valves. The water was then pumped out.

Damage

During the fire, the *St. Clair* suffered severe damage to her engine room, second deck, and the deckhouse. The conveyor belts within the ship were completely burned, and smoke and fire damage was found located in the forward ladder trunks and all cargo holds as well. She suffered fractures in the overhead of the third deck/floor of second deck, in an area located just outside and above the workshop.

Find the full report on the *St. Clair* fire at
www.shipwatcher-news.com/newsfeed/

Other Information

The *St. Clair* went into layup on January 19, 2019. The ship's machinery, pumps, and generators were shut down and the ship was connected to shore power to run layup equipment. A shipkeeper stayed aboard in the chief cook cabin on the main deck.

Winter work was being performed by H. Hansen Industries. They were performing ballast tank repairs and renewal of frames in the No. 2 cargo hold tunnel. Overhaul of the starboard service generator was also being taken care of by Michigan CAT.

The H. Hansen workers took breaks in the rec room on the main deck of the ship or the workshop area in the engine room. There were a total of 6 space heaters on the boat at the time of the fire. One propane heater was in the rec room, two electric heaters in the starboard generator space, and one in the lower level engine room with the remaining in the workshop area. The heaters in the starboard generator space were found unplugged after the fire. It was common practice for the workers to leave heaters on after work to keep the spaces warm for the next day.

Workers had been reported to have been smoking in the workshop area prior to the fire. There was no company policy prohibiting smoking onboard the vessel. There was also no company policy for ASC to conduct safety inspections after work concludes for the day. Smoke was also reported to regularly collect in the engine room following hot work. There was no onsite monitoring of the ship after the H. Hansen workers left at 1800 that evening.

Putting the Information Together

Smoke was identified at 1645, but it was assumed as residual smoke from hot work in the No. 6 ballast tank. This smoke was likely a smoldering hotspot, burning wood or trash, which later spread into the severe fire. With the fan on in the engine room, it may have helped to speed up the spread of the fire. The fire damage points to the area in the vicinity to the workshop as the origin.

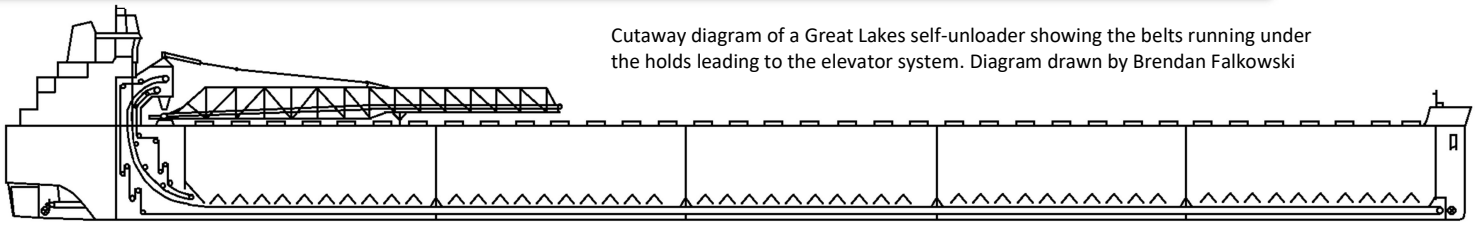
Conclusion

The Marine Board concluded that the likely cause of the fire was use of portable space heaters or smoldering smoking materials that later spread fire to the rest of the vessel. The lack of procedures for continuous monitoring was cited as the cause for the extent of the damage. ☐

NAVAL ARCHITECTURE & MARINE ENGINEERING

IN THE DESIGN: SELF-UNLOADERS

A LOOK BEHIND THE CONCEPT OF SELF-UNLOADING TECHNOLOGY



Cutaway diagram of a Great Lakes self-unloader showing the belts running under the holds leading to the elevator system. Diagram drawn by Brendan Falkowski

A BRIEF BACKGROUND & HISTORY

Many ports around the Great Lakes do not have the equipment to be able to unload gearless freighters. To solve this problem, and to help with efficiency from lost time at docks unloading, the self-unloading bulk carrier was developed. In 1908, the first purpose-built self-unloader was launched as the *Wyandotte* in Detroit. The number of these types of ships slowly increased, until the early 1970's in which almost all new construction were self-unloading ships. The technology has changed throughout the years, with systems being tailored to fit the needs of different cargoes while being efficient and cost-effective. The concept of self-unloading technology is now used around the world, but the largest concentration of this type of ship is here on the Great Lakes.

HOW SELF-UNLOADING SHIPS WORK

All self-unloading ships operate in a similar manner. Cargo flows through small gates on the bottom of the cargo hold that feed to a conveyor belt, which takes the cargo to the end of the ship with the unloading boom. The cargo is then transported by another belt system, taking it up to the boom conveyor on the main deck, which will drop the cargo onto the dock.

Ships can be set up with up to 3 conveyor belts underneath the hold, with 1 or 2 belts being most common. Cargo is allowed through small gates where it will be dropped onto the belts under the hold in the tunnels. These gates can be electrically or hydraulically opened, and can drop-down or move in a sliding motion, which is preferable. Nowadays, it is common for ships to be able to operate all of these gates from one control room, while a few ships still retain their manually-operated gates.

The tunnel for the unloading belt underneath the hold runs the entire length of the ship, and may be subdivided by partial bulkheads that align with the bulkheads in the cargo hold. Ships without a double bottomed-hull will have water-tight gates to meet stability and damage control standards. They may also be equipped with a "guillotine" system that will cut the belt at the bulkhead and seal the tunnel to prevent water from moving through the tunnel.

VARIATIONS IN DESIGN

There are three main variations self-unloading elevators, with a few other minor variations. The main three types include the C-Loop, Incline belt, and the Bucket Elevator. ➲

➲ The C-loop, or the Loop Belt, is the most common system. It was first introduced in 1972 when the Canadian ship *J. W. McGriffin* was launched. Since then, most new vessels have been equipped with this system. The loop belt system sandwiches the cargo between two belts that carry it in a loop motion up to the unloading boom on the main deck. Though loop belt may require more maintenance to keep tension between the belts, it is very desirable when it comes to new construction; it is lighter than other systems, less expensive, faster, simpler, quieter, and it takes up less spaces than other systems. Loop belt systems are the most efficient unloading systems, and can carry a wider variety in cargo than other systems.

The incline belt system was introduced to the lakes in the later 1960's, and was installed in some new construction during the 1970's. Incline belts consist of a series of ramps that carry the cargo up to the boom on the main deck. These ramps are limited at the amount of incline, making them very invasive as they have to carry the cargo out from the bottom of the hold to the main deck. Often they run through the engine room. Their main benefit is that they require less infrastructure, but they are able to carry most of the same cargoes as the loop belt system.

Bucket elevator systems are the original self-unloading elevator, being installed on the *Wyandotte* when she was launched in 1908. Cargo is taken out of the hold and carried up to the main deck in buckets attached to a belt on a steep incline. Bucket systems are common on older ships or vessels that were converted in the 1960's and before. They are quite heavy, and are much slower than loop belts and incline belts systems. It is hard to find replacement part for these systems, and they require more maintenance for the many moving parts.

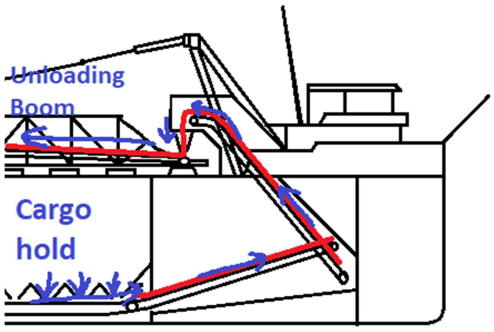
Another elevator system that can be found on the Great Lakes is the Rotary Elevator. The system is essentially a combination of a loop belt and bucket elevator, where the belt runs around a large wheel with buckets on it. The rotary system can be found on the *Stewart J. Cort* and the barge *Presque Isle*. The rotary system is very efficient, and the *Cort* can unload at a rate of up to 20,000 tons per hour, making her the fastest unloader on the lakes.

Another unique system is the ConFlow system, which was found on the Canadian ship *Ralph Misener*. The system was a deck-mounted adaptation of a coal excavator. It was very inefficient, and was removed a few years after installation.

In the cargo hold, some unloading systems receive ➲

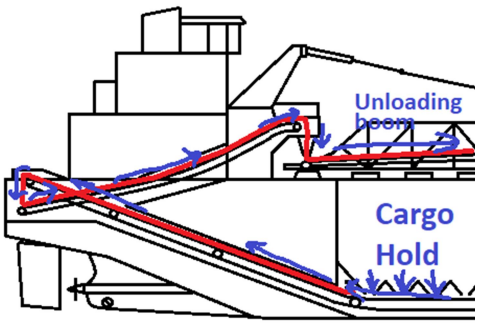
Types of Self-Unloaders on the Great Lakes

Bucket Elevator



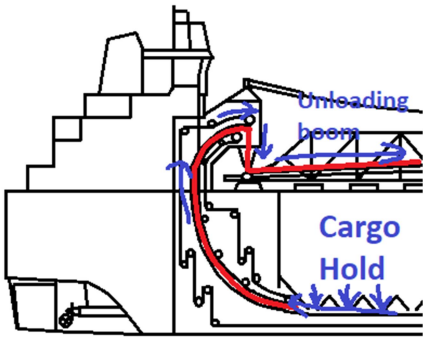
Cargo is carried out of the hold to a belt on a slight incline, from which it is transferred to a belt with buckets on it that drops the cargo onto the boom.

Incline Belt



Cargo is carried out of the hold on an inclined belt, from which cargo is transferred to another inclined belt that drops the cargo onto the boom.

C-Loop



Cargo is carried out of the hold and pinched between two conveyor belts that shift the cargo above the main deck and onto the boom.

➲Assistance from scraper systems to help ensure all cargo makes it out of the hold. These systems originated with the self-unloader on the Great Lakes, with the first vessel converted to a self-unloader, the *Hennepin*, being retrofitted with a lengthwise scraper that moved the cargo to the elevator. Nowadays, some self-unloading ships without sloped cargo holds are equipped with scraper systems. These systems can either be front-end loaders stored in garages in the hold, or reclaiming machines that run on tracks the length of the hold.

Cement carriers

Some self-unloading cement carriers work off a similar concept to that of regular self-unloaders. There are several different cement unloading systems, those being a conveyor system with a bucket elevator, FK Screw Pump, or Pneumatic.

Cement can be a difficult cargo to handle, it is a fine-grain product, and it handles almost like a liquid. It can be difficult to measure the total amount of cargo as well. It will compress, and will often settle in the hold, sometimes as much as 2-3 ft. on a 12-hour run. Tonnage is usually measured by how full the hold is. New technology is being introduced on newer carriers, such as using radar transmitters at the hold gates to gauge unloading rate and the depth of the cargo on the tunnel belt. When unloading, dusting can be an issue. Since powdered cement is so fine, it is hard to control when being moved around on the ship. Dust collection has become very important, and self-unloading cement ships are equipped with high pressure-vacuum systems in the hold to keep the cement sitting at the bottom of the hold.

Conveyor cement carriers are equipped with sloped holds and gates that lead to the conveyor system in the tunnel beneath the hold. The cargo holds are often equipped with air slides, a semi-permeable fabric that compressed air is injected through, and vibrators to make the cement flow down to the conveyor. The tunnel conveyor could be either a belt or a screw-type conveyor. This conveyor will take the cement to a bucket elevator, which sits in a recessed sump in the tank top to help limit slope. The cement powder travels up the bucket elevator to an air slide boom that will transport it to the shore side terminal.

The FK, or Fuller-Kinyon pump system, utilizes a screw ➲ conveyor underneath the hold that transports the cargo to a forward pump. Many ships are fitted with both air-slide conveyors and FK systems to make them more versatile. Pneumatic systems work on a similar basis, but use pressure pumps and vacuum pumps to move the cargo from the hold to the main deck, and the dock. These systems carry much less cargo than the bucket elevator systems.

Unloading booms

Once the cargo has made it to the main deck, it is transported to the dock via an unloading boom. When designing self-unloading vessels, several factors, such as wind, heel, and loading have to be taken into consideration when arranging the boom system.

There are several different variations on the unloading booms. Tubular booms can be found on older vessels, and are heavy and must be tied down when not in use. Their more modern replacement, triangular booms, are much lighter and are stowed in a saddle on deck, and don't have to be tied down, as their weight is enough to hold them down. Another variation, the shuttle boom, is found only on three Great Lakes ships. These booms are mounted in the stern and run only about 50' over the side of the ship, unloading into specific shore side hoppers.

Booms can be placed either forward or aft, and each has their benefits and disadvantages. Forward booms are much more versatile, allowing for a ship to pull into hard-to-reach docks. The forward area has much less draft and there is less risk of damage to the propeller and rudder. Forward booms also add more buoyancy to the ends of the ship, and they free up equipment space aft. Aft booms are better for vessels that stick to their same trade routes, such as the 1,000-Footers. They also are close to the ships systems and machinery spaces located aft.

Self-unloading technology has truly revolutionized shipping on the Great Lakes and around the world. ☐

Special thanks to the naval architects who provided their time and resources to help me write this article. Thank you to Travis Martin and Fred Koller from Bay Engineering, Eric Helder from Interlake Steamship Company, Nick Hunter and David Hossenlopp from NETSCo., and Andrew MacDonald from Port City Marine Services. –Brendan Falkowski

LEE A. TREGURTHA

Lee A. Tregurtha on the St. Marys River, August 2016.
Photo by Roger LeLievre

HISTORY

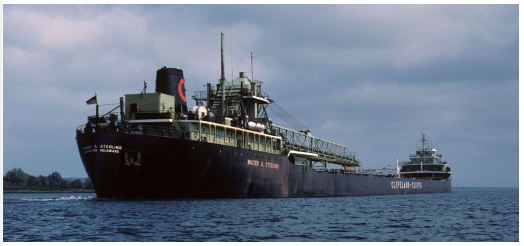
The *Lee A. Tregurtha* started her life looking quite a bit different than she does today. She was laid down as the *Mobiloil* by Bethlehem Shipbuilding & Drydock at their Sparrows Point, Maryland shipyard as Hull #4378 in 1942. Her contract was taken over by the Maritime Commission while partially completed, being renamed *Samoset*. She was launched on June 25, 1942, being designated as a T3-S-A1 oiler. She was originally 501'08'' long, 68' wide and 30'08'' deep. She had 40 tanks, 8 centerline and 16 port/starboard wing tanks, and was powered by a yard-built cross compound steam engine rated at 7700 SHP, fueled by 2 Foster-Wheeler oil-fired water tube boilers.

She was acquired by the U.S. navy on December 24, 1942, being renamed USS *Chiwawa* (AO-68) under the command of Cdr. H. F. Fultz. She was the first of 5 *Chiwawa* class auxiliary oilers acquired by the Navy, with another notable ship of the class being the USS *Neshanic* (AO-71), which was later rebuilt for Lake service as the *Pioneer Challenger (Middletown, American Victory)*. The *Chiwawa* was deployed on February 13, 1943. She sailed as part of several convoys that crossed the Atlantic in 1943-1944, as well as serving as an oiler on the U.S. East Coast. She was transferred to the Pacific fleet on July 18, 1945 after a refit. The *Chiwawa* was present at the Japanese Surrender at Tokyo Bay on September 2, 1945, and continued Pacific service through December 13, 1945. She was decommissioned on May 6, 1946 after almost four years of service and earning multiple battle stars. The *Chiwawa* was sold to Cities Service Oil Company of New York in 1947, serving East Coast Ports.

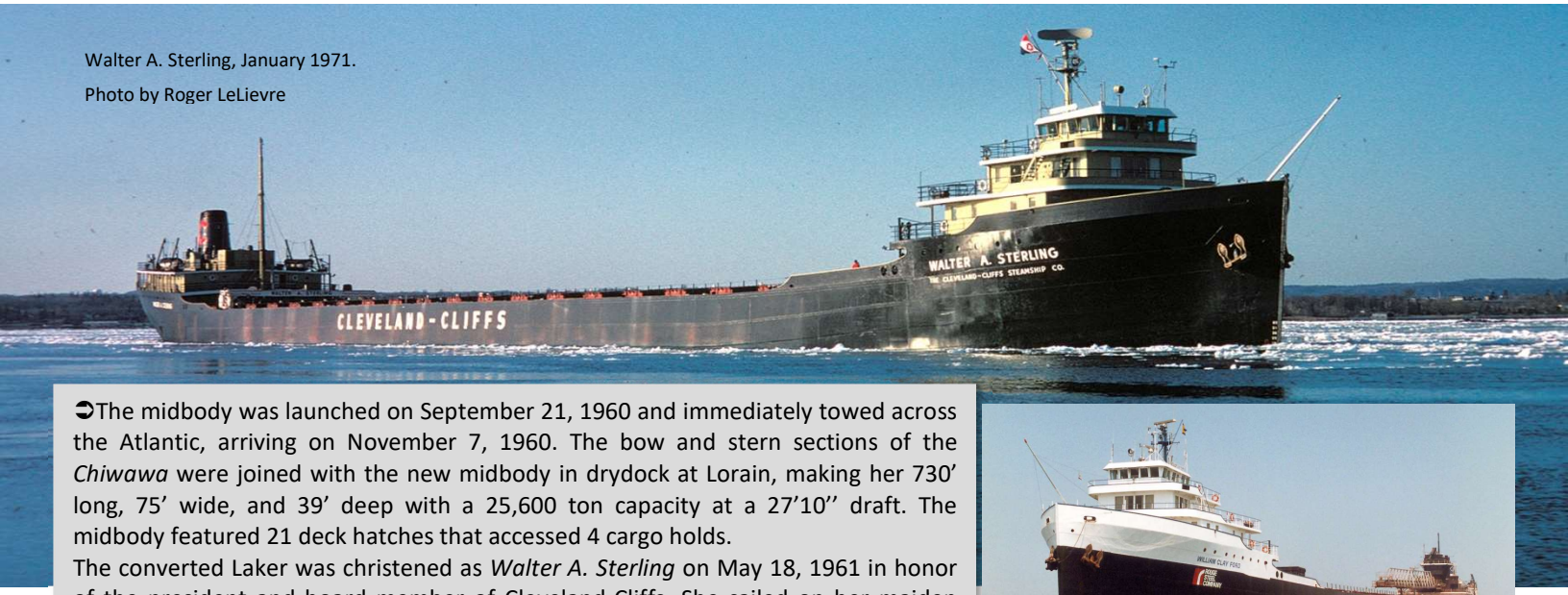
On February 12, 1960, the *Chiwawa* was purchased by the Cleveland-Cliffs Steamship Company for conversion to a Great lakes bulk carrier. She was the final T-2 tanker-Laker conversion to join the U.S. fleet. The *Chiwawa* was taken to American Shipbuilding Company's Lorain, Ohio shipyard where her bow and stern were removed and her midbody scrapped. A new 510' midbody was built by Schlieker-Werft of Hamburg, West Germany in 1960 as their Hull #554➲

USS Chiwawa, Photo from Roger LeLievre collection

Walter A. Sterling, early 1980's. Photo by Roger LeLievre



Walter A. Sterling, Photo by Jim Hoffman



Walter A. Sterling, January 1971.
Photo by Roger LeLievre

➲The midbody was launched on September 21, 1960 and immediately towed across the Atlantic, arriving on November 7, 1960. The bow and stern sections of the *Chiwawa* were joined with the new midbody in drydock at Lorain, making her 730' long, 75' wide, and 39' deep with a 25,600 ton capacity at a 27'10'' draft. The midbody featured 21 deck hatches that accessed 4 cargo holds.

The converted Laker was christened as *Walter A. Sterling* on May 18, 1961 in honor of the president and board member of Cleveland-Cliffs. She sailed on her maiden voyage on July 5, 1961 as the flagship of the Cleveland-Cliffs Steamship Co. fleet. The *Sterling* was equipped with a bow thruster in 1966 and her boiler and burner controls were automated in 1968 by American Shipbuilding Company's Lorain yard.

In 1976, the *Walter A. Sterling* was pulled into drydock at the American Shipbuilding yard at Lorain to be lengthened by 96'. She was cut in half, with one section of hull being floated out to place the new hull addition in the drydock. After the new section as aligned, the other hull section was floated back in and the three sections were welded together. The entire project cost about $3.5 Million, and increased her carrying capacity to 30, 592 tons, making her the largest steamer on the Great Lakes.

In 1978, she went back to the American Shipbuilding yard at Lorain for conversion to a self-unloader. The project consisted of the installation of an aft-mounted C-Loop self-unloading system with an aft-mounted 250' boom. Her old cargo hold bottom was removed and replaced with a hopper-type hold with hydraulically controlled gates that lead to a conveyor belt tunnel beneath the hold. Her cargo capacity was slightly reduced to 29,360 Tons at a draft of 28'01'', but it increased her efficiency and opened up the opportunity to operate in the Western low Sulphur coal trade. A stern thruster was installed in 1982.

On April 6, 1983, the *Walter A. Sterling* struck an unidentified object in the St. Marys River, being holed in her forward compartments. To prevent sinking, she was beached. She lightered into the *Henry Ford II* before proceeding for repairs.

At the end of the 1984 season, the Cleveland-Cliffs fleet was dissolved. The *Walter A. Sterling* and her fleetmate *Edward B. Greene* were sold to Ford Motor Company's Rouge Steel Company. The *Sterling* was renamed *William Clay Ford {2}* and immediately became flagship upon joining the fleet. She departed Duluth on April 16, 1985 on her maiden voyage for her new owners. Over the winter of 1985/86, the *Ford*'s electrical system was converted from DC to AC. On March 31, 1989, Ford announced intentions to sell the Rouge Steel fleet. That April, Interlake Steamship Company successfully outbid Oglebay Norton for the three remaining Rouge Steel boats.

To accommodate for different unions, Interlake formed the Lakes Shipping Company to manage the ships with a union agreement to integrate. The *William Clay Ford* was rechristened *Lee A. Tregurtha* in a joint ceremony with the *Kaye E. Barker* on May 13, 1989 at Cleveland, Ohio. The *Tregurtha* was named in honor of the wife of the vice-chairman of Interlake Steamship. The *Lee A. Tregurtha* loaded the last cargo of taconite pellets shipped out of LTV Steel mining Co.'s Taconite Harbor, MN dock on June 23, 2001. ➲

William Clay Ford, Photo by Roger LeLievre

Lee A. Tregurtha, Photo by Isaac Pennock

➲On January 9, 2006, the *Lee A. Tregurtha* laid up for the final time as a steamer at Bay Shipbuilding's yard at Sturgeon Bay, Wisconsin. That winter, she was repowered with 2 new automated Rolls Royce Bergen diesel engines and fitted with a new controllable pitch propeller. She returned to service on September 29, 2006.

Over the winter in 2016, the *Lee A. Tregurtha* was fitted with diesel exhaust scrubbers by Bay Shipbuilding in Sturgeon Bay, Wisconsin. This was part of Interlake's fleet modernization project. Now the *Tregurtha* displays a signature steam plume to show Interlake's commitment to the environment.

The *Lee A. Tregurtha* continues to be an active carrier for Interlake, hauling ore, coal, and stone. She continues to sail 78 years after her initial launching; now displaying her WWII battle ribbons on her forward cabins. ◘

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Cover Photo: Lee A. Tregurtha on the St. Marys River. Photo by Sam Hankinson

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