August 12, 2024 MIR-24-23

Flooding and Partial Sinking of Towing Vessel *Uncle Blue*

On March 26, 2023, about 0500 local time, the towing vessel *Uncle Blue* was towing one empty barge on the Lower Mississippi River in Ascension Parish, Louisiana, when the vessel began flooding (see figure 1 and figure 2).[1] The six crewmembers aboard attempted to pump out the vessel but were unsuccessful, and they evacuated to the barge. A Good Samaritan vessel pushed the towboat and barge to the right descending bank, where the *Uncle Blue* partially sank. There were no injuries, and no pollution was reported. Damage to the vessel was estimated at $500,000.

Figure 1. *Uncle Blue* underway in 2019. (Source: Michael Alexis)

[1] (a) In this report, all times are central daylight time, and all miles are statute miles. (b) Visit ntsb.gov to find additional information in the public docket for this NTSB investigation (case no. DCA23FM023). Use the CAROL Query to search investigations.

Casualty Summary	
Casualty type	Flooding/Hull Failure
Location	Lower Mississippi River, mile 184, Ascension Parish, Louisiana 30°11.15′ N, 091°01.14′ W
Date	March 26, 2023
Time	0500 central daylight time (coordinated universal time –5 hrs)
Persons on board	6
Injuries	None
Property damage	$500,000 est.
Environmental damage	None
Weather	Visibility 6 mi, patchy fog, winds west-southwest 5 kts, air temperature 60°F, sunrise 0701
Waterway information	River, width 2,600 ft, depth 26 ft

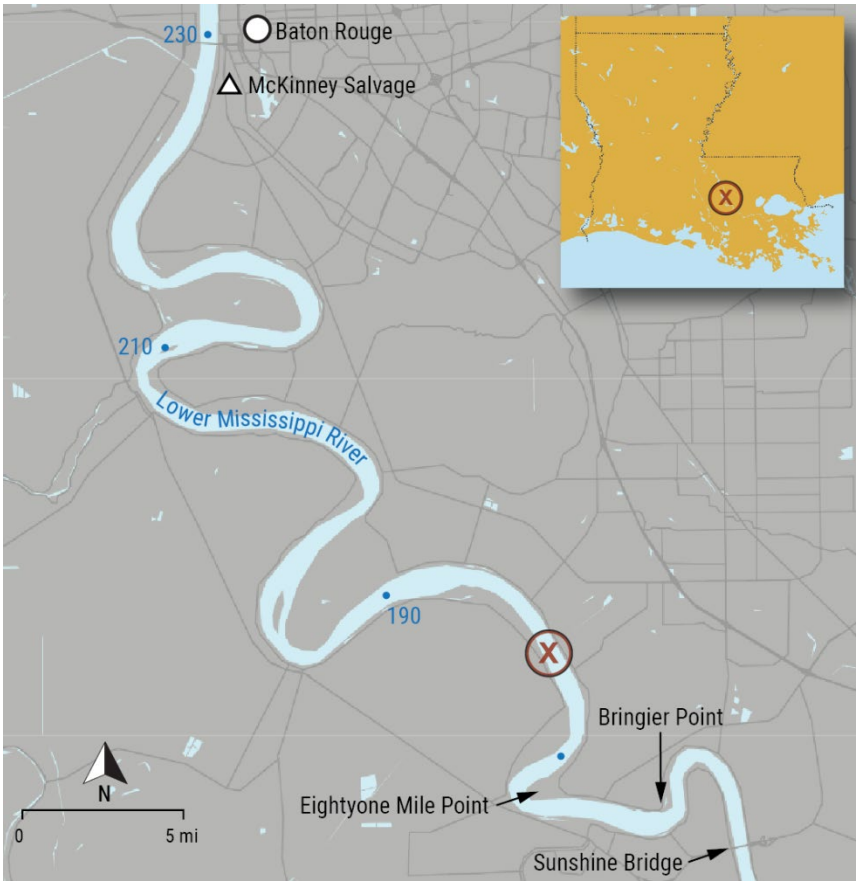

Figure 2. Area where the *Uncle Blue* flooding occurred, as indicated by a circled *X*. (Background source: Google Maps)

1 Factual Information

1.1 Background

The 71-foot-long *Uncle Blue* was constructed in 1964 of welded steel by Gulfport Shipbuilding Corp. in Port Arthur, Texas, as the *National Trader* for National Marine Service. The vessel was acquired and renamed by Alexis Marine LLC, which operated several towing vessels in the fleeting and line haul services on the Western Rivers.

Uncle Blue was outfitted with a single bilge alarm in the forward end of the engine room. The bilge system included a small submersible pump by the two main propulsion shaft seals in the engine room. A deckhand told investigators the crew had never had to dewater the voids or the lazarette. A roughly 2-inch-diameter pipe conduit ran from the lazarette to the engine room (see figure 3).

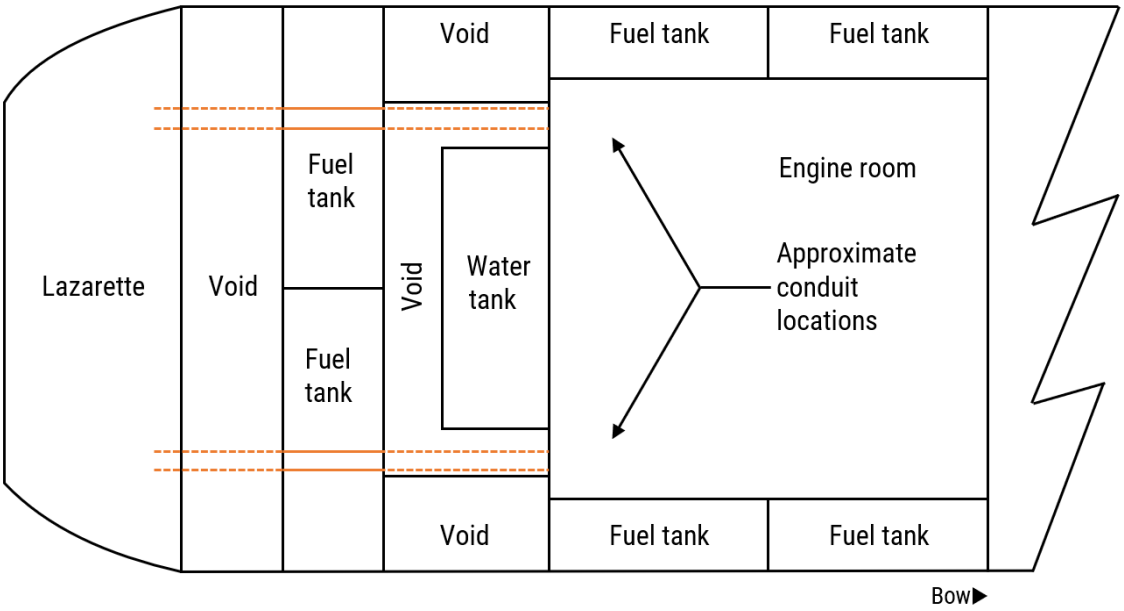

Figure 3. Aft section of the *Uncle Blue* below deck general arrangement.

1.2 Event Sequence

On the morning of March 25, the *Uncle Blue*, pushing one empty deck barge, left Stewart Construction in Harvey, Louisiana, enroute to McKinney Salvage near Baton Rouge (mile 228) to pick up a cargo of crane parts.

On March 26, about 0200, as the vessel neared the Sunshine Bridge (mile 167) on the Lower Mississippi River, the steersman made a round of the vessel (he typically conducted rounds hourly). He checked the engine room, generators, bilges, and doors (the lazarette and aft voids were only accessible via sealed flush access hatches on deck); the bilges were dry. About 0300, the vessel was rounding Bringier Point near mile 173, and the steersman made another round of the vessel. He told investigators he only checked the engine room on every other round, so he did not include it in his 0300 round.

About 0330, the steersman returned to the wheelhouse and took the helm from the captain in time to make the bend at Eightyone Mile Point (mile 178). About the same time, the captain felt the boat list slightly to port and assumed the barge's rake end, made up to the front of the towing vessel, was "walking" up the vessel's push knees. Due to having only one barge and making such a short trip, the crew had earlier decided not to install wires from the push knees to the barge that would prevent this.

After rounding the bend at Eightyone Mile Point, the *Uncle Blue* listed to starboard. With the vessel in slack water near the right descending bank, the crew loosened the face wires holding the barge securely against the vessel, and the vessel rolled to the other side (port).[2] The engine room bilge alarm sounded, and the captain noticed water "roll up on the [aft] deck."

The steersman re-tightened the wires and investigated the bilge alarm. He discovered flooding in the engine room; the captain then sounded the general alarm, awaking the remaining crew. The captain asked for help on VHF channel 67 and maneuvered the vessel and barge toward the right descending bank. The nearby towing vessel *CSS Richmond* answered the VHF call and pushed the *Uncle Blue* around toward the bank. The aft main deck bulwark was awash by the time they reached the bank.

Because the suction hose for the *Uncle Blue*'s portable pump was stowed on the stern (which was now under water), the *CSS Richmond* crew provided pumps. However, efforts to dewater the engine room were unsuccessful, and the crew abandoned the vessel to the barge. The *Uncle Blue* continued to sink until it was partially submerged; the barge remained afloat (see figure 4).

[2] The inland towing industry refers to the shorelines of Western Rivers as the left and right banks when traveling (facing) downriver. The left bank is called the *left descending bank*, and the right bank is called the *right descending bank*.

Figure 4. *Uncle Blue* partially sunken. (Source: US Coast Guard)

1.3 Additional Information

1.3.1 Damage

Salvors worked for 4 days to remove 1,400 gallons of fuel from the vessel and refloat the towboat. When the vessel was lifted by crane, NTSB investigators noted water pouring from holes in the portside shell plating of the flooded lazarette. They also noticed numerous doubler plates in that area of the hull.[3] Salvors made temporary epoxy repairs to keep the vessel afloat (see figure 5).

[3] A *doubler plate* is a small piece of plate that is attached to a larger area, to provide strengthening in that location.

Figure 5. Temporary epoxy repair, applied during the postcasualty salvage, on the port quarter, near the lazarette, with an existing doubler plate just above and to the left.

Uncle Blue was originally outfitted with rods used for rudder angle feedback (feedback rods). Although the feedback rods were no longer used, they were still in place within conduits (about 2-inch-diameter pipes) that passed from the lazarette to the engine room. Investigators noted that the conduits were either corroded or missing where they passed through the voids (see figure 6). The conduits were intact where they passed through the fuel tanks. These conduits were unsealed on their ends, and if there was flooding of the lazarette, they would have allowed progressive flooding of water from the lazarette to the voids and the engine room.

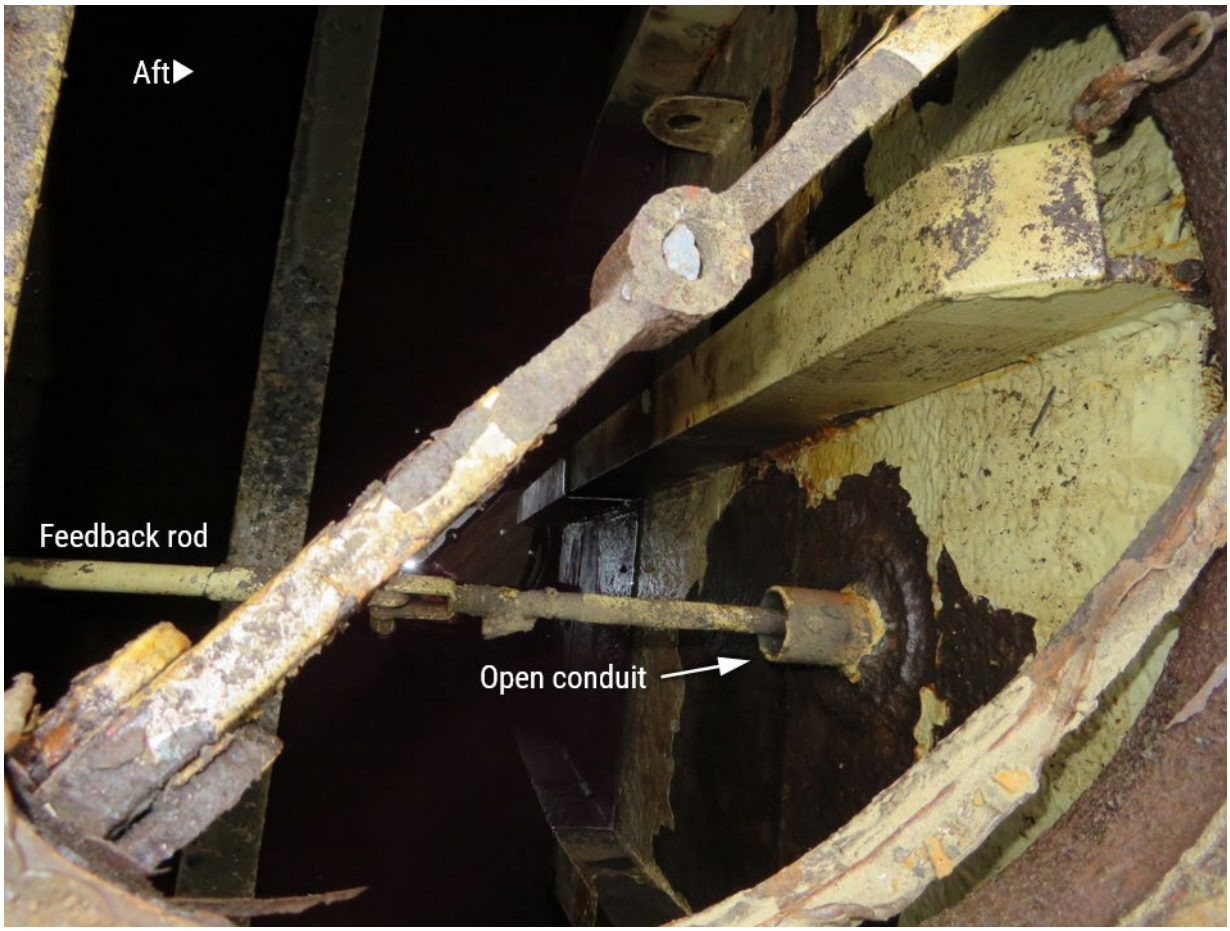

Figure 6. Feedback rod and conduit in the flooded void, between the lazarette and aftmost fuel tanks, taken during salvage operations.

Alexis Marine removed the vessel from service due to excessive damage.

1.3.2 Maintenance and Regulatory Oversight

Title 46 *Code of Federal Regulations* (*CFR*) Subchapter M requires certain towing vessels to be inspected and obtain a US Coast Guard-issued certificate of inspection (COI). Subchapter M also requires that towing vessels with a COI that operate primarily in fresh water be drydocked for a hull exam every 5 years.[4]

The *Uncle Blue*'s initial COI was issued May 17, 2021. Alexis Marine used the Towing Vessel Inspection Bureau for a Third-Party Organization (TPO) to audit their Towing Safety Management System. Coast Guard policy did not require a drydock

[4] 46 *CFR* 137.300

inspection before the initial COI was issued. *Uncle Blue* was not due for a drydock inspection until 2026, five years after the initial COI was issued.

Coast Guard guidance generally allows for 25% corrosion in steel plate, depending on location and structural use.[5] The guidance specifically warns industry of the following common corrosions or conditions that frequently cause corrosion: side shell corrosion at the wind and water line, strakes that are alternatively wet and dry with the motion of vessel, waves, and between loaded and ballasted conditions.

The vessel had been drydocked in January 2024 to repair a shaft, but the remainder of the hull was not inspected by the TPO or Coast Guard. The captain stated he typically checked the voids monthly, although there was no preventive maintenance plan for checking voids.

1.3.3 Personnel

The captain held a merchant mariner credential endorsed as master of towing vessels upon the Great Lakes, Inland Waters, and Western Rivers. He had worked in the industry for 15 years, including 3 years as captain, 1 year of which was aboard *Uncle Blue*. He had been on board this hitch for about 3 weeks.

The steersman held a merchant mariner credential endorsed as 100-ton master and 200-ton mate. He had worked for Alexis Marine for 1 year and had been aboard *Uncle Blue* about 4 days this hitch.

[5] Coast Guard, "Navigation and Vessel Inspection Circular No. 7-68," (October 28, 1968), NVIC 7-68, 28Oct1968 (uscg.mil), 18–19.

2 Analysis

While pushing a single barge on the Lower Mississippi River, the *Uncle Blue* flooded and partially sank near mile 184.

The *Uncle Blue* had been in service for almost 60 years. During salvage, investigators discovered numerous wastage holes in the hull on the port side of the lazarette. They also discovered doubler plates installed on the hull near the wastage holes. Doubler plating can be used as a temporary repair solution; however, because doubler plate repair can lead to increased stress concentrated in the area of the repair, doubler plates are not suitable as a permanent repair for sections of the hull. Given the vessel's age, the holes found in the hull, and the presence of the doubler plates, the vessel's hull had not been adequately maintained. Investigators did not identify other potential sources for the flooding; therefore, the wasted steel hull plating in the lazarette was the initial source of the flooding.

Pipe runs (conduits) inside the hull, which had previously been used to allow rods to run the length of the hull, were either corroded or missing where they passed through the voids. These openings allowed water from the lazarette to flood through two voids and, eventually, into the engine room. Thus, the conduits allowed for progressive flooding, which resulted in the partial sinking.

The *Uncle Blue* had only one bilge high-water level sensor, located at the forward end of the engine room. Because the vessel sank by the stern, the float on the sensor would not have lifted until the lazarette and two voids were filled and the aft end of the engine room was inundated with water. Therefore, as it was configured, the bilge high-water level alarm system was ineffective as a means to alert the crew. Had an additional sensor been installed in the lazarette, the crew would have had an earlier indication of the flooding and may have been able to act to address it.

3 Conclusions

3.1 Probable Cause

The National Transportation Safety Board determines that the probable cause of the flooding and partial sinking of the towing vessel *Uncle Blue* was a lack of watertight integrity due to the poor condition of the hull, which allowed water to ingress through wastage holes into the lazarette. Contributing to the sinking were unsealed penetrations in transverse bulkheads, which allowed for progressive flooding forward into the engine room, and the lack of a high-water bilge sensor in the lazarette, which prevented early detection of flooding into the space.

3.2 Lessons Learned

Inspecting and Repairing Steel Hulls

Steel hulls are susceptible to corrosion, erosion, and damage over time. To avoid flooding or weakening of the hull, it is good marine practice for owners to conduct regular oversight and maintenance of hulls, including between drydock periods. An effective maintenance and hull inspection program should proactively address potential steel wastage, identify hull and watertight integrity deficiencies, and ensure corrosion issues are repaired in a timely manner by permanent means.

Using Doubler Plates for Hull Repairs

Although doubler plating can be used as a temporary repair solution, it is not generally suitable as a permanent repair for a vessel's hull. Vessel owners should crop out wasted steel on the hull and replace it by inserting new plating instead of covering it up with doubler plating.

Vessel Particulars

Vessel	*Uncle Blue*
Type	Towing/Barge (Towing vessel)
Owner/Operator	Alexis Marine LLC (Commercial)
Flag	United States
Port of registry	Grand Bayou, Louisiana
Year built	1964
Official number (US)	296384
IMO number	8644450
Classification society	Towing Vessel Inspection Bureau (Third-party organization)
Length (overall)	71.2 ft (21.7 m)
Breadth (max.)	26.1 ft (8.0 m)
Draft (casualty)	7.5 ft (2.3 m)
Tonnage	132 GRT
Engine power; manufacturer	2 x 900 hp (671 kW); Mitsubishi S12A2-MPTA engines

NTSB investigators worked closely with our counterparts from **Coast Guard Marine Safety Unit Baton Rouge** throughout this investigation.

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For more detailed background information on this report, visit the and search for NTSB accident ID DCA23FM023. Recent publications are available in their entirety on the NTSB website. Other information about available publications also may be obtained from the website or by contacting—

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