



AVIATION



HIGHWAY



MARINE



RAILROAD



PIPELINE

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MAB-21/22

Contact of *Trent Joseph* Tow with Barataria Bridge

On November 22, 2020, about 2122 local time, the towing vessels *Trent Joseph* and *George C* together were towing two barges southbound in the Barataria Waterway near Barataria, Louisiana.¹ While passing through the open Barataria Bridge, the second barge contacted the bridge's swing span. The bridge, which was the only means of road access for the community of Barataria, was damaged and remained unusable until November 28. There were no injuries and no pollution reported. Damage to the barge was negligible, while damage to the bridge was reported to be more than \$500,000.



Figure 1. *Trent Joseph* (left) and *George C* (right) under way before the accident. (Source: Coastal Towing, LLC; Cvitanovic Towing, LLC)

¹ (a) All times in this report are central standard time (coordinated universal time - 6 hours); (b) Visit [ntsb.gov](https://www.ntsb.gov) to find additional information in the [public docket](#) for this NTSB accident investigation (case number DCA21FM008). Use the [CAROL Query](#) to search investigations.

Accident Type	Contact
Location	Barataria Waterway, Barataria, Louisiana 29°44.00' N, 090°07.64' W
Date	November 22, 2020
Time	2122 central standard time (coordinated universal time - 6 hours)
Injuries	None
Property damage	\$500,000 est.
Environmental damage	None
Weather	Visibility 10 miles, clear skies, winds light and variable, air temperature 64°F, water temperature 69°F ²
Waterway Information	Navigable channel, 125 feet wide, 12 feet deep.



Figure 2. Area of accident where the *Trent Joseph* contacted the Barataria Bridge, as indicated by the red circle. (Background source: Google Maps)

² All miles in this report are statute miles.

1. Factual Information

1.1 Background

The 67-foot-long, 1,440-hp towing vessel *Trent Joseph* was constructed of steel and built in 1997. The vessel was owned by Coastal Towing, LLC. The 68-foot-long, 1,000-hp towing vessel *George C* was also constructed of steel and was built in 2012. The vessel was owned by Cvitanovic Towing, LLC.

1.2 Accident Events

On November 22, about 2003, the *Trent Joseph* tow departed a fleet at mile 10 on the Gulf Intracoastal Waterway west, en route to Grand Isle, Louisiana, with a captain, pilot, and two deckhands. The captain was operating the vessel, working his regular 6-hour watch from 1800 to midnight. The vessel was towing two barges behind in a single string by means of a tow bridle and shock line extending an estimated 70-75 feet from the stern of the *Trent Joseph* to the forward barge, the *KS 4513*, which measured 140 feet long and 45 feet wide, and had on its deck a cargo of concrete fish boxes for an artificial reef project. The aft barge, *JMSS Mobile*, measured 264 feet long and 51 feet wide and carried an excavator crane and associated equipment. There was no deck cargo or equipment overhanging past the hull of either barge. The captain of the *Trent Joseph* stated that he wanted to place the larger and wider *JMSS Mobile* at the head of the tow with the narrower *KS 4513* aft, but, because the head of the *JMSS Mobile* did not have any deck fittings to which the crew could secure the towing bridle, they had to place it at the back of the tow with its stern coupled to the stern of the *KS 4513* and its rake facing aft.

Behind the barges, connected by an estimated 10- to 15-foot tow line, was the *George C*, with a crew of four, operating as the tail boat. As the tail boat, the *George C* would act based on the instructions given by the operator of the lead boat, the *Trent Joseph*, to use its propulsion to keep the barges from running over the lead boat if it were to slow down or stop. As described by its captain, the *George C* acted as “the brakes” for the tow. Additionally, according to the captain of the *Trent Joseph*, the tail boat could also act to help move the tow to port and starboard as needed. On board the *George C*, its captain was working his regular 6-hour watch from 1800 to midnight in the wheelhouse, and, according to him, the excavator crane and associated equipment on the *JMSS Mobile* directly ahead obstructed his field of view forward. The captain of the *Trent Joseph* said that, normally, the tail boat would be made up to the aft barge—meaning the boat would be positioned against the hull of the barge and attached to it with push cables—but there was a risk that anchoring equipment and deck obstructions at the head (bow) of the *JMSS Mobile* could have cut the push cables, so the only option

was to use a tail line between the *George C* and the barge. Overall, the estimated length of the tow was 624 feet.

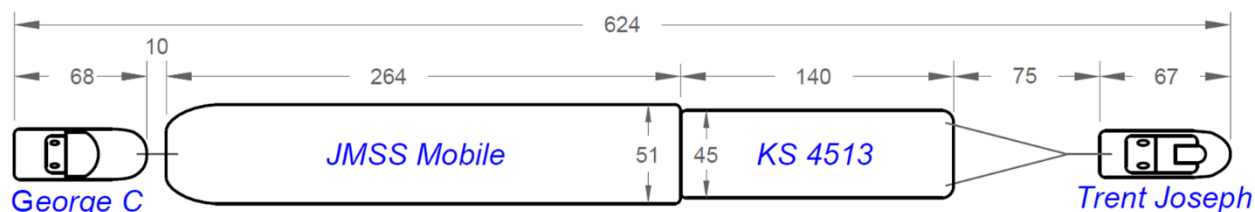


Figure 3. Simplified tow arrangement of the towing vessel *Trent Joseph*, barge *KS 4513*, excavator crane barge *JMSS Mobile*, and towing vessel *George C*, with lengths in feet.

The tow proceeded westbound toward the intersection of the Gulf Intracoastal Waterway and the Barataria Waterway at mile 14.5. The Barataria Waterway extended about 34 miles between the Gulf of Mexico through Barataria Bay to this intersection with the Gulf Intracoastal Waterway and was used by commercial light draft vessels, tows, and fishing vessels. About 2100, the *Trent Joseph* and its tow turned into the Barataria Waterway, with the Barataria Bridge about 0.9 miles ahead. According to the captains of the *Trent Joseph* and *George C*, the current was flowing with the tow in a southerly direction at a velocity about 1.4 mph. Because of the following current, the captain of the *Trent Joseph* ordered the tail boat *George C* to “clutch reverse,” meaning both engines were to be in gear in astern propulsion at a low-revolutions-per-minute setting. The crew did not report any mechanical, steering, or navigational equipment problems with either the *Trent Joseph* or the *George C*.

Built in 1948, the Barataria Bridge (also known as the Leo Kerner Bridge) was the only road access to Barataria, Louisiana, on the west bank of the Barataria Waterway. Constructed of steel, timber, and concrete, the bridge had a 7-foot vertical clearance over the Barataria Waterway. The swing bridge was owned and operated by the Louisiana Department of Transportation and Development (DOTD) and was continuously staffed by a bridge tender who operated from a bridge house on the north side of the road on the east bank. The bridge was typically kept closed to allow the passage of road traffic. The bridge tender could operate controls that engaged electrical motors to open the swing span in a clockwise direction (thus closing in a counterclockwise direction) on a center pier near the middle of the waterway to a north-northwesterly (328°)/south-southeasterly (148°) orientation in the opened position. The bridge tender told investigators that she was not informed of any technical or mechanical issues with the Barataria Bridge by the bridge tender she relieved when she began her shift at 1800, nor was she aware of any other issues with the Barataria Bridge the evening of the accident.

About 2104, the captain of the *Trent Joseph* called the bridge tender by radio to request it be opened. The bridge tender then told the captain of the *Trent Joseph* that

she would begin opening the bridge. She logged the bridge as being open at 2110, and she stated that, about the same time, saw the *Trent Joseph* rounding a bend about 0.5 miles north of the bridge.

The permanent navigable channel through the bridge was 77 feet wide and ran between a long fender wall in the center of the waterway (center fender) and a shorter fender wall on the east bank (east fender). When in the fully open position, the bridge was protected by the center fender wall, which was constructed of timber.

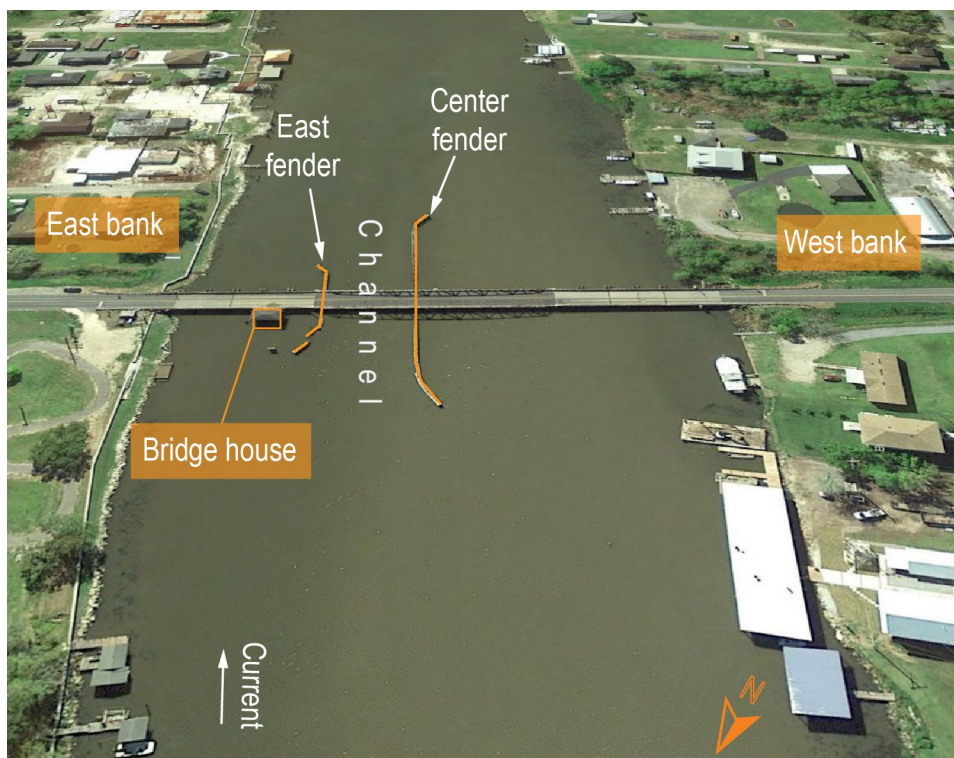


Figure 4. Southern-facing view of the Barataria Bridge channel and fendering. (Background source: Google Earth)

Each of the fenders had red lighting marking the ends and middle. According to the bridge tender, at the time of the accident, the red lights on the east fender had been removed to be repaired. No temporary lighting was fitted to replace the lights that had been removed. On the northern side of the swing span of the bridge (east-facing when open) were three navigation lights (each light showed alternating red and green colors) marking each end and the top center of the swing span. For an approaching vessel, when the bridge was in the closed position, the swing span's lights would show red, and

in the open position, the lights would show green and be in line.³ According to the bridge tender, all of the lights except for the lighting on the east fender (three red lights) were working on the night of the accident.

According to automatic identification system information and the captain of the *Trent Joseph*, the *Trent Joseph* tow was in the navigable channel as they approached the Barataria Bridge. In preparation to transit through the bridge in darkness, the captain of the *Trent Joseph* had a deckhand posted outside the starboard-side wheelhouse door to monitor the passing of the barges through the bridge (there was no means to access the barges from the *Trent Joseph* or *George C*).

The captain stated that he saw the swing span's green lights (which indicated the bridge was open) and looked for the fenders' red lights to indicate the fenders' location. Not seeing lights on the east or center fenders, he contacted the bridge tender and said he informed her that he could not see any red lights and asked which side of the bridge to pass through. The bridge tender said she replied that he should transit through the east (bridge house) side and that the east fender lights were not operational. She said that she suggested the captain use the tug's spotlight if needed to help pass through the channel.

About 2118, as the *Trent Joseph* was approaching the Barataria Bridge on the east side of the navigable channel at a speed over ground of 3.1 mph, about 615 feet from the northern end of the center fender, the captain of the *Trent Joseph* turned to starboard to line up the tow to pass through on the east side of the swing span. About 1 minute later, the *Trent Joseph* was on a steady course over ground of 145° about 390 feet from the northern end of the center fender at a speed over ground of 2 mph. The captain stated that, as the *Trent Joseph* got closer to the bridge, he still could not

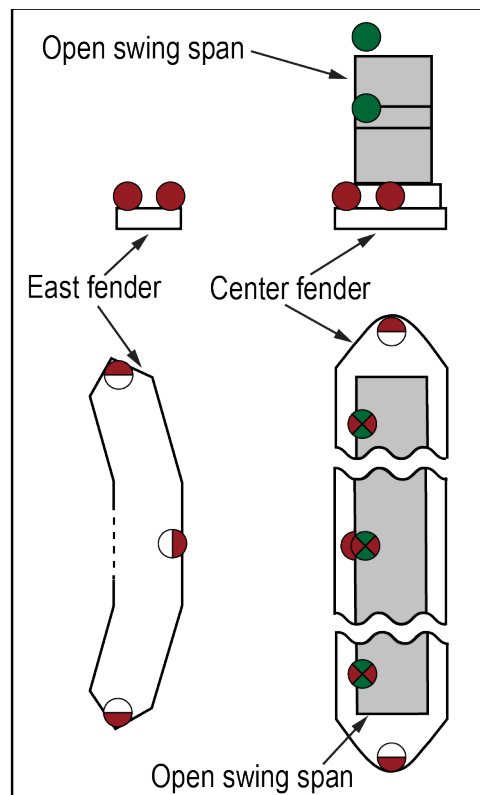


Figure 5. Simple representation of fendering and swing span lighting; profile (top) and plan (bottom) views. (Background source: Coast Guard)

³ The regulations in Title 33 *Code of Federal Regulations* 118.60 and 118.70(c) require that every swing bridge be lighted so that each end of the piers adjacent to the navigable channel or each end of the protection piers protecting their pivot point is marked with a red light. The regulations also require that each light be of sufficient candlepower to be visible against the background lighting at a distance of at least 2,000 yards (1.14 miles) 90% of the nights per year.

see any red lights on the center fender wall ahead of the tow, so, knowing he would encounter the longer center fender first, he turned on the starboard-side spotlight to search for it.

The captain of the *Trent Joseph* estimated that, when the *Trent Joseph* was about 100 feet from the swing span (about 2121, based on automatic identification system information), he saw that the northeast-facing corner of the open swing span had “over rotated” and was extending past the center fender. He estimated that the swing span was protruding about 1 foot beyond the center fender wall and noted that he could see the green navigation light on a pole at that end of the span. He said that he called the captain of the *George C* by radio and told him the bridge was over-rotated, to keep an eye on it, and to “do what he had to do” to keep the barge from hitting it.

As the *Trent Joseph* passed through the bridge’s navigable channel, the deckhand saw that the barges began to fall to starboard towards the swing span and center fender and reported this to the captain inside the wheelhouse. The captain of the *Trent Joseph* said he corrected (steered) to port, which initially pulled the barges to starboard before the tow bridle tightened to pull them to port. The *George C*’s captain noticed that, when the *Trent Joseph* began its correction to port, “with the fair tide, everything went sideways to the bridge,” and he was able to see the swing span (his view had previously been obstructed by the crane and equipment on the *JMSS Mobile*). After the correction, he, too, noticed the bridge span protruding past the center fender, and it was at that point that he knew “something was wrong.” He said he called the captain of the *Trent Joseph* to ask if there was anything he could do but did not receive a reply, so he stayed with the last given instruction, which was clutch reverse.

At 2122, at a speed over ground about 2 mph, the starboard forward side (port aft quarter) of the trailing barge, *JMSS Mobile*, struck the northeast-facing corner of the swing span and dislodged it from its mounting and supports. The captain of the *George C* stated that he saw the barge strike the swing span, but it did not hit the fender. According to the bridge tender, the *Trent Joseph* was completely clear of the bridge at the time the aft barge struck the swing span.

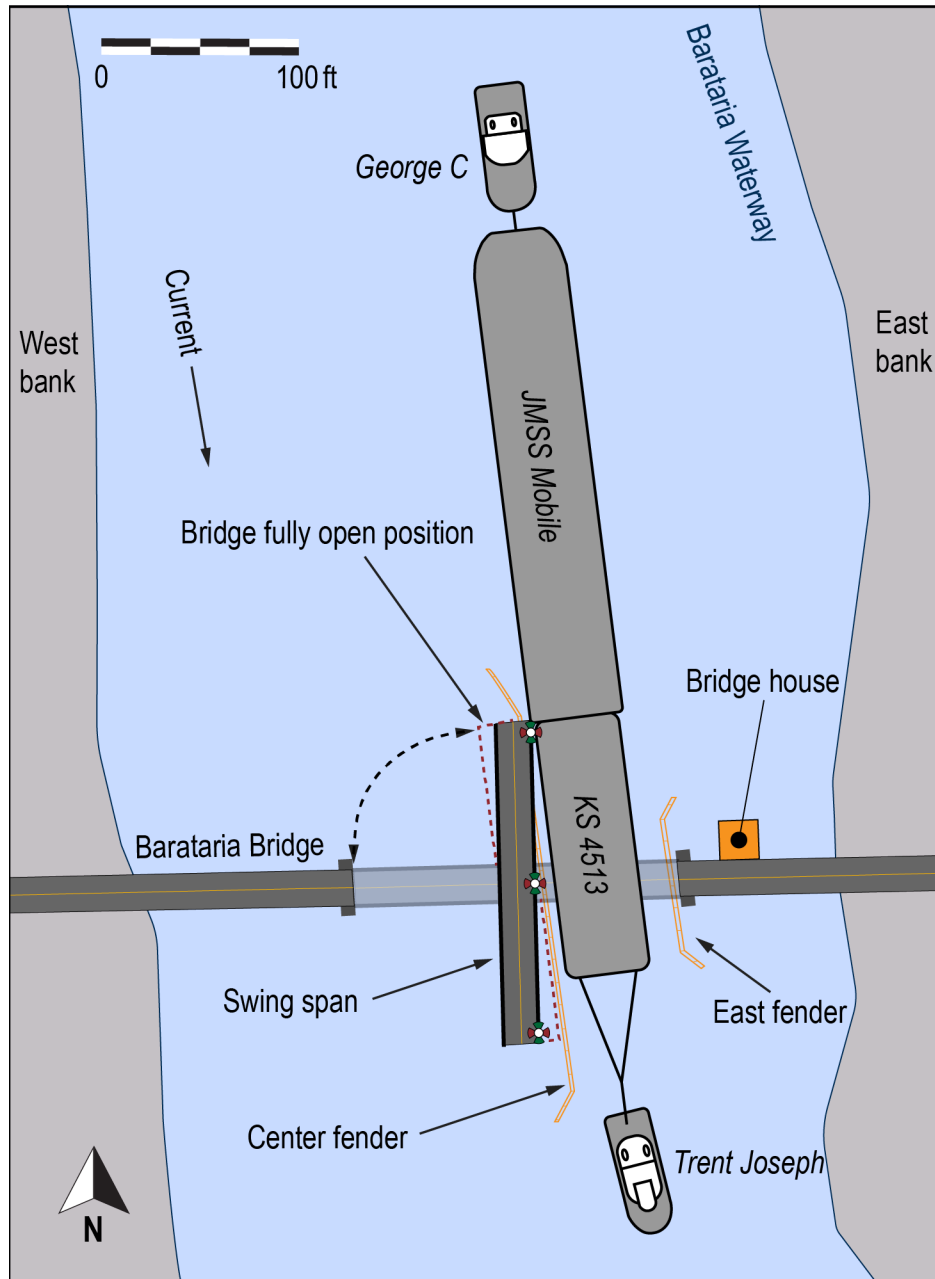


Figure 6. Estimated position of the *Trent Joseph* tow as it passed through the Barataria Bridge and approximation of the contact of barge *JMSS Mobile* with the northeast corner of the swing span. (Navigation lights not to scale.)

After the aft barge hit the bridge, the captain of the *Trent Joseph* stopped his vessel and took it out of gear. From the back of the tow, the *George C*'s captain saw that he had to turn the vessel to port and move the barge ahead and over to clear the bridge and prevent the *George C* from going underneath the displaced bridge. When the *Trent Joseph*'s captain was informed that the *George C* had shoved the aft barge to keep clear of the span, he put the vessel back in gear and finished pulling the tow through. Once

the entire tow was fully clear of the bridge, the captains of the *Trent Joseph* and *George C* had the spuds on the barges dropped, removed their tow lines, and remained with the barges just south of the bridge. The tow remained at that location until the following night, when it got back under way toward its intended destination.

1.3 Additional Information

1.3.1 Damage

There was no damage to the *Trent Joseph*, *George C*, or the forward barge, *KS 4513*, or any deck equipment and cargo. The aft barge, *JMSS Mobile*, sustained paint scrapes and gouges about 6 feet above the waterline on the aft port corner with no indentations or fractures found. Repairs were not required.

The Barataria Bridge sustained major damage, with a shear in the north end floor beam and damage to the center bearing, guide wheels, supports, drive system gears, and mounting. There was also damage to the electrical cabling for the bridge and to the center pier concrete.



Figure 7. Postaccident damage to Barataria Bridge looking north. The corner of the swing span that the barge contacted is circled. (Source: anonymous)

Surveyor photographs and a postaccident barge damage survey report showed that the points of impact were between the port corner and a deck button of the *JMSS Mobile* and the swing span (the northeast corner when the bridge was open), including the span's steel center floor beam and road surface deck timbers. There were no signs of contact with the fendering system on the hull of the barge, and, according to the survey report, neither the center nor the east fender walls displayed any signs of new contact. A Louisiana DOTD postaccident examination report did not provide any findings regarding factors that would have allowed the bridge to extend past the fendering prior to it being struck.

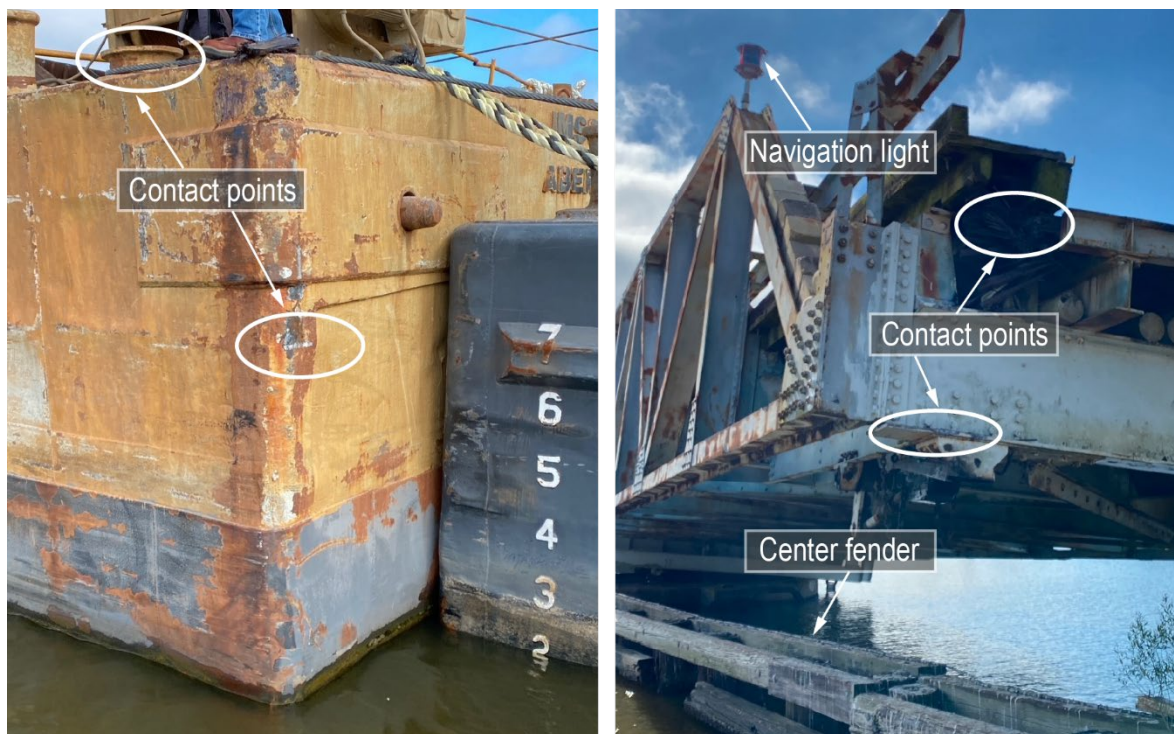


Figure 8. Postaccident damage to the corner of barge *JMSS Mobile*, with damage markings and scrapes about 6 feet above the waterline (left), and to the northeast corner of the Barataria Bridge, with points of contact with the barge *JMSS Mobile* indicated (right). (Source: anonymous)

After the accident, a ferry was used to transport vehicles across the waterway until the Barataria Bridge was lifted back into the closed position and opened to vehicular traffic on November 28, 2020; the bridge remained closed to marine traffic. On August 30, 2021, when Hurricane Ida impacted the area, the Barataria Bridge was struck while in the closed position by a fishing vessel and a barge that broke loose from a vessel maintenance and salvage yard about 0.6 miles south of the bridge. Damage to the swing span and supports was reported to be extensive, requiring the swing span to be cut into two pieces and removed. Replacement and repair costs were estimated at \$23 million. A temporary, fixed span was later constructed over the waterway.

1.3.2 Barataria Bridge and Fendering Condition and Maintenance

The postaccident survey report documented that the bridge's "entire" fender system contained previous damage and was "structurally unsuitable" for protecting the bridge as designed. Preaccident photos showed the center channel fendering at the north end with missing and damaged timbers. Additionally, Louisiana DOTD bridge condition reports documented the fender system timbers and piles as having damage, splits, and decay dating back to 2017. According to these reports, the condition of the Barataria Bridge and structure was poor dating back to May 2000. According to Coast Guard records, from 2001 to the accident date there had been a total of nine incident

investigations related to vessel contacts with the fendering system of the Barataria Bridge; Coast Guard records did not indicate damage to the swing span.

The Louisiana DOTD documented maintenance and repairs on the Barataria Bridge on a maintenance record spreadsheet. The spreadsheet documented multiple instances of “troubleshooting” carried out on the bridge’s limit switches—which are used to prevent the travel of a mechanism past a predetermined point—including on July 19, February 22 and 27, and October 29, 2019. The maintenance records did not provide detail regarding each problem on the dates of entry, and the DOTD did not provide additional information regarding the records. The spreadsheet had an entry on November 20, 2020, 2 days before the accident that read, “Barataria bridge adjust far on coming limit switch level bridge.” This was the last entry until after the accident.

On October 28, 2020, during Hurricane Zeta, two unoccupied casino barges struck the closed Barataria Bridge after breaking loose from their moorings at a vessel maintenance and salvage yard in the Barataria Waterway about 0.6 miles south of the bridge, causing damage to the bridge. The maintenance record spreadsheet showed that repairs were carried out on the bridge from October 30 to November 6 to restore it to service. Later, on December 1, 2020, the Louisiana DOTD documented on the spreadsheet, “we installed and repaired fender lights” (they did not specify what lights were installed or repaired). The DOTD did not provide any records regarding past accident reports; any reported or identified electrical, hydraulic, system deficiencies; troubleshooting and repair service; or bridge tender logs.

1.3.3 Crew

After the accident, the crew of the *Trent Joseph* and the captain and deckhand of the *George C* were tested for alcohol and other drugs, all with negative results.

2. Analysis

Both the Barataria Bridge’s center and east fenders had red navigation lights to mark the ends and middle of each fender. The bridge tender attested that the east fender’s (red) lights were removed for repair before the accident; the east fender was, therefore, unlighted at the time of the accident. The captain of the *Trent Joseph* stated that, as the tow approached the bridge, the two red lights marking the center fender that should have been visible to him were not. He could only see green lights on the swing span, thus causing him uncertainty regarding which side of the bridge to pass through, so he used a spotlight to look for the fenders when approaching the bridge.

When the *Trent Joseph* was about 100 feet from the bridge, the captain saw with the spotlight that the swing span had “over-rotated” and extended past the center

fender wall. After the accident, photos taken at the scene and a postaccident survey report confirmed that the swing span's beam was struck by the aft port corner (starboard forward when oriented in the tow) of the barge *JMSS Mobile*. By design, the protective center fender on the Barataria Bridge was in place to shield the swing span from being struck when rotated to the open position. As such, if the swing span had been behind the protective center fender as it should have been, the tow would have contacted, or slid against, the fender instead of striking the swing span. Although a postaccident survey showed that the fendering system contained previous damage and was "structurally unsuitable," if the tow had contacted the center fender, damage (if any) to the fendering would have been minimal due to the tow's low speed.

The *George C* was positioned as the tail boat of the tow. From the wheelhouse of the *George C*, the captain's view was restricted by the crane and deck equipment on the *JMSS Mobile*, and, by his account, he was not able to see the protruding swing span until the *Trent Joseph* corrected to port and just before the barge struck it. Thus, there was little the captain of the *George C* could have done to help keep the barge clear of the protruding swing span.

Louisiana DOTD maintenance records indicated that, 2 days before the accident, work had been conducted on the Barataria Bridge's limit switches (which prevent the movement of the swing span beyond a predetermined point). Additionally, work had previously been performed on the bridge's limit switches on four occasions dating back to October 2019. Although no detail was provided in the maintenance records as to what sort of work and return-to-service testing was conducted, these records indicate a recent issue with the span's opening rotation limit. Due to COVID-19 pandemic restrictions, investigators were not able to physically examine the bridge structure and mechanical and electrical components to determine why the bridge had rotated past the center fendering.

3. Conclusions

3.1 Probable Cause

The National Transportation Safety Board determines that the probable cause of the contact of the tow of the *Trent Joseph* with the Barataria Bridge was a corner of the bridge's swing span protruding outside of its protective fendering into the navigable channel after recently attempted repairs to the limit switch system that controlled the swing span's rotation limit.

Vessel	<i>Trent Joseph</i>	<i>George C</i>
Type	Towing vessel	Towing vessel
Flag	United States	United States
Port of registry	New Orleans, Louisiana	Venice, Louisiana
Year built	1997	2012
Official number (US)	1055480	1237510
IMO number	N/A	N/A
Classification society	N/A	N/A
Length	67 ft (20.4 m)	67.5 ft (20.6 m)
Beam	24 ft (7.3 m)	26 ft (7.9 m)
Draft	10 ft (3 m)	6 ft (1.8 m)
Tonnage	97 GRT	99 GRT
Engine power; manufacturer	2 x 720 hp (537 kW); Caterpillar 3412-C	2 x 500 hp (373 kW) Cummins QSK-19M
Persons on board	4	4

NTSB investigators worked closely with our counterparts from **Coast Guard Sector New Orleans** throughout this investigation.

The National Transportation Safety Board (NTSB) is an independent federal agency dedicated to promoting aviation, railroad, highway, marine, and pipeline safety. Established in 1967, the agency is mandated by Congress through the Independent Safety Board Act of 1974, to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, "accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person" (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB's statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)).

For more detailed background information on this report, visit the NTSB investigations website and search for NTSB accident ID **DCA21FM008**. 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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