



Issued February 9, 2023

MIR-23-04

Contact of *Miss Mollye D* Tow with Route 182 Bridge

On December 23, 2021, at 0326 local time, the towing vessel *Miss Mollye D* was pushing six barges eastbound on Bayou Boeuf between Morgan City and Amelia, Louisiana, when the tow left the channel and struck the Route 182 bridge, which ran parallel to the waterway.¹ The operator then maneuvered the tow back into the channel, and the tow continued eastbound. Utility workers discovered damage to the bridge later that morning and notified the US Coast Guard. None of the five crewmembers aboard the *Miss Mollye D* were injured, and no pollution was reported. Damage to the bridge was estimated at \$2 million.



Figure 1. *Miss Mollye D* moored following the casualty. (Source: US Coast Guard)

¹ (a) In this report, all times are central standard time, and all miles are statute miles. (b) Visit [ntsb.gov](https://www.ntsb.gov) to find additional information in the [public docket](#) for this NTSB investigation (case no. DCA22FM008). Use the [CAROL Query](#) to search investigations.

Casualty type	Contact
Location	Bayou Boeuf, 1.3 miles southeast of Morgan City, Louisiana 29°40.66' N, 91°8.38' W
Date	December 23, 2021
Time	0326 central standard time (coordinated universal time -6 hrs)
Persons on board	5
Injuries	None
Property damage	\$2 million est.
Environmental damage	None
Weather	Visibility 5 mi, patchy fog, winds light and variable, air temperature 44°F, water temperature 54°F
Waterway information	Channel, width 520 ft, depth 12 ft, current 0 kts



Figure 2. Location of the Route 182 bridge that was struck by the *Miss Mollye D* tow, as indicated by a red X. (Background source: Google Maps)

1. Factual Information

1.1 Background

The 86-foot-long *Miss Mollye D* was a towing vessel constructed in 1961 of welded steel by Towing Service Inc. in Greenville, Mississippi. At the time of the casualty, the vessel was operated by Deloach Marine Services (DMS). The *Miss Mollye D* had two 850-hp diesel engines, each driving a fixed propeller. The vessel had two steering rudders and four flanking rudders. The ship's crew stated that during the casualty transit, the towing vessel experienced no issues with steering or propulsion.

The vessel had five crewmembers. The relief captain stood navigation watches from 0600 to 1200 and from 1800 to 2400 each day, known as the "front watch." (The relief captain, a position designated by the company, served as the towboat captain when the designated captain was off rotation; at the time of the casualty, the captain was off rotation and ashore.) The pilot stood the opposite watches (0000-0600 and 1200-1800), known as the "back watch."² The lead deckhand was assigned to the front watch, and another was assigned to the back watch. A third deckhand was on call and assisted the other deckhands as needed.

The Louisiana Route 182 (Route 90 Business) bridge crossed over the shallow, non-navigable Bayou Ramos, which connected Bayou Boeuf to Lake Palourde from the north. The bridge was outside of and parallel to the Intracoastal Waterway channel in Bayou Boeuf. Originally built in 1932 using concrete tee-beam construction, the fixed bridge was widened in 1989. It was built at the level of the roadway, gaining only a few feet of elevation at the center of the span. The vertical clearance was about 13 feet. Because the Route 182 bridge did not cross a navigable waterway, it was not required to have a US Coast Guard permit. It was neither lighted nor fendered, nor was it required to be. The bridge was depicted on the *Miss Mollye D*'s electronic chart system (ECS) by a dark gray outline. Other bridges were similarly depicted in the system.

1.2 Event Sequence

On December 22, 2021, the *Miss Mollye D* was pushing six hopper barges eastbound on the Intracoastal Waterway destined for New Orleans, Louisiana, from San Jacinto (Houston area), Texas. Two of the barges were loaded with scrap steel, and the remaining barges were empty. The tow was arranged in two strings of three barges: the loaded barges were in the port string with an empty barge in the lead, and three

² *Pilot* is a term used aboard towing vessels on inland waterways for a person, other than the captain, who navigates the vessel.

empty barges were in the starboard string. The forward loaded barge—the second barge in the port string—had a raked bow; the other barges had flat bows (barges with this configuration are commonly referred to as “box barges”). The *Miss Mollye D* was positioned behind the port string. The relief captain stated that the tow was configured in this manner to improve speed. The total length of the tow, including the *Miss Mollye D*, was 676 feet, and the width was 70 feet. The relief captain and pilot both stated that, throughout the transit, the tow handled well.

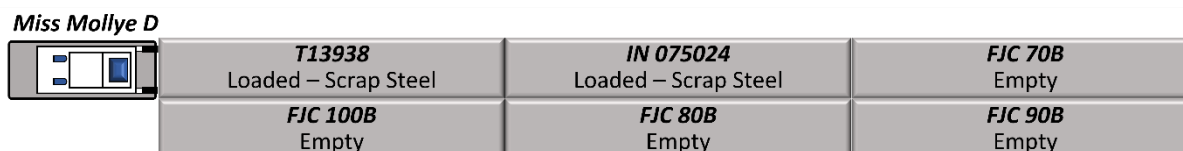


Figure 3. *Miss Mollye D* tow arrangement.

At 1930 that evening, the tow stopped while awaiting its turn to transit through the Bayou Boeuf Lock near Morgan City, Louisiana. About midnight, the pilot assumed the watch from the relief captain. An hour and 50 minutes later, the tow entered the lock. The *Miss Mollye D*'s on-call deckhand, who had 5 years' experience, assisted the back-watch deckhand, who had 1 month's experience, with linehandling and other tasks as the tow locked through to Bayou Boeuf. The crew stated that they observed fog while in the lock, but it cleared before the tow exited.

At 0218, the tow completed locking through and proceeded eastbound on Bayou Boeuf. The on-call deckhand went to sleep, and the back-watch deckhand went to the engine room to pump oil out of the bilges and into the vessel's slop tank, a task assigned to him by the lead deckhand. He remained in the engine room until after the casualty.

The Bayou Boeuf section of the Intracoastal Waterway is about 500 feet wide for most of its length, with a charted depth of 12 feet. There is no significant current in the waterway, and on the night of the casualty, winds were light. Just after 0300, the pilot on the *Miss Mollye D* was working the tow around a gradual bend at a speed of about 2 mph. According to data from the vessel's automatic identification system (AIS) and ECS, the tow moved to the starboard (south) side of the channel, and then, at 0303, began veering to port. It continued veering to port until the pilot stopped the tow as the head of the port lead barge, the *FJC 70B*, approached the north bank, leaving the stern of the *Miss Mollye D* near the south bank. The tow remained positioned across the width of the channel for 8 minutes. The pilot told investigators that he had heard reports over the radio of fog ahead and had stopped to consider whether to continue. He did not call the relief captain or the company to seek advice or ask for assistance. At 0314, the pilot worked to straighten the tow back in the channel, and then the tow began heading eastbound again.

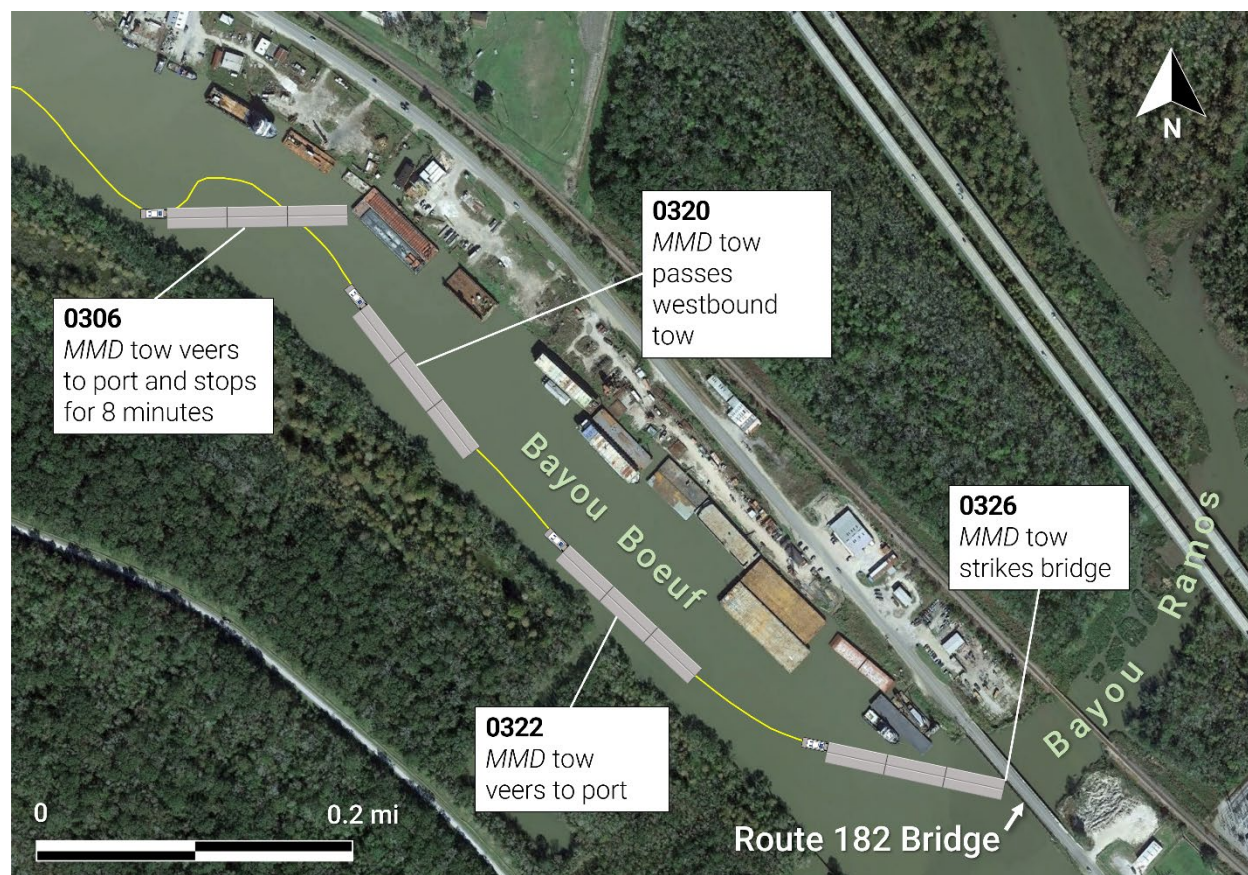


Figure 4. Track of the *Miss Mollye D* (MMD), shown in yellow, as it pushed the tow before the casualty. Photo is not from the time of the casualty. Vessels shown moored along the northern bank are typical for the waterway. (Background source: Google Maps)

A few minutes later, the *Miss Mollye D* passed a westbound tow in the channel. After the passing, the *Miss Mollye D* tow was again on the starboard side of the channel. Then, at 0324, the tow began swinging to port.

The pilot told investigators that he noticed the tow moving to port, but he did not correct the tow's path. Instead, he turned his attention to the *Miss Mollye D*'s ECS display to access weather information. According to the pilot, the ECS display was normally set up with two navigation windows showing short- and long-range views of the vessel's position on the electronic chart. The system could also import and display weather information from the nearest National Oceanic and Atmospheric Administration station, and the operator could view this information by clicking on a menu on the screen. The pilot stated that accessing weather information opened a window that obscured the navigation view. The ECS display was located to starboard on the console at the helm station.

The pilot said he looked at the weather report on the display for about a minute to a minute and a half, and when he looked forward again, he realized the tow was "not in a

good position." The pilot then put the engines in reverse. The Route 182 bridge was now ahead of the tow at close range to the port lead barge. The pilot said that initially he did not see the bridge.

Video from a forward-looking camera mounted on the *Miss Mollye D*'s wheelhouse captured the tow's turn to port. As it approached the Route 182 bridge, the tow passed close to the stern of an anchor-handling vessel that was moored outboard of two other vessels on the port (north) side of the channel. Based on AIS data, the towing vessel was making 3.1 knots on a course over ground of 110° and a heading of 102°. The bridge was not visible in the darkness on the video; however, 23 seconds before the contact occurred, a vehicle with headlights and taillights illuminated crossed the bridge.

The momentum of the tow continued to move it forward, and, at 0326, barge *FJC 70B* struck the bridge. The video showed that the tow's forward motion stopped suddenly, and the barges pitched upward slightly. After contact was made, the pilot illuminated the bridge with one of the *Miss Mollye D*'s spotlights for about 1 second.

Three minutes after the casualty, the towing vessel *Philip*, which was west of the *Miss Mollye D* and headed eastbound on Bayou Boeuf, radioed the *Miss Mollye D*, asking, "Where you goin' in at?" The *Miss Mollye D* pilot responded, "No. I'm trying to get it off of this." Over the next 15 minutes, the pilot backed the tow away from the bridge and straightened it in the Bayou Boeuf channel (the *Philip* passed astern of the *Miss Mollye D* and continued eastbound). While straightening the tow, the pilot again illuminated the bridge with a spotlight, panning the light from left to right along the bridge for about 6 seconds. Once aligned in the channel, the *Miss Mollye D* proceeded in its original eastbound direction.

Federal regulations (Title 46 *Code of Federal Regulations* Part 4.05-1) require the operator of a vessel involved in an unintended bridge strike to immediately notify the nearest Coast Guard office. The pilot told investigators that he did not know that the tow had struck the bridge, and therefore he did not report the incident to the relief captain or authorities ashore. No other crewmembers, including the on-watch deckhand working in the engine room, stated that they heard or felt the bridge contact, although the deckhand in the engine room recalled the engines cycling (increasing and decreasing speed) during his watch.

As the *Miss Mollye D* continued on in Bayou Boeuf, a watchstander on another vessel moored along the channel radioed the pilot to report that the barges in the tow sounded like they were moving around. The watchstander recommended that the *Miss Mollye D* crew check the rigging (lashings) on the tow. Accordingly, the pilot ordered the deckhand in the engine room to go out on the tow and check the rigging.

The deckhand found several loose rigging wires, which he tightened. Some of the rigging had "bottomed out" and could not be tightened further, so he informed the pilot

that he was going to wake up the lead deckhand. According to the deckhand, the pilot told him, "Don't worry about it," and the deckhand went back to the engine room.

At 0600, the pilot turned over the watch to the relief captain. The relief captain stated that the pilot did not report the bridge strike or any other problems during the watch.

When the tow struck the bridge, water, electrical, and gas lines along the bridge ruptured, triggering alarms at the utility providers. Workers sent to investigate found the bridge damaged and reported it to the Coast Guard. Using Ports and Waterways Safety System (PAWSS) data from Vessel Traffic Service Morgan City, Coast Guard investigators determined that the *Miss Mollye D* tow had likely hit the bridge, and they contacted the towing vessel's relief captain about 0900.

After receiving the call from the Coast Guard, the relief captain directed the lead deckhand to inspect the barges. The deckhand stated that, upon inspection, he found several broken rigging wires on the port and starboard sides of the tow, as well as concrete pieces on the port corner of barge *FJC 70B* at the forward end of the tow. The concrete was later identified as coming from the bridge.

1.3 Additional Information

1.3.1 Damage

The Route 182 bridge sustained damage to several pilings, both above and below the waterline, as well as the concrete pile cap, girder, deck, bearing, and bridge railing above pilings. Water, electrical, and gas utility lines south of the bridge that were supported by separate timber pilings and cross bracing were severed when the tow made contact. The bridge was closed to traffic following the casualty; the north lane was reopened about 3 weeks later for one-way traffic alternating between east and westbound. The south lane remained closed until repairs could be made. Repairs to the bridge were estimated at \$2 million.

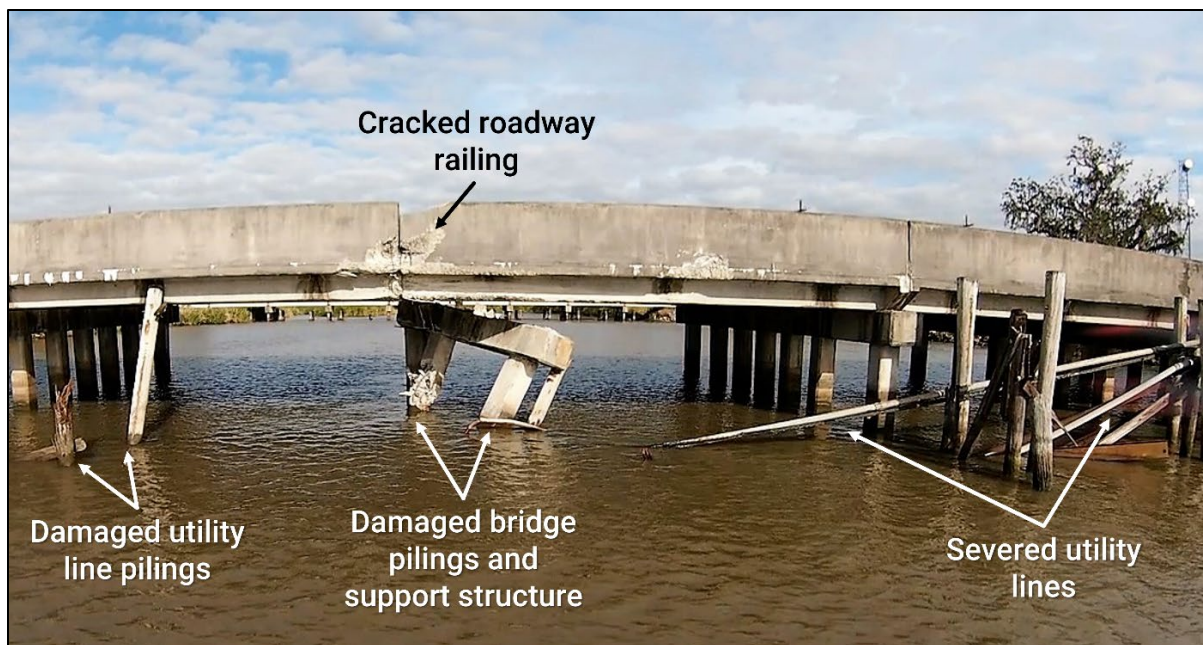


Figure 5. Route 182 bridge damage. (Background source: Cajun Drone Photography, Jim Pierce Jr.)

The hull of barge *FJC 70B* was punctured above the waterline on the portside bow. At the time of the casualty, the barge was en route to a recycling facility to be scrapped, and therefore it was not repaired.

1.3.2 *Miss Mollye D* Pilot

The *Miss Mollye D* pilot began working for DMS as a deckhand in 2010. In 2012, he left the company to work outside the maritime industry but returned 3 years later, again employed as a deckhand. In 2019, he began the Apprentice Mate (Steersman) program, and for the next 16 to 17 months, he received training on standing the navigation watch, accumulating between 280 and 360 12-hour days of work steering towing vessels. The pilot stated that his steersman training was principally on the *Sally Ann*, a DMS-operated towing vessel similar in size to the *Miss Mollye D*. As a steersman, he stood watch with the captain of the vessel, generally on the front watch. After completing the training program, he submitted the required documentation to the Coast Guard and received a credential as a Mate (Pilot) of Towing Vessels Upon Great Lakes, Inland Waters and Western Rivers in January 2021.

The pilot stated that about the time he completed the steersman program, he was laid off by DMS due to a slowdown in business. He was rehired into a deckhand position in March 2021, where he worked for 7 months. During this time, he did not stand any navigation watches. On October 5, 2021, he was promoted to pilot and completed two

rotations totaling 60 days, standing navigation watches aboard the *Miss Mollye D*.³ Neither the captain nor the relief captain reported any concerns with the pilot's abilities before the casualty. The captain stated that he had observed the pilot operating in various situations and different types of tows, and the pilot "did it very well."

The captain stated that there were no factors that made Bayou Boeuf challenging to navigate. However, the bayou was not on the *Miss Mollye D*'s typical route in the Intracoastal Waterway, and the casualty transit was only the second time the pilot had transited the waterway.

The pilot told investigators that he had two cell phones with him in the wheelhouse during the watch on which the casualty occurred: a company phone and a personal phone. He stated that he did not make or receive any calls, send or receive texts, search the internet, or otherwise use either phone during the watch. Records for the company phone and the pilot's personal phone showed no activity during the watch.

The pilot stated that he got 8-9 hours of sleep each 24-hour period while on the vessel, split between his two off watches. When asked by investigators about the quality of sleep while on board the vessel, he stated that he "slept fine." He stated that he did not fall asleep during the casualty watch.

1.3.3 Toxicology

Toxicology tests based on a urine sample collected from the pilot at 1635 on the day of the casualty were negative for all tested-for substances.⁴ Exercising its authority under Title 33 *Code of Federal Regulations* Part 95.035(a)(1), the Coast Guard directed the pilot to undergo further toxicology testing using a hair sample. The sample was obtained on February 1, 2022, and the results of this testing were positive for methamphetamine and its metabolite amphetamine, buprenorphine and its metabolite norbuprenorphine, and fentanyl.

Methamphetamine is a controlled substance used recreationally to increase alertness, relieve fatigue, and for its intense euphoria. The effects after extensive use

³ The bridge strike occurred during the second rotation, which was terminated on the day of the casualty.

⁴ By regulation, postaccident urine drug testing is limited to identifying urinary metabolites of amphetamine, methamphetamine, cocaine, codeine, morphine, heroin, phencyclidine (PCP), methylenedioxymethamphetamine (MDMA), methylenedioxyamphetamine (MDA), methylenedioxyethylamphetamine (MDEA), tetrahydrocannabinol (THC), oxycodone, oxymorphone, hydrocodone, and hydromorphone.

include dysphoria, restlessness, agitation, nervousness, paranoia, delusions, and lack of coordination, among other symptoms.⁵

Buprenorphine is a controlled substance used for the treatment of opioid addiction. Like other opioids, buprenorphine may be abused and carries a warning that it “may impair the mental or physical abilities required for the performance of potentially dangerous tasks such as driving a car or operating machinery, especially during treatment induction and dose adjustment.”⁶

Fentanyl is a controlled substance and an opioid. Fentanyl has seen increasing street use, and its effects include euphoria, sedation, confusion, drowsiness, and dizziness.⁷

The pilot stated that he drank no alcohol the day before the casualty or during the casualty watch. A postcasualty alcohol test was not conducted due to the length of time between the casualty and the administration of toxicology testing.

2. Analysis

The Route 182 bridge did not cross a navigable waterway, and therefore it did not require a permit and was not lighted nor fendered for vessel traffic. The pilot was using the *Miss Mollye D*'s ECS to navigate, and the Route 182 bridge was clearly marked similarly to other bridges on the electronic chart. Twenty-three seconds before the casualty, a vehicle passed over the bridge with visible headlights and taillights, which should have been another indicator to the pilot of the presence of the structure. The Route 182 bridge was parallel to and outside the Intracoastal Waterway channel and did not present a hazard to vessels transiting the waterway. It was struck only after the *Miss Mollye D* tow veered out of the channel. Therefore, the bridge's location and lack of lighting and fendering were not factors in the casualty.

Although the pilot was relatively new to the position, he had completed the extensive steersman program, and the captain's assessment of his ability to maneuver tows was that he “did it very well.” The pilot had only navigated a tow in Bayou Boeuf once before the casualty (during his steersman training), but the captain stated that there

⁵ National Highway Traffic Safety Administration, Drugs and Human Performance Fact Sheets, Methamphetamine, revised April 2014, <https://www.nhtsa.gov/sites/nhtsa.gov/files/809725-drugshumanperformfs.pdf>.

⁶ National Institutes of Health, US National Library of Medicine, “Buprenorphine HCL tablet,” DailyMed, updated April 15, 2022, <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=1bf8b35a-b769-465c-a2f8-099868dfcd2f>.

⁷ Drug Enforcement Administration, “Drug Fact Sheet: Fentanyl,” April 2020, https://www.dea.gov/sites/default/files/2020-06/Fentanyl-2020_0.pdf.

were no factors that made the waterway challenging to navigate. The channel was over 500 feet wide, there was little current, and, at the time of the casualty, winds were light.

About 20 minutes before the casualty, as the *Miss Mollye D* proceeded eastbound in Bayou Boeuf, the tow veered to port. The pilot stopped the *Miss Mollye D* before the lead barges could impact the north bank, but the tow blocked the entire channel. During this time, the *Miss Mollye D*'s stern was close to the south bank and risked grounding. The tow remained in this position for 8 minutes, while the pilot said he considered what to do about the possibility of fog (the pilot stated he heard reports of fog over the radio, but he did not report seeing fog at his location at the time). While stopped, the pilot did not seek the advice or assistance of the relief captain or shore personnel.

After recommencing the transit, the tow was on the starboard side of the channel when it again began to veer to port. The pilot said he noticed that the tow had begun to turn but took no action before looking at a weather report on the ECS. By his account, he focused on the weather report for a minute to a minute and a half, a long period of time considering that the tow was veering toward the opposite channel bank. As a result, the tow nearly collided with an anchor-handling vessel moored along the port bank, and he could not stop the tow before it struck the Route 182 bridge.

The pilot stated that he did not know that the tow had hit the bridge, but the sudden loss of speed and the visual indication of the barges pitching upward would have been clear indicators of the bridge strike. Further, the damage to the bridge was extensive and would have been apparent when the pilot spotlighted the bridge on two occasions immediately after the casualty. Finally, his radio transmission to the towing vessel *Philip*, stating that he was "trying to get [the tow] off of this," suggests that the tow was in contact with the bridge. Based on the evidence, it is apparent the pilot was aware that the tow hit the bridge, but he did not report the casualty to the relief captain or to the Coast Guard, as required by regulation. The bridge was closed following the casualty, with the south lane remaining closed until repairs could be made. However, traffic over the bridge was not stopped until the utility workers found the damage, hours after the casualty occurred. Had the roadway failed and a vehicle crossed the bridge, or had the severed gas and electric lines ignited a fire before the damage was discovered, the consequences of this casualty could have been severe. This casualty underscores the importance of reporting bridge strikes and other casualties immediately after they occur.

The tow's veering to port when it stopped in the channel just after 0300 and when it struck the bridge at 0326 could not be explained by machinery issues, external forces, or distraction of the pilot. The crew reported no issues with steering or propulsion systems, and current and wind conditions were benign. The pilot stated that he did not use the two cell phones in the wheelhouse during the watch, and records for the phones confirmed no activity. While the pilot may have been fixated on the weather report just

before the casualty, this does not explain the first instance of the tow veering to port, nor does it explain why he did not correct the tow's course before looking at the weather report.

A more likely explanation of the vessel's erratic movement and the pilot's actions before and after the casualty is impairment. Possible causes of impairment include fatigue or drug use. The pilot and relief captain were standing watch on a 6-hours-on, 6-hours-off basis. Research has shown that this watch rotation leads to shorter sleep durations, more frequent nodding off on watch, and more instances of excessive sleepiness when compared to a 4-hours-on, 8-hours-off watch rotation.⁸ In addition, the casualty occurred during a time period considered to be a circadian low (roughly 0200-0600), when the body is normally more fatigued and prone to diminished alertness and degraded performance. A person who is fatigued is prone to episodes of microsleep, a brief period of sleep lasting less than 15 seconds.⁹ The International Maritime Organization notes that, "during microsleep, the brain disengages from the environment (it stops processing visual information and sounds)."¹⁰ Although the pilot told investigators that he did not fall asleep, it is possible for a person to experience microsleep without recognition that it has happened.¹¹ However, because there were no other crewmembers in the *Miss Mollye D* wheelhouse during the events preceding the casualty, the impact of fatigue could not be conclusively determined.

The pilot submitted to a urinalysis on the afternoon of the casualty, and the results were negative for all tested-for drugs. Methamphetamines were screened in the test, and therefore it is unlikely that the pilot was impaired by that drug at the time of the contact with the bridge. However, the urinalysis did not test for buprenorphine or fentanyl, and hair-sample testing conducted 5 weeks after the casualty indicated that the pilot used these drugs at some point in the preceding 1-2 months. Buprenorphine causes mental and physical impairment, and fentanyl causes confusion, drowsiness, and dizziness. While the use of either of these drugs could have caused the pilot to be impaired, the specific timing of the drug use could not be determined by the hair sample test.

⁸ Mikko Härmä et al., "Effects of 6/6 and 4/8 Watch Systems on Sleepiness among Bridge Officers," *Chronobiology International* 25 no. 2-3 (April 2008): 413-423.

⁹ Jelena Skorucak et al., "Automatic Detection of Microsleep Episodes with Feature-based Machine Learning," *SLEEP*, (2020): 1-12.

¹⁰ International Maritime Organization, *Guidelines on Fatigue*, MSC. 1/Circ. 1598, (January 2019), 15.

¹¹ Brandon Peters, "The Causes, Dangers, and Prevention of Microsleep," *Verywell Health*, updated May 31, 2022, <https://www.verywellhealth.com/description-of-microsleep-3015366>.

3. Conclusions

3.1 Probable Cause

The National Transportation Safety Board determines that the probable cause of the contact of the *Miss Mollye D* tow with the Route 182 bridge was a loss of control of the tow by the pilot at the helm of the towing vessel, likely due to impairment by factors such as fatigue or drug use.

Vessel	<i>Miss Mollye D</i>	<i>HC 70B</i>
Type	Towing/Barge (Towing vessel)	Towing/Barge (Hopper barge)
Owner/Operator (Type)	M/V Mollye LLC/DeLoach Marine Services (Commercial)	St. Paul Barge Line Inc/Ingram Barge Co. (Commercial)
Flag	United States	United States
Port of registry	St. Francisville, Louisiana	St. Louis, Missouri
Year built	1961	1979
Official number (US)	286204	604089
IMO number	N/A	N/A
Classification society	N/A	N/A
Length (overall)	86.0 ft (26.2 m)	200.0 ft (61.0 m)
Beam	34.0 ft (10.4 m)	35.0 ft (10.7 m)
Draft (casualty)	9.2 ft (2.8 m)	4.0 ft (1.2 m)
Tonnage	287 GRT	1,051 GRT
Engine power; manufacturer	2 x 850 hp (634 kW); Cummins KTA38-M0 diesel engines	N/A

NTSB investigators worked closely with our counterparts from **Coast Guard Marine Safety Unit Morgan City** 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 DCA22FM008. 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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