



Issued March 8, 2023

MIR-23-06

# Contact of *Robert Cenac* and Tow with Houma Twin Span Bridge

On March 6, 2022, about 0038 local time, the towing vessel *Robert Cenac* was transiting the Gulf Intracoastal Waterway, in Houma, Louisiana, pushing ahead the crane barge *Mr. Dawg* and another deck barge.<sup>1</sup> While passing beneath the Houma Twin Span Bridges, the crane aboard *Mr. Dawg* contacted the eastbound span of the bridge. Eastbound automobile bridge traffic was reduced from two lanes to one for 10 days. No pollution or injuries were reported. Damage to the bridge was estimated at \$1.5 to \$2.0 million.



**Figure 1.** *Robert Cenac* before the casualty. (Source: Jeff L. Yates)

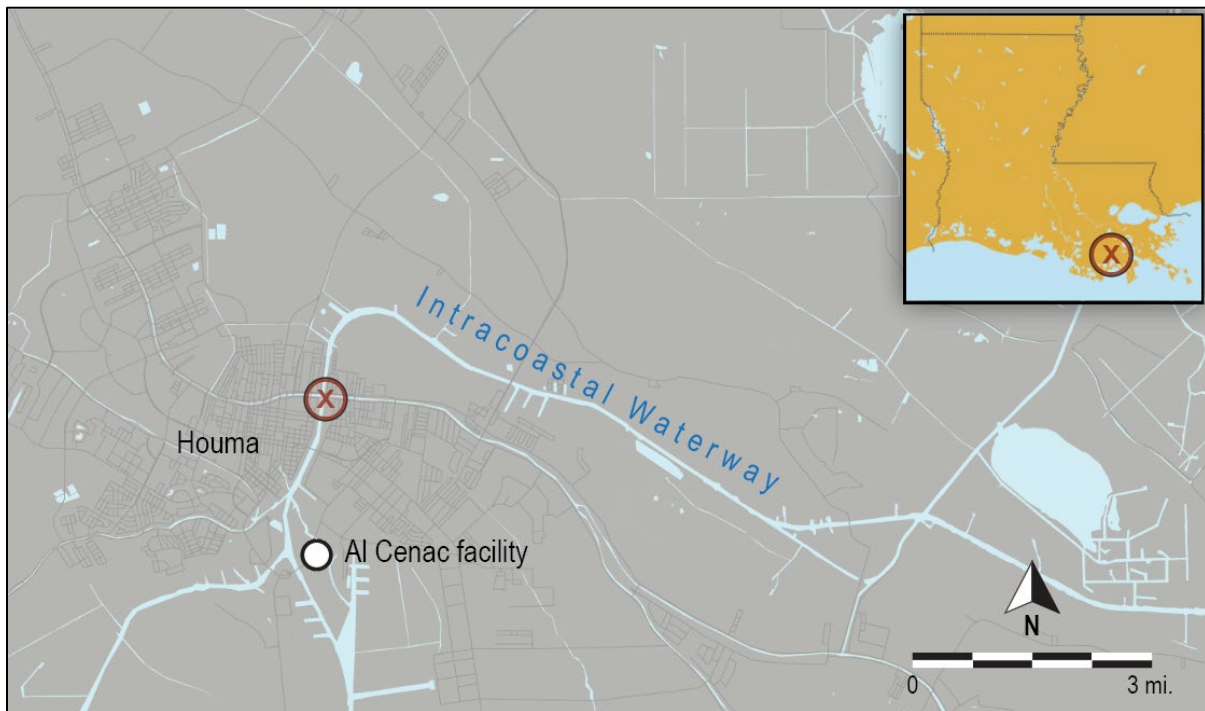
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<sup>1</sup> (a) In this report, all times are central standard time, and all miles are statute miles. (b) Visit [nts.gov](https://www.nts.gov) to find additional information in the [public docket](#) for this NTSB investigation (case no. DCA22FM012). Use the [CAROL Query](#) to search investigations.

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<b>Casualty type</b>	Contact
<b>Location</b>	Gulf Intracoastal Waterway, Houma, Louisiana 29°35.87' N, 090°42.62' W
<b>Date</b>	March 6, 2022
<b>Time</b>	0038 central standard time (coordinated universal time -6 hrs)
<b>Persons on board</b>	4
<b>Injuries</b>	None
<b>Property damage</b>	Est. \$1.5 to \$2 million
<b>Environmental damage</b>	None
<b>Weather</b>	Visibility clear, scattered clouds, winds southeast 5-10 knots, air temperature 68°F, sunrise 0624
<b>Waterway information</b>	Inland waterway, width 125 ft, controlling depth 12 ft, no current

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**Figure 2.** Area where the *Robert Cenac* tow contacted the Houma Twin Span Bridge, as indicated by a red X. (Background source: Google Maps)

## 1. Factual Information

### 1.1 Background

The *Robert Cenac* was a 60-foot-long, 1,400-hp towing vessel constructed of welded steel by Palmer Marine in Houma, Louisiana, in 2014.<sup>2</sup> Al Cenac Towing, a wholly owned subsidiary of Caillou Island Towing Co., operated towing vessels primarily from its Houma, Louisiana, facility. The towboat had a crew of four and had a valid US Coast Guard certificate of inspection endorsed for Rivers routes.

The *Mr. Dawg* was a 150-foot-long crane barge constructed of welded steel by Conrad Shipyard in Morgan City, Louisiana, in 2020 for Sealevel Construction, a Louisiana-based civil construction company. A crawler crane with a 300-ton lift rating was secured on *Mr. Dawg's* aft deck with its 180-foot-long boom facing forward. There was no crane boom rest. Two spuds, each 60 feet long, were located on the starboard side of the barge. When raised, the top of each spud was about 56 feet above the water given the *Mr. Dawg's* 4-foot draft.

The Houma Twin Span Bridge over the Gulf Intracoastal Waterway (GIWW) was built in 1996 of multiple steel girders and a concrete deck. The two-lane eastbound span was 39 feet wide, 3,230 feet long, and carried one-way Main Street (LA 24) traffic from West Houma to East Houma. The channel span was 150 feet wide, and the charts showed the bridge had a vertical

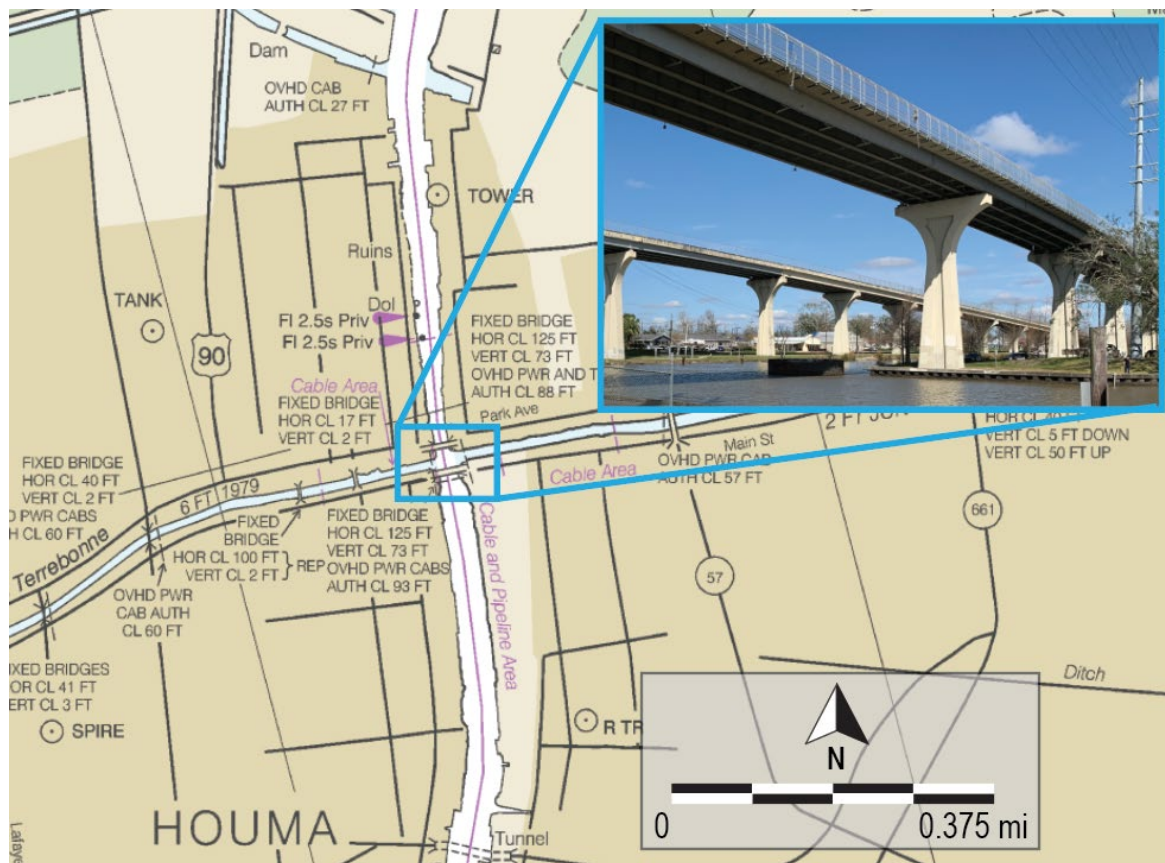


**Figure 3.** Crane barge *Mr. Dawg* in operation. (Source: Houma Times)

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<sup>2</sup> The *Robert Cenac* was renamed *Remy Rhex* in May 2022.

clearance of 72.8 feet.<sup>3</sup> The bridge carried over 30,000 vehicles daily per the US Department of Transportation's National Bridge Inventory records.



**Figure 4.** Extract of National Oceanic and Atmospheric Administration chart 11355, annotated by NTSB. Inset: photo of the Houma Twin Span Bridge.

## 1.2 Event Sequence

About 2000 on March 5, a Sealevel Construction employee contacted Al Cenac Towing to charter the *Robert Cenac* to tow the *Mr. Dawg* and a deck barge, the *HMT 26*. The Sealevel Construction representative said that the barges were to be moved from Houma to a levee near the LOOP Facility in Clovelly, Louisiana.<sup>4</sup> The Al Cenac Towing sales representative accepted the job; the arrangements between the chartering client, the operator (Al Cenac Towing), and vessel were all verbal.

<sup>3</sup> Vertical clearance is the distance from the water to the lowest point of the bridge or obstruction.

<sup>4</sup> The LOOP cavern storage facility receives and stores up to 60 million barrels of imported crude oil from tank vessels calling on the Louisiana Offshore Oil Platform.

At 2019, Sealevel reported to Al Cenac Towing that, per the last personnel to work with the *Mr. Dawg's* crane, the crane boom had been lowered below the top of the fully raised barge spuds (the boom would normally be positioned visually below the spud tops for transport). The Al Cenac Towing representative told investigators that he also confirmed with Sealevel that there was no crane boom rest and that the spuds were 50 feet "high," but the NTSB could not confirm if this information was passed to the *Robert Cenac's* captain.

Additionally, about 2100, Al Cenac Towing called the *Robert Cenac*, moored in Houma at the time, and told the crew to check that the boom had been lowered. About 2200, the *Robert Cenac* crew proceeded to make up the tow with the towboat pushing the *Mr. Dawg* and the smaller *HMT 26* in the lead, nearby to Eagle Drydock (close to where the towboat had been staged).

The towboat captain told investigators that, while standing above the wheelhouse, he estimated the head of the crane boom was about 10 feet higher than the spuds, which he estimated were 50 feet (this was a standard spud length for vessels on the GIWW according to the captain). He therefore estimated the boom head was "roughly 60 feet" above the water. He also understood all of the bridges on the passage had 72 feet of vertical clearance.

About 2327, Al Cenac Towing texted the marine logistics coordinator at Sealevel, "Hey could you find out the height of the boom on the crane? They [the captain] just want to confirm it. It's a little taller than the spuds." A series of text messages between Al Cenac Towing and Sealevel and internally within Sealevel ensued; however, no confirmation was sent to Al Cenac Towing nor the towboat. About 2330, the captain told Al Cenac Towing he was comfortable, and the tow got underway.

The tow transited the Houma Navigation Canal swing bridge without incident as it entered the GIWW. At 2340, the mate arrived in the wheelhouse for his watch. The vessel was a mile from the Houma Twin Span Bridge when the captain went to bed. The mate stated he could almost see the bridge at the time and called the deckhand out to the barge to act as a lookout and watch the lateral clearance between the barges and bridge piers. The captain had told the deckhand not to go out on the smaller *HMT 26* in the dark due to steel I-beams stowed on the deck; the mate stated that from his vantage point in the wheelhouse, he saw the red and green navigation lights on the bridge but he couldn't see how high the boom was.

At 0038, the head of the crane boom struck the outermost stringer of the eastbound bridge. The tow was moving at a speed of 4.3 mph. When the crane made contact, the *HMT 26* broke away from the tow and had to be resecured.

The captain came to the wheelhouse and made reports to the Houma Police Department, Al Cenac Towing, and the Coast Guard. He then called Sealevel to have a

crane operator come and lower the crane. The crane operator arrived between 0900 and 0930 and told the captain and a Sealevel representative that the crane boom was between 26° and 30°. He lowered the boom to about 15°, then at the captain's request further to 5°.

The tow then continued its transit at 1230, only to turn around at Bayou St. Denis due to shallow water. It was not possible to reach the work site from the direction the captain planned. The vessel returned to Houma, where another towboat relieved them for the barge transport to be completed.

The bridge sustained a bent girder, a damaged deck, and fractures to the pier caps and was completely closed to vehicular traffic until 1100, when one lane was reopened. The second lane was opened on March 16.



**Figure 5.** Eastbound span of the Houma Twin Span Bridge showing damaged stringer.

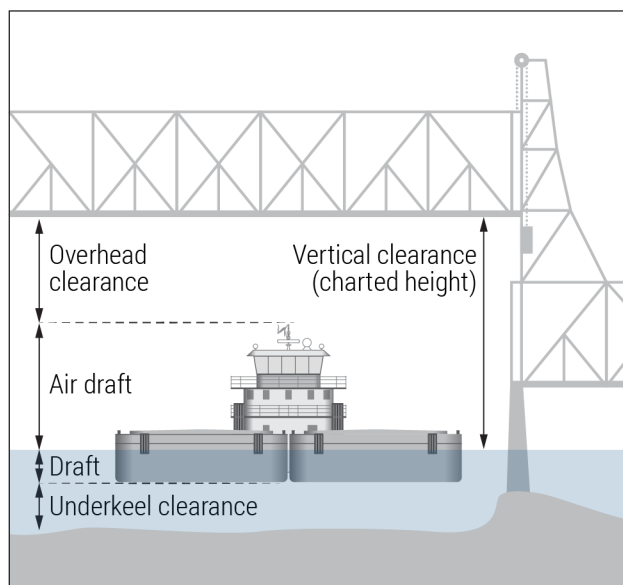
### 1.3 Additional Information

The captain held a merchant mariner credential endorsed as master of 100-ton vessels and had worked in the industry for 23 years. He had worked for the company for 13 years and on the *Robert Cenac* for 2 years. He told investigators he had been under these bridges “countless” times with deck barges, cranes, “red flags” (barges carrying hazardous materials), and dredges. He stated he had never towed the *Mr. Dawg* before.

The mate had worked in the industry for 6 years and as mate for almost 2. This was his first time towing *Mr. Dawg*.

### 1.3.1 Voyage Planning

Coast Guard regulations require the officer in charge of a navigational watch to conduct a navigation assessment to include, among other things, “air draft relative to bridges and overhead obstructions taking tide and river stage into consideration.”<sup>5</sup> Al Cenac Towing’s procedures included a voyage plan form, which required, among other things, barge and towboat information, weather, locks, and bridges for the intended route. By practice, whoever was on watch at the time would complete the voyage plan—in this case, the captain completed it at 2235 on March 5, about 2 hours before the contact.



**Figure 6.** Critical dimensions and terms for bridge transits.

The *Mr. Dawg* was too wide for the 57-foot-wide locks at Golden Meadow precluding a more direct route via Bayou Lafourche. Therefore, the captain planned a voyage to the LOOP facility via the GIWW to Lafitte, then via the Barataria Waterway and Bayou St. Denis, to Turtle Bay, Little Lake, and the “back side of Galliano.” The voyage plan form asked for the “Vessel Air Draft,” which the captain had entered as 40 feet, and asked for the lowest structure on the route, which he identified as the West LaRose Bridge at 72 feet (the Houma Twin Span Bridge vertical clearance was listed in electronic navigational charts at 72.8 feet).

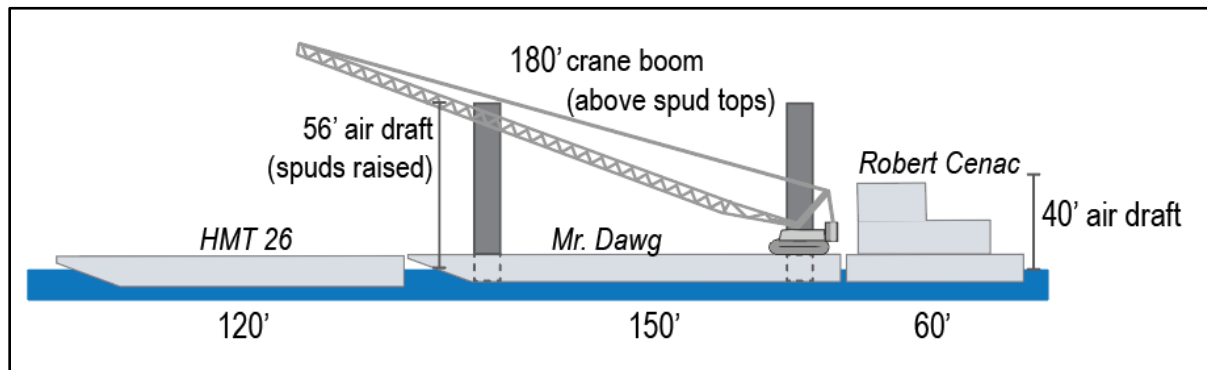
The mate stated he did not review the voyage plan form when he came on watch and had a verbal watch relief with the captain. The captain stated that throughout his

<sup>5</sup> (a) See Title 46 *Code of Federal Regulations* Part 140.635(a). (b) *Air draft* describes the vertical distance from the top of a vessel’s highest point down to the waterline.

career he had never received written documentation on the height [air draft] of any barges.

### 1.3.2 Vessel Layout

As positioned on the barge, the crane's 180-foot boom extended beyond *Mr. Dawg's* bow, and no boom rest was outfitted on the barge. By practice, according to Sealevel, crane operators would lower the boom below the spuds for transport.



**Figure 7.** Tow arrangement of *Robert Cenac* and barges at the time of the casualty. Scale approximate.

The captain told investigators that it was a given that spuds would fit under the bridges on the GIWW. Bridges along the planned route in West Larose and Prospect were all nearly the same height. He also understood that the company had a 2-foot underkeel clearance policy though no minimum overhead clearance policy. The mate stated he was comfortable with 5 feet of overhead clearance, specifically for lift bridges when he would call for an opening.

According to Al Cenac Towing's Health, Safety, and Environmental Manager, the field on the form next to "Vessel Air Draft" was meant for the towboat's height, which was almost always the highest point, and not the tow. He was not aware of any other similar incidents.

According to Sealevel, the *Mr. Dawg* was built to do work on the Mississippi River, requiring the longer 60-foot spuds. *Mr. Dawg's* spuds could be raised and lowered without the use of the crane.

### 1.3.3 Previous related investigations

The NTSB investigated the 2014 contact between a crane barge and a lift bridge in New Orleans, Louisiana, which resulted in the unsupported crane boom falling and



fatally injuring the towboat captain.<sup>6</sup> The NTSB recommended that the Occupational Safety and Health Administration (OSHA), which regulates non-mariner related occupational safety such as marine construction, revise regulations to address “the placement and securing of crane booms for transit to and from marine construction and other sites.” OSHA declined to amend the regulations, citing existing requirements. The NTSB classified the recommendation Closed–Unacceptable Action.

Following the same casualty in 2014, the Coast Guard issued Safety Alert 09-14 titled “Air Draft is Critical.” The alert stated that the Coast Guard had found 205 incidents over 11 years of overhead bridge strikes and that the primary causal factor “was the lack of accurate air draft data for either the towing vessel or its tow being made available to the responsible mate or master.” The alert strongly recommended that:

- Every officer in charge of a navigational watch know the air draft of his/her vessel and tow and also know how to apply that knowledge using the resources available to him/her regarding the height and location of bridges, power lines, pipelines and other elevated objects located within the navigable channel,” and
- Assumptions are not made regarding a vessel or its cargo’s “air draft” or of “bridge heights.” Specific data must be known when planning transits.

In 2020, the NTSB investigated the contact of a crane barge pushed by the *Kristin Alexis* with the Sunshine Bridge.<sup>7</sup> The NTSB recommended that the tow operator:

- Develop a detailed voyage plan with specific information concerning/about all known risks, including calculated overhead clearance limitations for tows. (M-20-7)
- Develop a detailed audit plan to verify that the bridge transit procedures and watch handovers are understood and effectively used by captains and pilots. (M-20-8)

To address these recommendations, the tow operator implemented detailed voyage planning requirements and an ongoing audit program to verify bridge transit procedures. After reviewing the company's new procedures, the NTSB classified Safety

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<sup>6</sup> *Allision of Crane Barge, Pushed by Towing Vessel Cory Michael, with the Florida Avenue Bridge*, Marine Accident Report [NTSB/MAR-15/02](#). Washington, DC: NTSB.

<sup>7</sup> *Contact of Crane Barge Mr Ervin, Pushed by Towing Vessel Kristin Alexis, with Sunshine Bridge*, Marine Accident Brief [NTSB/MAB-20-29](#). Washington, DC: NTSB.

Recommendation M-20-7 Closed–Acceptable Action and Safety Recommendation M-20-8 Closed–Exceeds Recommended Action.

## 2. Analysis

Unbeknownst to Sealevel staff, who chartered the tow, their last crew to use the crane aboard the *Mr. Dawg* did not lower the boom to an angle typically used for transport—with the boom lowered below the barge’s raised spud tops. Both the towboat operator (Al Cenac Towing) shoreside staff and their towboat crew aboard the *Robert Cenac* were concerned about the height of the crane, and the captain observed that the head of the crane boom was higher than the crane barge spuds, contrary to what Sealevel had initially communicated to Al Cenac Towing. Despite being asked at least twice about the height of the crane by the towboat operator before departure, Sealevel staff did not provide Al Cenac Towing with a verified crane height.

Without a verified crane boom height, the captain of the *Robert Cenac* estimated the total air draft of the tow, assuming the spuds to be a standard 50 feet high and then estimating the portion of the crane boom above the spuds at 10 feet, arriving at a total air draft of “roughly 60 feet.” However, the raised spuds on the *Mr. Dawg* had an air draft of about 56 feet, not 50 feet as the captain assumed.

A spud length of 50 feet was very common for spud barges operating in the area and may have biased the captain’s initial estimate. The captain’s ability to accurately judge the height of the crane boom above the spuds was also likely affected by the dark nighttime conditions impacting his ability to make an accurate estimate of height from a distance given the 180-foot length of the crane boom. These factors resulted in an inaccurate and subjective assessment of the crane barge’s air draft, which was the highest in the tow.

When faced with uncertainty, such as the height of the crane boom or spuds, humans typically draw from experience, relying on mental heuristics, or shortcuts to get to an acceptable solution. In the present case, the captain was familiar with spud barges equipped with 50-foot spuds and used this estimated measurement as his baseline, or anchor, from which adjustments were made to estimate the height of the crane boom and overall air draft of the tow. However, the initial assumption of the height of the spuds on the *Mr. Dawg* was incorrect. Unlike most of the spud barges that he had previously dealt with, the *Mr. Dawg*’s spuds were actually 56 feet above the water when fully stowed, in the “up” position.

The crane boom head contacted the lower part of the bridge, listed in charts as 72.8 feet, meaning that the captain’s estimate of 60 feet was at least 12 feet short. Had he based his estimate of the crane boom head being 10 feet higher than the actual spud

height of 56 feet, he would have estimated a 66-foot air draft (giving him only about 6 feet of overhead clearance at the bridge). This would have created a narrower margin of safety, which may have caused the captain to reconsider getting underway until the tow's actual air draft was known. As a result of the incorrect estimate, the captain felt comfortable getting underway, and the crane contacted the bridge, damaging the steel girder and impacting vehicular traffic for 10 days.

Tow operators are required to know the air draft of their vessel and tows and should not make assumptions. As the NTSB has also recommended before, tow operators should have a detailed voyage plan with specific information concerning/about all known risks, including calculated overhead clearance limitations for tows. Additionally, the Coast Guard has recommended that "assumptions are not made regarding a vessel or its cargo's 'air draft' or of 'bridge heights.' Specific data must be known when planning transits." In this case, the captain should have waited to get underway until the exact air draft of the tow was established.

### 3. Conclusions

#### 3.1 Probable Cause

The National Transportation Safety Board determines that the probable cause of contact of the *Robert Cenac* tow with the Houma Twin Span Bridge was the tow captain's incorrect estimate of the crane boom height and his decision to depart before getting a confirmed height from the crane barge owner. Contributing to the incident was the crane barge owner not providing the accurate air draft information to the tow company.

#### 3.2 Lessons Learned

##### Navigation Assessments

When operating in higher risk conditions, operators should ensure that they have the most accurate and objective data before getting underway. Bridges pose a risk to vessels and tows with high air drafts. Owners and operators should develop voyage plans that assess operational risks and hazards, to include air draft relative to bridge vertical clearances along the intended route.

Vessel	<i>Robert Cenac</i>	<i>Mr. Dawg</i>
Type	Towing/Barge (Towboat)	Towing/Barge (Freight barge)
Owner/Operator	Al Cenac Towing	Sealevel Construction
Flag	United States	United States
Port of registry	Houma, Louisiana	Houma, Louisiana
Year built	2014	2020
Official number (US)	1251904	1307039
IMO number	None	N/A
Classification society	None	N/A
Length (overall)	60.0 ft (18.3 m)	150.0 ft (45.7 m)
Beam	28.0 ft (8.5 m)	60.0 ft (18.3 m)
Draft (casualty)	6.0 ft (1.8 m)	4.0 ft (1.2 m)
Tonnage	93 GRT	783 GRT
Engine power; manufacturer	2 x 700 hp (522 kw); Cummins QSK19 diesel engines	None

NTSB investigators worked closely with our counterparts from **Coast Guard Marine Safety Unit Houma** 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.

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For more detailed background information on this report, visit the NTSB investigations website and search for NTSB accident ID DCA22FM012. 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—

National Transportation Safety Board  
 Records Management Division, CIO-40  
 490 L'Enfant Plaza, SW  
 Washington, DC 20594  
 (800) 877-6799 or (202) 314-6551