



National Transportation Safety Board

Marine Accident Brief

Contact of *Chad Pregracke* Tow with Old Highway 80 Bridge

Accident type	Contact	No. DCA19FM021
Vessel name	<i>Chad Pregracke</i> and barges <i>CC 5507B</i> , <i>CC 95523B</i> , <i>LTD 405</i> , and <i>MTC 852</i>	
Location	Lower Mississippi River, mile 435, near Vicksburg, Mississippi 32°18.79' N, 90°54.14' W	
Date	February 27, 2019	
Time	0704 central standard time (coordinated universal time – 6 hours)	
Injuries	None	
Property damage	\$800,000 est.	
Environmental damage	None	
Weather	Visibility 10 miles, cloudy, winds calm, current 4–5 knots, air temperature 54°F, morning twilight 0610, sunrise 0635	
Waterway information	The Lower Mississippi River near mile 435 was under an extreme high-water safety advisory. The river gage measured 48 feet of water at Vicksburg (flood stage is 43 feet).	

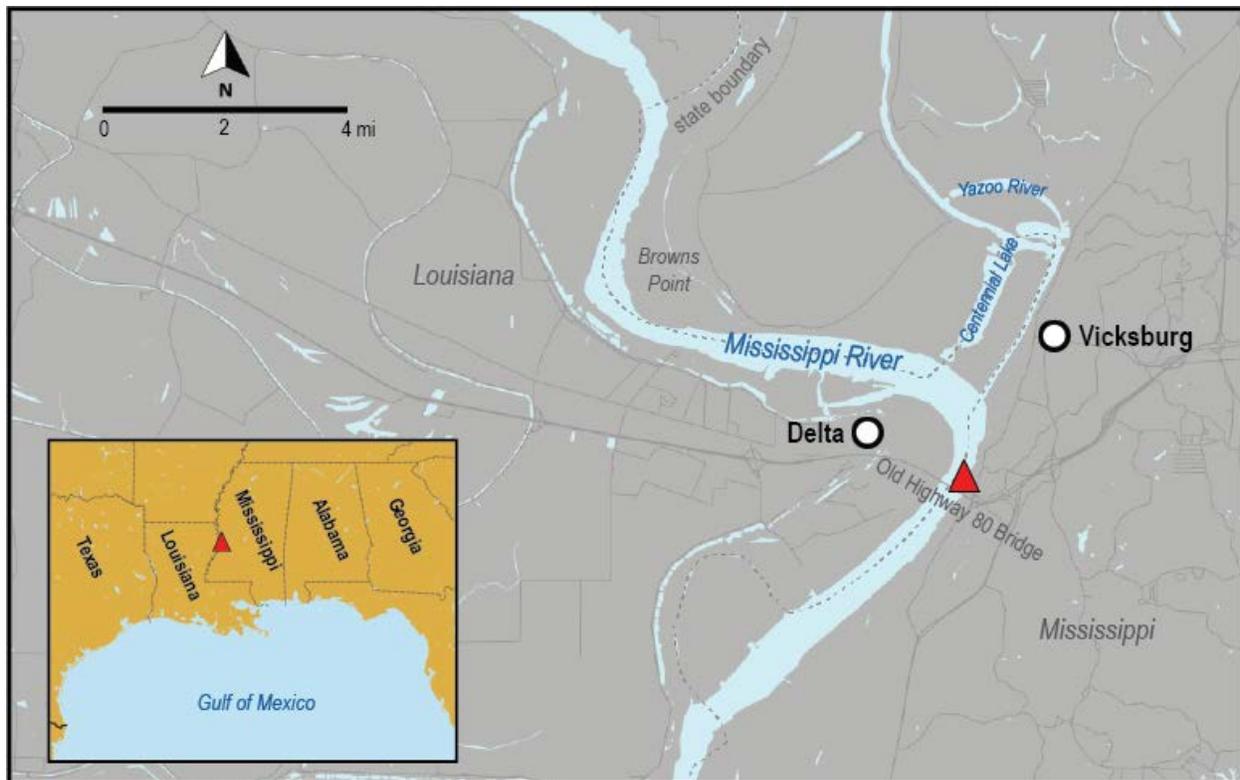
On February 27, 2019, about 0704 local time, the towing vessel *Chad Pregracke*, pushing 30 loaded grain barges down the Mississippi River, was coming out of a bend and lining up to pass under two adjacent bridges in Vicksburg, Mississippi, when the tow set toward the left descending bank and into a pier supporting the Old Highway 80 Bridge.¹ The tow broke apart, one barge sank, and three barges were damaged. The vessel's nine crewmembers remained on board and began gathering barges. No pollution or injuries were reported. Total damage to the barges was estimated at \$800,000.



Chad Pregracke under way before the accident. (Source: Marquette Transportation)

¹ The Old Highway 80 Bridge is also known as the “Vicksburg Railroad Bridge,” the “Highway 80 Bridge,” and the “Old Vicksburg Bridge.” The bridge was closed to vehicle traffic in 1998.

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Area of accident where the *Chad Pregracke* tow struck the Old Highway 80 Bridge in Vicksburg, Mississippi, as indicated by the red triangle. (Background source: Google Maps)

Background

The 173-foot-long *Chad Pregracke* was a twin-propeller towing vessel that was powered by two diesel engines that produced a combined 10,000 horsepower. The vessel was fitted with two sets of flanking rudders and two sets of Becker (flap) rudders. The vessel was built in 2016 and operated by Marquette Transportation Company, LLC.

The Mississippi River current at Vicksburg was 4–5 miles per hour (mph), and the river gage was 48 feet and rising (flood stage was 43 feet). The Lower Mississippi River near mile 435 was under an extreme high-water safety advisory from the US Coast Guard Captain of the Port due to “hazardous conditions associated with strong currents, severe out drafts, [and] missing/off-station aids to navigation and diving buoys.” The Coast Guard considers extreme high water to be a rising depth of water measuring at least 40 feet.

The Vicksburg bridges included the Old Highway 80 Bridge, which opened in 1930 as a highway and railroad crossing and still serves as a railway bridge, and the Interstate 20 bridge, which opened in 1973 and was built with piers spaced to match the adjacent and upriver Old Highway 80 Bridge piers. The bridges were located 1.1 miles downstream from a 121° bend in the river. In addition to the cross-currents associated with such a large change in direction of the river, the current from the Yazoo river converged in the bend.

On February 6, 2019, the Lower Mississippi River Committee (LOMRC) activated watchstanders in the Vicksburg Information Center (VIC) to “provide mariners with the most

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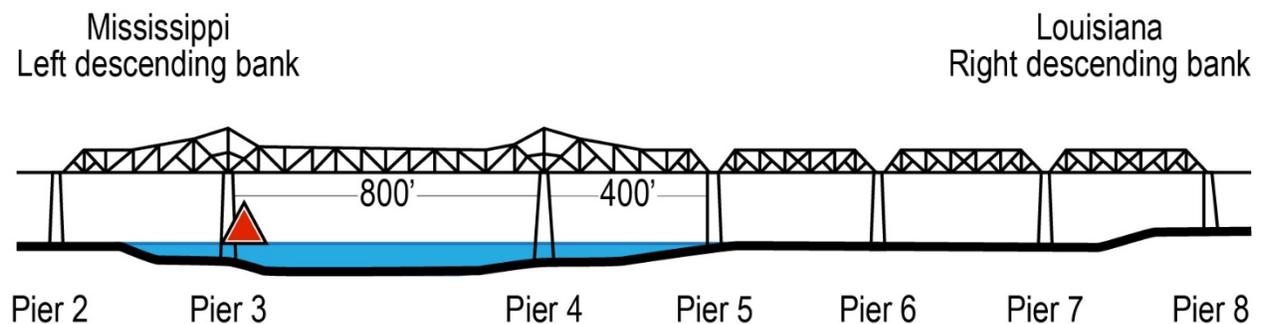
current information related to river conditions affecting transit through the Vicksburg Bridges.”² The VIC personnel also were responsible for granting permission for tows to transit under the bridges. VIC personnel verified that each tow met the guidelines for transiting the bridges after discussing the transit with wheelhouse personnel. To receive permission to transit under the bridges, wheelhouse personnel of southbound tows were required to confirm that they were comfortable with their tow configuration and the river state; the tow met the horsepower per barge and max tow size requirements; and all red-flag barges (barges carrying hazardous materials) in mixed tows were placed in inboard strings and not a lead loaded barge in any string.

The Coast Guard also issued a Notice to Mariners on February 6, recommending only daylight operations for southbound tows wider than 110 feet passing under the Vicksburg bridges. On February 25, two days before the accident, the Coast Guard issued another notice, reducing the maximum number of loaded barges from 36 to 30.

Accident Events

On the morning of February 27, the *Chad Pregracke*, with 9 crewmembers (including a captain and pilot), was en route to Baton Rouge, Louisiana, pushing 30 loaded grain barges, six across by five long. The tow measured 210 feet wide and 1,173 feet long. The pilot on board had joined the vessel only two days before the transit in Pemiscot Township, Missouri. The owner specifically assigned the pilot to the vessel because he had experience transiting through Vicksburg in high-water conditions.

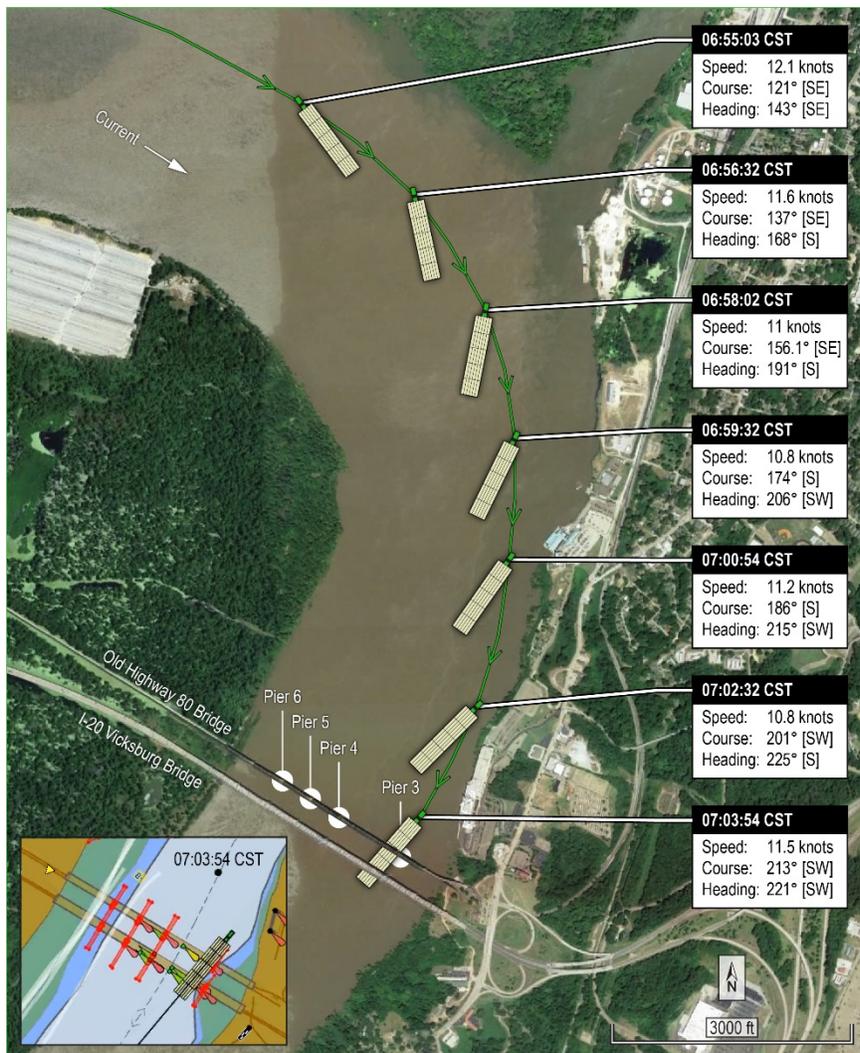
In preparation to pass underneath the Vicksburg bridges, the pilot and the VIC watchstander spoke at 0230 to confirm that the *Chad Pregracke* tow complied with the high-water measures adopted by the industry to mitigate the risk of southbound transits through the bridges. The pilot confirmed that he was comfortable with the tow configuration and that the tow averaged 333 horsepower per barge, which met the Coast Guard’s 280-horsepower-per-barge minimum guideline to transit. Later, at 0400, the pilot held up the tow on the left descending bank, waiting for daylight as called for by the voluntary guidelines, before passing through the Vicksburg bridges.



A drawing of the Old Highway 80 Bridge looking downriver. The red triangle indicates the location of the bridge strike.

² The LOMRC is an association of companies and organizations who are stakeholders in the commercial industry on the inland rivers. The committee representatives provide an industry perspective to the Coast Guard and the US Army Corps of Engineers on matters such as high and low water, shoaling, marine accidents, and recovery.

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Trackline of the *Chad Pregracke* and its 30 barges over the last 9 minutes leading up to the bridge strike. (Background source: Google Earth). Inset: *Chad Pregracke* as recorded on RosePoint at 07:03:54 CST.

800-foot width between piers 3 and 4. The pilot stated that as the tow moved downriver, the current set the tow to the left side of the river despite his efforts to head towards the right side of the span. The pilot told investigators that he experienced the set to the left earlier and harder than he anticipated. The tow, moving at 11.5 knots, was set down onto pier 3 at a 10° angle to the pier. The

Before getting under way at 0634, the *Chad Pregracke* pilot discussed the transit with the port captain from Marquette Transportation. The Vicksburg gage read just under 48 feet. The *Chad Pregracke* captain, who did not have high-water experience in Vicksburg, was also in the wheelhouse because his regular watch was from 0600–1200. The pilot stated that he would normally flank the bend above the Vicksburg bridges, but he decided to steer the bend based on experiencing little set from the current when he steered through the Brown’s Point bend at mile 444, just a few hours earlier, at 0320.³

As the tow moved through the bend, the pilot had about a mile to line up the tow with the bridge. The pilot, anticipating a set to port, steered for pier 4 on the right side of the span, in order to line up to transit the

³ A *flanking* maneuver allows tows to pivot around the point of a bend, similar to how a large log might drift downriver. The operator reverses the engines to reduce the forward speed of the tow and places the stern of the tow near the “point” or inside of the bend, in slower-moving water. During the turn, the operator applies a series of engine thrusts against the current to keep the stern near the point of the bend, while the faster-moving water at the outside of the bend, swings the head of the tow around. A vessel operator may decide to flank around a bend if the combined forward speed of the vessel and the current might otherwise push the tow onto the outside riverbank before the turn can be completed. Compared with steering around a bend, flanking requires more time to navigate through relatively short stretches of the river (as the forward speed is slower) but reduces the risk of running aground. Flanking is possible only when the current pushes the vessel from astern and “carries” the vessel through the turn.

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tow contacted the bridge between the third and fourth barges from the head of the tow on the port side, and the tow broke apart.

Four barges were damaged. The *CC 95507B* sank immediately, and the *LTD 405*'s bow was submerged. Two other barges were damaged but remained afloat. The Coast Guard closed the river to traffic. By 1450, the crew of the *Chad Pregracke*, with the help of other towing vessels, had retrieved the remaining barges, and, on March 1 at 1300, the crew had rebuilt the tow with the undamaged barges and continued the southbound transit. A total of 26 towboats and 354 barges were delayed until the morning of March 1, when the Coast Guard re-opened the area for vessel traffic. As of the publication of this report, barge *CC 95507B* has yet to be salvaged due to the high-water level. Salvors hope to recover the barge when the level recedes to 20 feet. The other three damaged barges were recovered, and each was towed to a shipyard in Vicksburg.



Barges broke away from the *Chad Pregracke* after the tow struck pier 3 of the Old Highway 80 bridge. (Photo: US Coast Guard)

Additional Information

In 2003, the Coast Guard-American Waterways Operators Bridge Allision Work Group noted the increased risk of bridge strike at the Old Highway 80 Bridge. The bridge was listed 84th in a tabulation of bridge strikes at 546 bridges during a 10-year period (1992–2001). Six bridge strikes occurred at the Old Highway 80 Bridge during that period. More recent Coast Guard casualty data shows many more strikes have occurred. In the year prior to this accident, five strikes occurred.

Because of the previous bridge strikes during high water, the LOMRC and the Coast Guard agreed to voluntary guidelines for downbound tows in order to mitigate bridge strikes in Vicksburg. These guidelines, which were found in the Waterways Action Plan (WAP) for the Lower Mississippi River, were created to ensure the safety of life and navigation, protect infrastructure and property, and prevent marine casualties. The WAP contained measures for towing vessel companies to follow when transiting under bridges in Vicksburg based on the height of the water. As the river rose, additional measures would be taken at 36, 40, 45, and 50 feet.

The Coast Guard informed mariners of the current guidelines in Notices to Mariners. Beginning January 5, 2019, about two months before the accident, when the river gage at Vicksburg reached 40 feet, the Coast Guard initiated action in the Vicksburg area to mitigate the risk of bridge strikes and other accidents caused by high water. At that time the Coast Guard, in concurrence with the LOMRC, issued guidelines for southbound tows for a portion of the

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Mississippi River (miles 439–303) including Vicksburg, recommending that wheelmen have experience handling the high-water conditions, the towing vessel's horsepower should average 280 horsepower (or more) per loaded barge, and a tow of loaded barges should not exceed 36 barges.

As stated above, on February 6, 2019, the LOMRC had VIC operators verify that each tow met the guidelines for transiting the Vicksburg bridges and the Coast Guard issued a Notice to Mariners that southbound tows wider than 110 feet passing under the bridges should be restricted to daylight operations. On February 25, two days before the accident, the Coast Guard issued another notice, reducing the maximum number of loaded barges from 36 to 30.

On March 5, the Coast Guard further reduced the recommended number of barges from 30 to 25 when the river gage exceeded 50 feet (50.39 feet at the Vicksburg gage); the Coast Guard also recommended increasing the horsepower requirement to an average of 300 horsepower per barge instead of 280.

The pilot had worked on the Mississippi River for 18 years. He first obtained his license to operate towing vessels in 1994 and held a license as master of self-propelled vessels, not including auxiliary sail, of less than 1,600 gross register tons upon Western Rivers, and a license as master of towing vessels upon Western Rivers. He told investigators that different towing companies would hire him specifically to operate tows in high water. He had transited the Vicksburg bridges southbound two weeks before the accident.

Analysis

The history of bridge strikes at the Old Highway 80 Bridge indicates that the location of the bridge and the geography of the approach make it difficult for downbound tows to pass under the span, particularly in high water. Even with a wide, 800-foot horizontal clearance, the Vicksburg bridges are more difficult to transit than others because of the increased risk associated with the approach that includes the sharp bend at Delta Point, in Louisiana, at mile 433, across from Vicksburg, changing the course of the river 121° from east to southwest, leaving pilots only 1.1 miles from the end of the bend to line up their tows to pass under the Vicksburg Railroad Bridge. At extreme high water, bends and their associated cross currents and eddies pose a hazard to navigation. In addition, high water on the day of the accident, measuring 47.8 feet at Vicksburg, produced fast currents that increased the risk of contact while navigating a tow under the bridge.

With a history of recurring bridge strikes, the Coast Guard and industry attempted to prevent accidents at the Old Highway 80 Bridge by recommending smaller tows with towing vessels with increased horsepower to overcome the effect of the cross-currents and eddies on the barges. The pilot was aware of the increased risk of striking the Old Highway 80 Bridge due to the high water and acknowledged that he felt comfortable transiting the area with the tow. The pilot also believed that the *Chad Pregracke* was capable of steering the 30 barges through the bend before the bridge span, since he had successfully navigated the bend at Brown's Point, and he had previous experience transiting the Old Highway 80 Bridge during extreme high water.

In an attempt to steer the bend at Vicksburg, the pilot maneuvered the long, 1,173-foot tow using the *Chad Pregracke's* engines and rudders to create a force to swing the bow to starboard and align the tow to pass through the 800-foot wide span. With the pivot point closer to the aft end of the tow (about one-third of the tow's length from towboat's stern), the force acting on this

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smaller lever to steer the tow was not enough to overcome the force of the cross-currents acting on the larger lever of the tow (the remaining two-thirds of the tow's length), and the current turned the head of the tow and pushed it to port. Although the tow configuration and the pilot's high-water experience met the Coast Guard's recommended guidelines for mitigating the risk of a bridge strike, the pilot could not overcome the effect of the current on the tow.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the contact of the downbound *Chad Pregracke* tow with pier 3 of the Old Highway 80 Bridge was the pilot's misjudgment of the effects of the river current acting on the tow while navigating the bend before the bridge at Vicksburg in high-water conditions.

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Vessel Particulars

Vessel	<i>Chad Pregracke</i>	<i>CC 95507B</i>
Owner/operator	US Bank National Association/ Marquette Transportation Company, LLC	Unknown
Port of registry	St. Louis, Missouri	N/A
Flag	United States	United States
Type	Towing vessel	Dry cargo barge
Year built	2016	Unknown
Official number (US)	1272284	CG1545191
IMO number	N/A	N/A
Classification society	N/A	N/A
Construction	Steel	Steel
Length	173 ft (52.7 m)	200 ft (61.0 m)
Draft	11 ft (3.4 m)	Unknown
Beam/width	48 ft (14.6 m)	35 ft (10.7 m)
Tonnage	761 GRT / 1094 GT ITC	Unknown
Engine power; manufacturer	2 x 5,000 hp (3,728 kW); Electro- Motive EMD-20-710G7-T3 diesel engines	N/A
Persons on board	9	0

NTSB investigators worked closely with our counterparts from Coast Guard Marine Safety Detachment Vicksburg, Mississippi, throughout this investigation.

For more details about this accident, visit www.nts.gov and search for NTSB accident ID DCA19FM021.

Issued: February 27, 2020

The NTSB has authority to investigate and establish the probable cause of any major marine casualty or any marine casualty involving both public and nonpublic vessels under Title 49 *United States Code*, Section 1131(b)(1). This report is based on factual information either gathered by NTSB investigators or provided by the Coast Guard from its informal investigation of the accident.

The NTSB does not assign fault or blame for a marine casualty; rather, as specified by NTSB regulation, “[NTSB] 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 conducting investigations 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).