



National Transportation Safety Board

Marine Accident Brief

Allision of *Michael G Morris* Tow with Thebes Railroad Bridge

Accident no.	DCA16FM036
Vessel names	<i>Michael G Morris</i> and tow, consisting of 30 barges
Accident type	Allision
Location	Upper Mississippi River at mile marker 43.7; Thebes, Illinois, 37°13.0' N, 89°28.0' W
Date	April 6, 2016
Time	About 0343 central daylight time (coordinated universal time – 5 hours)
Injuries	None
Property damage	\$850,000 est.
Environmental damage	None
Weather	Visibility 9 miles, winds west-southwest at 13 mph, air temperature 54°F, drizzle
Waterway information	The US Army Corps of Engineers maintains the navigation channel at 9 feet deep in this section of the Upper Mississippi River. At the time of the accident, the current was moving at an estimated 3–4 mph.

On April 6, 2016, about 0343 local time, the towing vessel *Michael G Morris*, pushing 30 loaded grain barges, allided with the Thebes Railroad Bridge at mile marker (mm) 43.7 on the Upper Mississippi River in Thebes, Illinois. The vessel and the bridge sustained no damage, but all barges broke away and 16 of them incurred \$850,000 in estimated total damage. No pollution or injuries were reported.



Towing vessel *Michael G Morris* under way. (Photo courtesy of AEP)

* Unless otherwise noted, all miles in this report are statute miles.

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Accident Events

The 180-foot-long *Michael G Morris* had departed St. Louis, Missouri, and was downbound on the Mississippi River headed for Cairo, Illinois, when the accident occurred. The 30 loaded grain barges were arranged six across (widthwise side by side) and five deep (lengthwise one after the other). Each barge was 200 feet long and 35 feet wide. The entire tow (vessel and barges) was 1,180 feet long and 210 feet wide. (See diagram on page 5.)

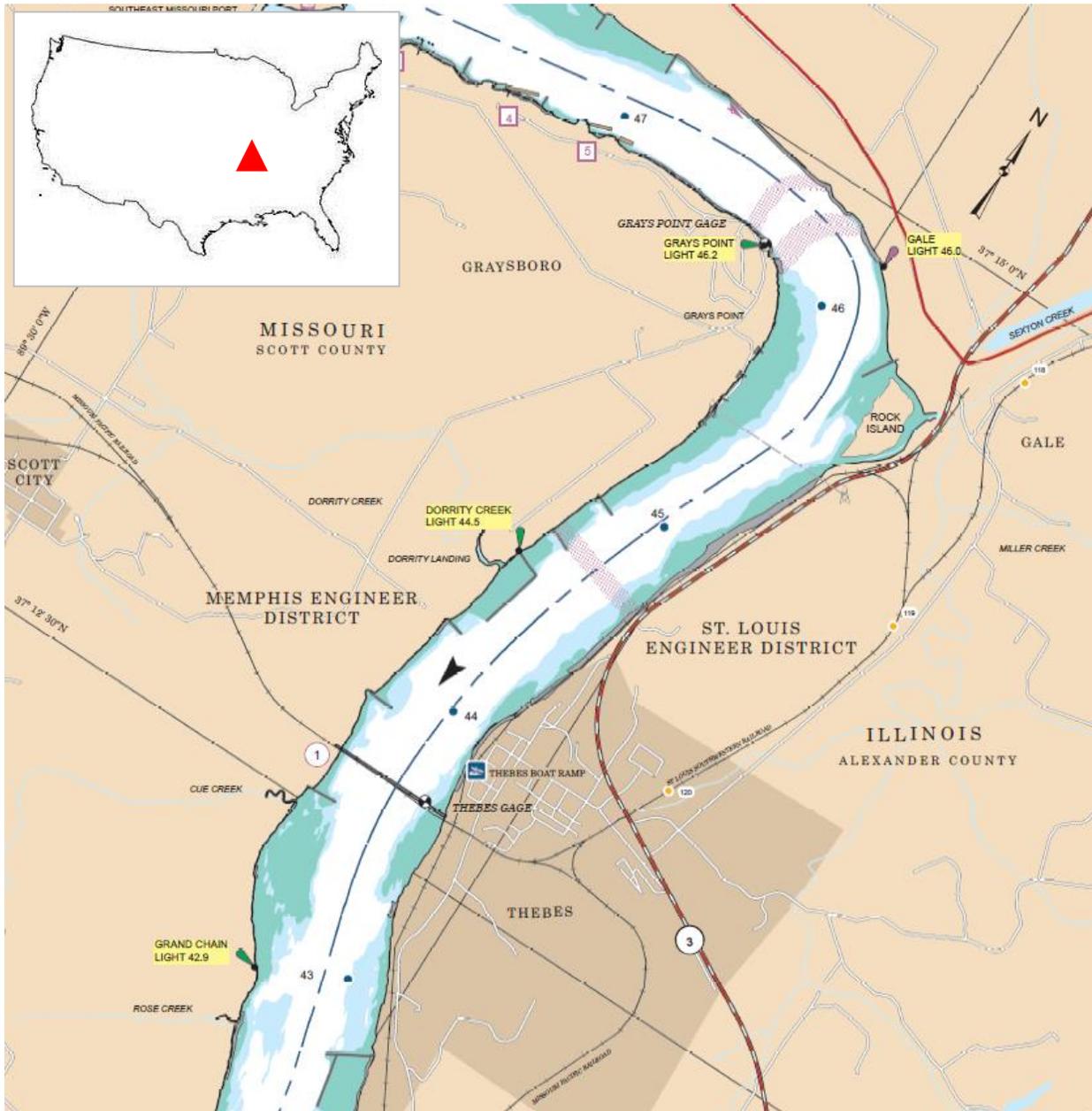
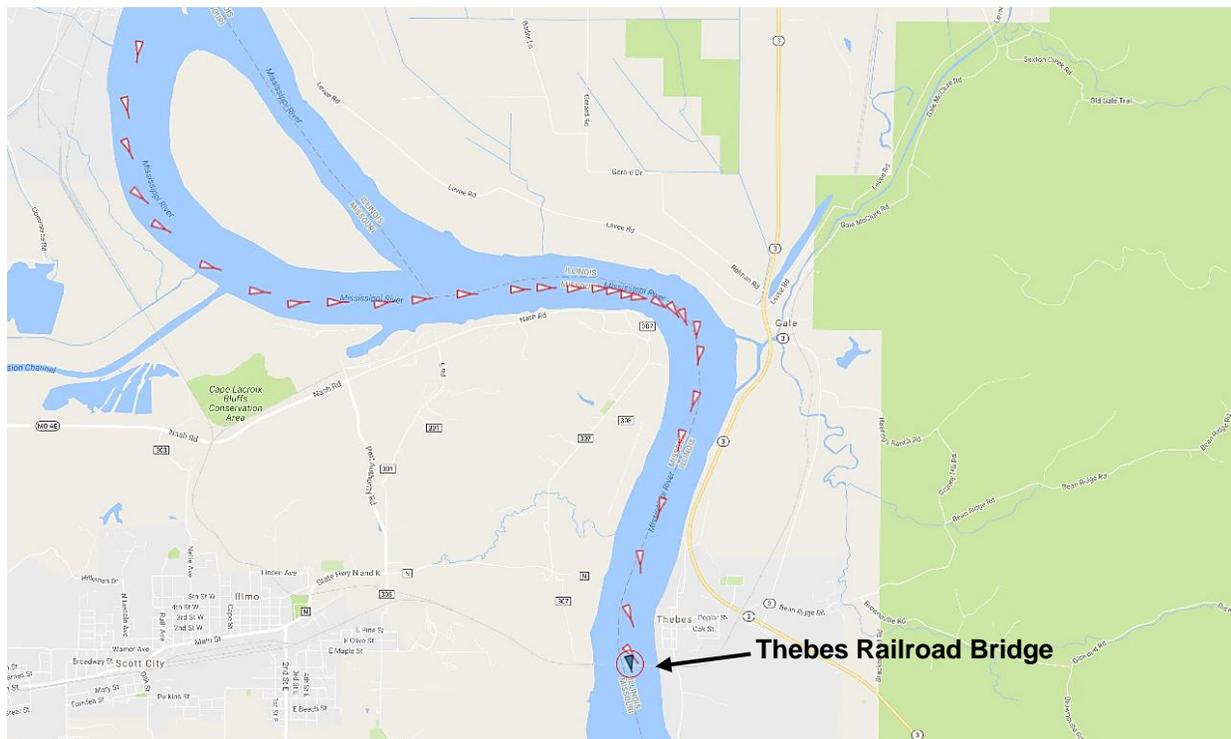


Chart of Upper Mississippi River in the accident area, including the Thebes Railroad Bridge. (Chart by US Army Corps of Engineers)

At 0312, about half an hour before the accident, the *Michael G Morris* operator (or “pilot” on inland/western river waterways) began to flank the vessel through the 113-degree bend at

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Gray's Point at mm 46 near Scott City, Missouri.¹ At 0332, when the vessel had completed the flank through the turn, it was on a course over ground of 191.7 degrees true and a heading of 199 degrees true at a speed of 8 miles per hour (mph) over ground, 1.7 miles from the bridge.

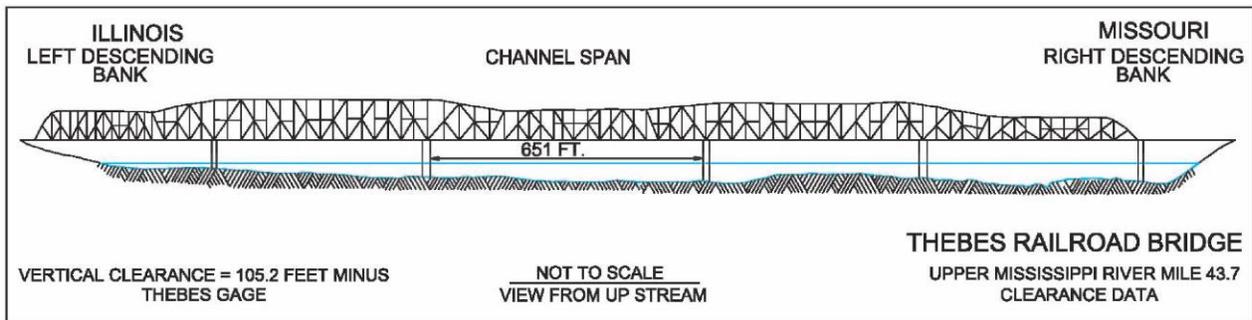


Positions of the *Michael G Morris* leading up to the accident, including the vessel's position when alliding with the bridge at 0343. (Image based on PortVision electronic data)

About 0336, with the vessel proceeding at a speed of 10.7 mph, the pilot, as intended, began to line up the bow of the tow with the left side bridge pier of the 651-foot-wide channel span, which he planned to steer through.

¹ 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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Thebes Railroad Bridge; screen shot courtesy of US Army Corps of Engineers.

The pilot told investigators that, as he approached the bridge, he tried to come right. However, the head of the tow did not swing right and instead continued to the left. AIS data showed that not only did the heading continue to come left, but so did the course over ground until the time of the allision at 0343. At that point, the third barge on the port side of the tow struck the left bridge pier. The tow broke apart, with some barges hitting the bridge piers. All 30 barges drifted downstream; 28 of them stranded between mm 44 and 31. Two sank, were removed, and were declared total losses of \$350,000 in estimated value. Fourteen other barges sustained hull insets and punctures; some took on water. Individual damage estimates for these 14 barges ranged from \$2,500 to \$55,000, totaling about \$500,000.



One of the two sunken barges at the left pier of the Thebes Railroad Bridge. (Photo by Coast Guard)

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Analysis

Even with a wide, 651-foot horizontal clearance, the Thebes Railroad Bridge is more difficult to transit than others because of the increased risk associated with the approach that includes two bends. The first bend at mm 46 is quite large, changing the course of the river 113 degrees from east to south. The second bend of 35 degrees occurs only 0.3 mile from the bridge. In addition, high water on the day of the accident, measuring 26.5 feet (flood stage occurs at 32 feet) at Cape Girardeau, Missouri, at mm 52.1, produced fast currents that increased the risk of allision while navigating a tow under the bridge. The Coast Guard's Waterways Action Plan, which contained information and risk mitigation measures to prevent accidents during periods of high water, cautioned mariners that they "may experience set while navigating Gray's Point and [the] channel span of the Thebes Railroad Bridge," and to navigate the area at "slowest safe speed." In 2003, the Coast Guard and American Waterways Bridge Allision Work Group noted the increased risk of allision at the Thebes Railroad Bridge, which was opened in 1905. The bridge ranked 47 out of 546 in a list of bridge allisions during a 10-year period (1992–2001). Ten allisions occurred at the Thebes Railroad Bridge during that period.

The *Michael G Morris* pilot told investigators that he had previously transited this portion of the Mississippi River but that this was his first time doing so navigating the *Michael G Morris*. He estimated the current at 3–4 mph and said the bow of the tow "hung up" in the slack water at and under the point on the left descending bank at Thebes. As he tried to come right, he eventually put the rudder hard to starboard, but the 1,180-foot-long tow's heading still continued to move left.

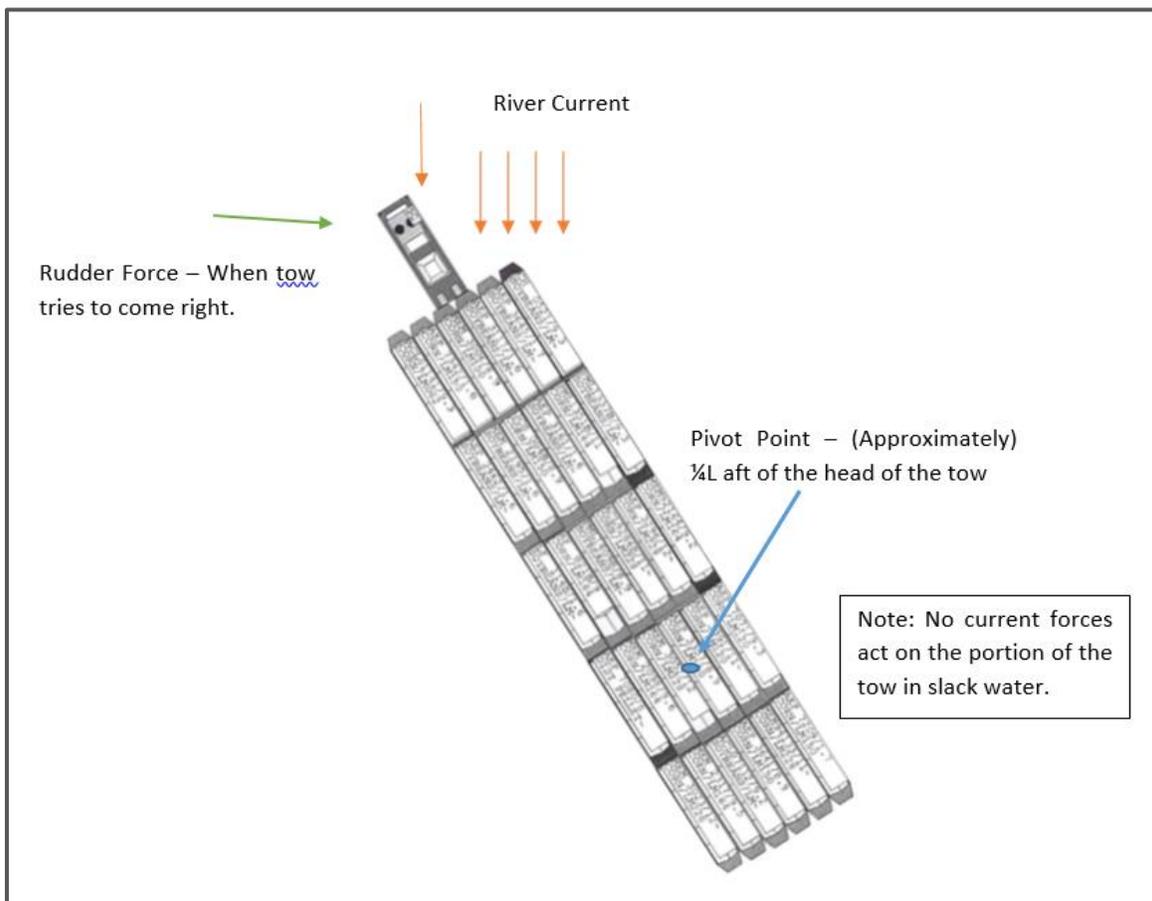


Diagram of the tow arrangement, including the rudder- and current forces, as described by the pilot, that would have acted on the tow leading up to the allision.

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In the scenario that the pilot described, the 3–4-mph current pushed on the port side of the *Michael G Morris* and on the after portion of the tow, while the forward barges of the tow experienced no effect of the current. The current acting on the after portion of the tow, with a force pivoting the vessel to the left, resisted the rudder force that the pilot applied at the stern of the *Michael G Morris* as he tried to pivot the vessel to the right.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the allision of the *Michael G Morris* tow with the Thebes Railroad Bridge was the pilot not correctly accounting for the river current in the bend just above the bridge, resulting in his late and insufficient use of rudder while making the turn.

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Vessel Particulars

Vessel	<i>Michael G Morris</i>
Owner/operator	ACBL River Operations LLC/American Commercial Lines LLC
Port of registry	St. Louis, Missouri
Flag	United States
Type	Towing vessel
Year built	1999
Official number (US)	1078466
IMO number	N/A
Classification Society	N/A
Construction	Steel
Length	170.1 ft (51.8 m)
Draft	9.75 ft (3 m)
Beam/width	48 ft (14.6 m)
Gross and/or ITC tonnage	1,091 gross tons
Engine power; manufacturer	Two 4,000-hp (2,983 kW) EMD engines
Persons on board	8

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

For more details about this accident, visit www.nts.gov and search for NTSB accident ID DCA16FM036.

Issued: June 30, 2017

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*, 1131. 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*, 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*, 1154(b)