



National Transportation Safety Board

Marine Accident Brief

Collision and Sinking of Towing Vessel *Todd Brown*

Accident no.	DCA17FM010
Vessel name	<i>Todd Brown</i>
Accident type	Collision and sinking
Location	Lower Mississippi River, mile marker 940, near Columbus, Kentucky 36°48.6' N, 89°08.6' W
Date	April 17, 2017
Time	1530 central daylight time (coordinated universal time – 5 hours)
Injuries	None reported
Property damage	\$1.5 million est.
Environmental damage	Approximately 100 gallons of diesel fuel (recovered during salvage operations)
Weather	Cloudy, winds north-northwest about 5 knots, air temperature 64°F
Waterway information	The accident occurred on the Lower Mississippi River about 20 miles south of the confluence with the Ohio River. At the time, the river gauge was about 36 feet (major flood stage) and the current flowing downstream was estimated at 8 mph (7 knots).

At about 1530 local time on April 17, 2017, while attempting to maneuver a string of barges from a barge fleet on the right descending bank of the Lower Mississippi River near mile marker (mm) 940, about 4 miles from Columbus, Kentucky, the uninspected towing vessel *Todd Brown* collided with the lead barges moored downriver and sank.¹ Before the sinking, all six crewmembers abandoned the vessel by climbing aboard the barges without reported injury. Approximately 100 gallons of diesel fuel were released during salvage operations but later recovered. Damage to the vessel was estimated at \$1.5 million.

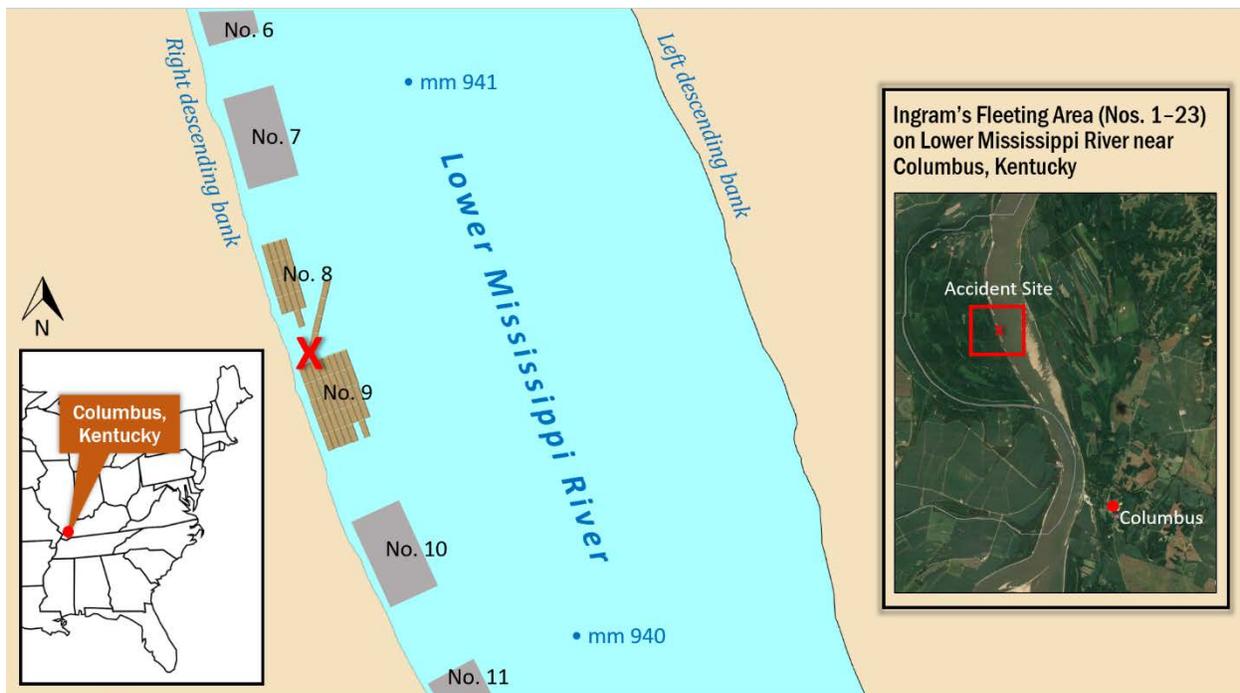


Todd Brown in May 2007. (Photo courtesy of Mark Haury)

¹ Unless otherwise noted, all miles in this report are statute miles.

Collision and Sinking of Towing Vessel *Todd Brown*

The *Todd Brown*—a 1,800-horsepower, twin-screw towboat—was built in 1977 as the *John Welch* by St. Louis Ship in St. Louis, Missouri. It was originally operated by Federal Barge Lines of St. Louis until December 1984, when it was sold to Midland Enterprises of Cincinnati, Ohio. In August 2003, the vessel was sold again, this time to Ingram Barge Company of Nashville, Tennessee, who later renamed it the *Todd Brown* in 2005. Based at the company's facility in Columbus, Kentucky, the *Todd Brown* was used as a fleet towboat on the Lower Mississippi River to move barges around the fleeting areas. These areas were geographic locations, each identified by a number, where a group of barges, or fleets, were moored and later assembled to comprise a tow. Ingram had 23 fleeting areas on the right descending bank (west side) of the Mississippi River near Columbus, Kentucky.²



Map of the accident area where the *Todd Brown* collided with moored barges and sank. The locations and dimensions of the fleets nearby are approximate. (Background from Google Earth Pro).

In April 2017, the Mississippi River was rising to a historically high level due to excessive runoff from melting snow and recent rainstorms. On April 17, the day of the accident, the gauge at Cairo, Illinois, measured at about 36 feet, almost 4 feet higher than normal, and was expected to crest to 48.5 feet. As a result of the rising river, the current had also increased, reaching an estimated 8 mph by the time the accident occurred. Due to the high-river level, the Coast Guard established an Incident Command—a team of representatives from multiple organizations associated with local river traffic, which included Ingram—to provide response efforts to flooded communities along the Mississippi River and issue tow-size restrictions for vessels in the area.

² The banks of the Western Rivers are referred to as *left* and *right* when traveling downstream because the rivers meander and can flow in any direction—south, east, west, and even north. Thus, when a section of the river flows from north to south, the east bank of the Mississippi River is referred to as the left bank and the west bank as the right bank. To avoid confusion, commercial river traffic often calls the left bank the *left descending bank* and the right bank the *right descending bank*.

Collision and Sinking of Towing Vessel *Todd Brown*

With the high water and increased current, debris such as tree trunks, limbs, and other accumulating litter collected from the shorelines and drifted downstream. A substantial amount of debris accumulated at the heads of the moored barge fleets due to the bends in the river. The barge fleets were secured by bridle and stern lines attached to large cement blocks buried in the ground on the river banks.

The accumulating debris led to an increased strain on the moorings, thus elevating the risk of the wires parting. In order to remove the debris, or “drift,” from the moored barges, fleet towboats such as the *Todd Brown* would perform “de-drifting” operations: maneuvered by one or more towboats, barges would be uncoupled from the remainder of the fleet and repositioned to allow the river current to flush the debris from their upstream end.



Accumulating debris (circled) under the rakes of fleeted barges.

At about 1330 on April 17, the *Todd Brown* and another Ingram towboat—the 74-foot long, 1,020-horsepower *Ot Adkins*—repositioned a string of four empty barges from the no. 8 fleet to the no. 6 fleet upriver, before returning to the no. 8 fleet near mm 940 on the right descending bank to remove the debris that had accumulated there. The crews on both towing vessels then planned to move another string of four empty barges, measuring about 800 feet long by 35 feet wide (each barge had a length of about 200 feet), into the river to flush, or de-drift, the accumulated debris from the head of the barge string. The fleet consisted of 20 barges, four units long by five wide.

Prior to 1500, to prepare for the operation, the crews doubled all the fore and aft couplings between the four barges. The pilot of the *Todd Brown* faced up (connected) his towboat to the aft end of the string, while the *Ot Adkins* was positioned along the starboard side of the lead barge. The pilot of the *Todd Brown* then began to maneuver his towboat to reposition the head of the barge string into the river. As the head of the barge string moved out into the river, a larger area of the barge string’s profile was exposed to an estimated 8-mph current. Despite having its engines at full ahead, the *Todd Brown*, along with the string of four barges, began moving astern.

Collision and Sinking of Towing Vessel *Todd Brown*

To reduce the astern motion of the barge string, the pilot of the *Todd Brown* requested that the crewmembers of the *Ot Adkins* attach a line from their vessel to one of the barges and push the string back toward the shoreline and away from the stronger current. However, as the current continued to overwhelm both towboats, the pilot directed a crewmember on board the *Todd Brown*

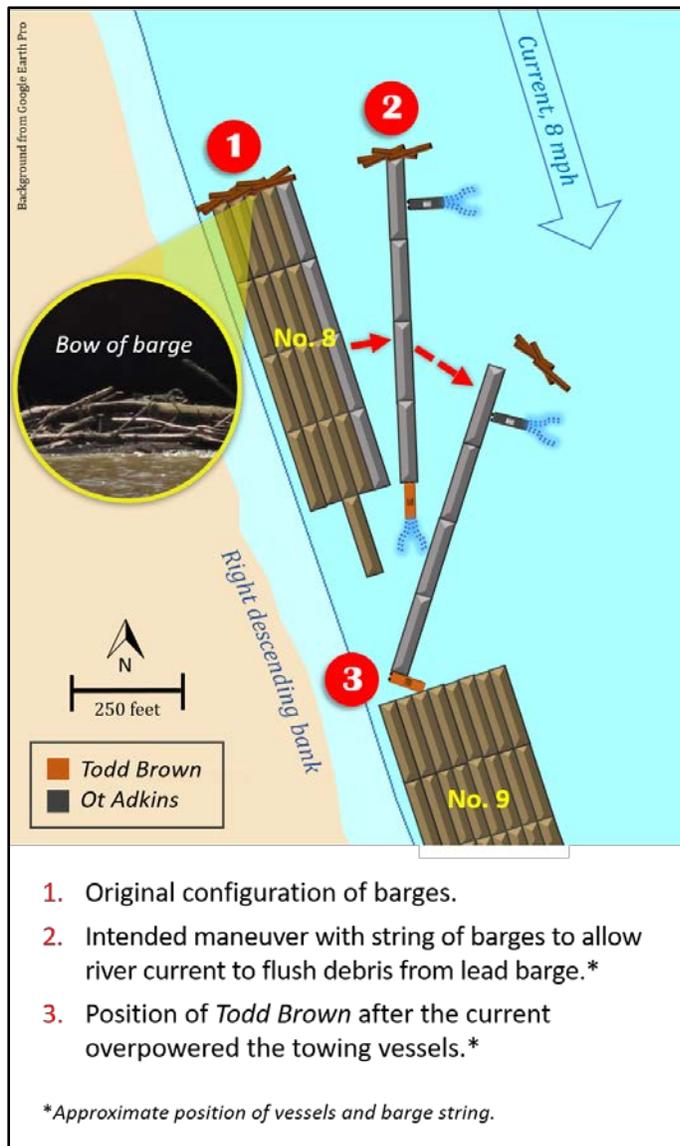
to unface (disconnect) their towboat from the barge string. Once it was unfaced, the pilot maneuvered his vessel to the port side of the drifting barge string, toward the more shallow west bank of the river. Consequently, the *Todd Brown* became trapped behind the moving string of barges and collided with the lead barges of the no. 9 fleet, about 250 feet downriver.

The barge string pinned the *Todd Brown*'s port side against the bow of one of the lead barges in the no. 9 fleet and the force of the river current pushed it under the barge's angled bow rake, causing the *Todd Brown* to list to starboard. After the pilot sounded the general alarm, the crew abandoned the vessel by climbing onto the moored barges. Swamped with water, the *Todd Brown* sank at about 1530 and came to rest in about 35 feet of water. The vessel was loaded with approximately 17,900 gallons of diesel fuel, along with 150 gallons of lube oil and 150 gallons of hydraulic fluid.

Five days later, on April 22, the *Todd Brown* was brought to the surface by a salvage team. A containment boom was deployed and captured approximately 100 gallons of diesel fuel that escaped from the vessel. After all the water was removed from interior

spaces, the vessel was refloated and drydocked for inspection. The hull was not damaged, but the wheelhouse structure was distorted, handrails and decks were bent, and all interior spaces were water-damaged, amounting to an estimated \$1.5 million in repairs. There was no damage to the *Ot Adkins* or to any of the barges in fleeting area nos. 8 and 9.

The crew of the *Todd Brown* were all tested for drugs and alcohol: all results were negative. The pilot provided his work/rest history, which indicated that he worked a consistent schedule of 6 hours on/6 hours off. According to the pilot, there were no reported equipment failures aboard the *Todd Brown*.



Collision and Sinking of Towing Vessel *Todd Brown*

The pilot had worked for Ingram for 17 years and was credentialed as master of towing vessels upon Western Rivers. Previously, he worked as a steersman from January 2011 to December 2012, and from then he was working as a fleet boat pilot until the time of the accident. While working as a pilot, he had been engaged in fleet operations during multiple periods of high-water and high-drift conditions. The captain, who also held the same credential as the pilot, was off watch and in bed at the time of the accident.



***Todd Brown*, listing to starboard, after striking the barges. (Photo by crewmember)**

Ingram did not have a safety management system (SMS), nor was one required. The company had high-water procedures for tying off barges in fleets, checking securing arrangements, and determining if vessels with greater horsepower would be required to stand by for assistance.

The only guidance related to de-drifting operations provided to investigators was a memo issued in response to an incident in 2016, when about 80 barges from 3 fleets broke away after being struck by a large pile of debris drifting downriver. The memo provided a standard operating procedure for de-drifting barge fleets with the following directives:

- keep the fleets “as thinned down as possible” to limit the fleet’s exposure to the current in areas where drift accumulated;
- “report and/or de-drift” large amounts of debris that accumulate on the heads of fleets;

Collision and Sinking of Towing Vessel *Todd Brown*

- “every attempt should be made to bring as much of [the accumulated debris] out as [operators] can into the river” and to de-drift “mid-stream”;
- advise all vessels in the area of the drift being released into the river; and
- place “shear fleets” (groups of barges positioned at an angle to the river current) throughout the fleeting area “as needed” to deflect as much drift back into the river.

Operators were also required to “utilize the high-water vessel to assist in holding large groups of barges” during operation. Ingram defined a high-water vessel as a standby vessel with greater horsepower, such as a line-haul vessel.³

In several high-water safety advisories for the Lower Mississippi River, the Coast Guard recommended that tow operators use towing vessels with 240 horsepower per barge when maneuvering barges. This horsepower guidance was also noted in a waterways action plan for the Mississippi River issued by Coast Guard Sector Ohio Valley in 2017 to reduce marine casualties during low- and high-water situations.⁴ Accordingly, the string of four barges would have required about 1,000 horsepower to be maneuvered. The horsepower for both the *Todd Brown* (1,800 hp) and the *Ot Adkins* (1,020 hp) exceeded the minimum amount suggested and had been sufficient for repositioning the previous string of barges upriver. However, their horsepower was insufficient for overcoming the river conditions when the port side of the barge string became exposed to the 8-mph current. Once realizing that the *Todd Brown* was being overpowered, the pilot moved the tug toward shore, rather than the center of the river, and became trapped between the barges and a downstream fleeting area.



***Todd Brown* after being recovered to the surface on April 22. (Photo by Coast Guard)**

³ US Coast Guard, *Towing Vessel Bridging Program (TVBP): Towing Vessel Outreach, Orientation and Indoctrination Workbook* (May 26, 2009).

Line-haul vessels are large vessels whose horsepower range from 1,800 to 14,000. They usually have conventional twin-screw propulsion systems and a towing winch equipped with a tow wire for long-haul towing of various cargo barges, ships, and oil rigs along the coasts and in the open ocean.

⁴ Coast Guard Sector Ohio Valley is the operational unit overseeing the Marine Safety Unit charged with investigating this accident.

Collision and Sinking of Towing Vessel *Todd Brown*

Probable Cause

The National Transportation Safety Board determines that the probable cause of the collision and sinking of the uninspected towing vessel *Todd Brown* was the pilot's underestimation of the effect of the river current on the barge string being maneuvered during a de-drifting operation.

Collision and Sinking of Towing Vessel *Todd Brown*

Vessel Particulars

Vessel	<i>Todd Brown</i>
Owner/operator	Ingram Barge Company, LLC
Port of registry	Cincinnati, Ohio
Flag	United States
Type	Towing vessel
Year built	1977
Official number (US)	587214
IMO number	N/A
Construction	Steel
Length	74.5 ft (22.7 m)
Draft	9.7 ft (3 m)
Beam/width	28 ft (8.5 m)
Gross tonnage	189
Engine power; manufacturer	2 x 900 hp (671 kW), QSK-38 Cummins; total 1,800 hp (1,342 kW)
Persons on board	6

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

For more details about this accident, visit www.ntsb.gov and search for NTSB accident ID DCA17FM010.

Issued: May 10, 2018

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).