



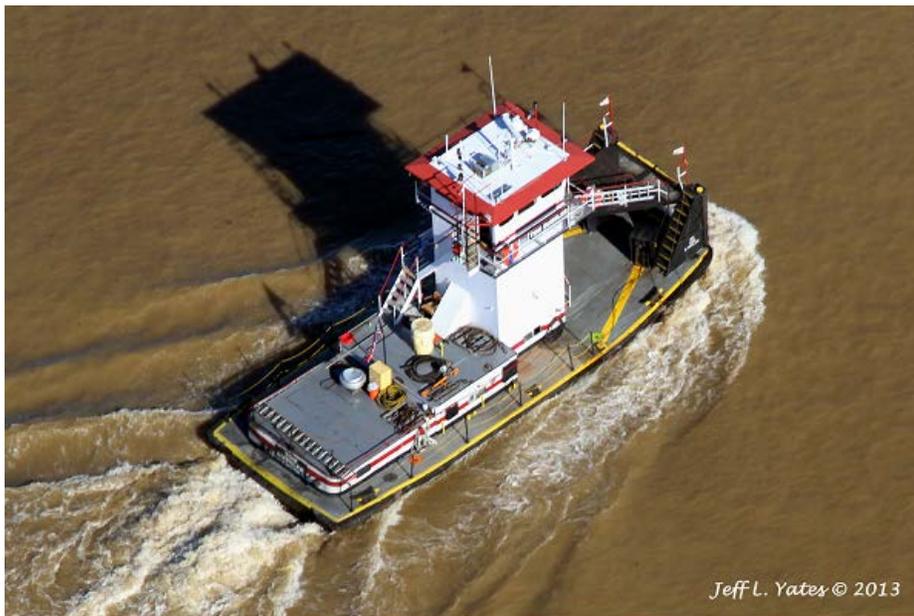
National Transportation Safety Board

Marine Accident Brief

Flooding and Sinking of Towing Vessel *Tom Bussler*

Accident type	Flooding	No. DCA19FM013
Vessel name	<i>Tom Bussler</i>	
Location	Tennessee River, mile 15, near Calvert City, Kentucky 37°03.62' N, 088°22.63' W	
Date	January 7, 2019	
Time	2030 central standard time (coordinated universal time – 6 hours)	
Injuries	2 minor	
Property damage	\$297,368 est.	
Environmental damage	Approx. 25 gallons diesel released and oil sheen on water	
Weather	Visibility 10 miles, cloudy skies, winds southwest 5 knots, gusts 10 knots; air temperature 60°F, water temperature about 45°F, sunset 1653, evening twilight ended 1721	
Waterway information	The Tennessee River at mile 21.1 (near the Interstate 24 bridge) was at watch phase with a strong current of +4.6 miles per hour (mph). The channel had a depth about 41.5 feet.	

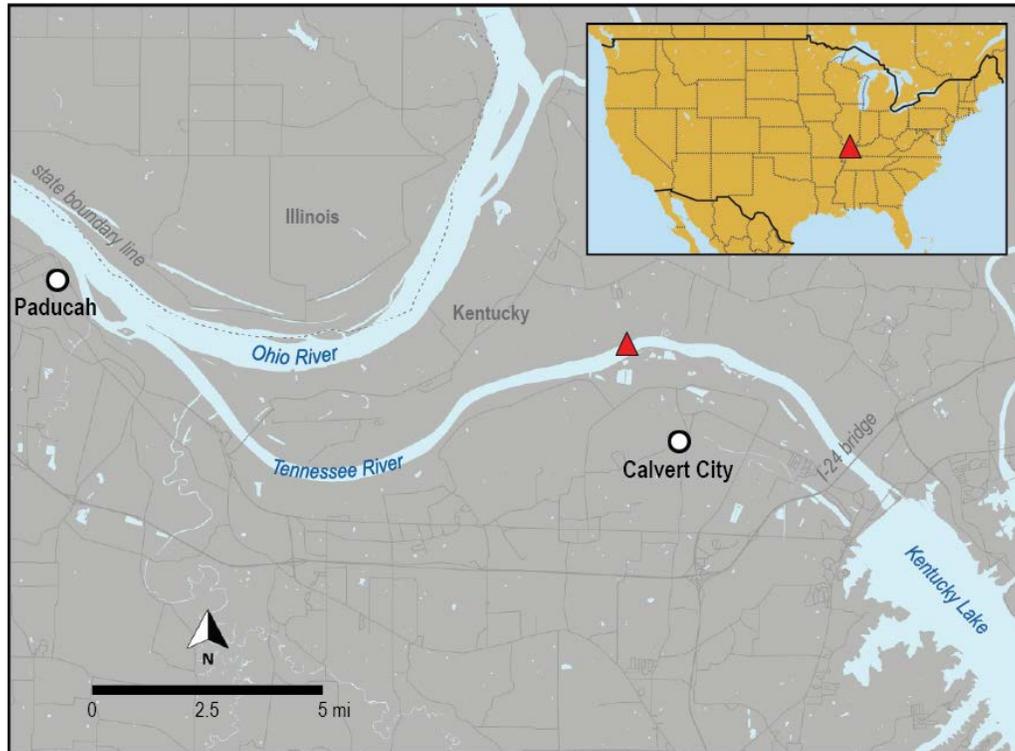
On January 7, 2019, about 2030 local time, the towing vessel *Tom Bussler* was transiting in light boat condition (no tow) upbound on the Tennessee River at mile 15 near Calvert City, Kentucky, when the vessel began flooding and quickly sank in the channel.¹ Both crewmembers aboard abandoned the vessel into the river and were rescued by a Good Samaritan vessel. No pollution or injuries were reported. Damage to the vessel was estimated at \$297,368, and it was scrapped.



***Tom Bussler* under way before the accident. (Source: ©Photo by Jeff L. Yates)**

¹ All miles in this report are statute miles.

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Area where the *Tom Bussler* flooded and sank, as indicated by the red triangle. (Background source: Google Maps)

Background

The 58-foot-long *Tom Bussler* was a towing vessel built in 1968. The vessel had twin main diesel engines, propellers, and rudders. The vessel was owned by McGinnis Equipment Company, Inc. and operated by National Maintenance & Repair of Kentucky. In 2007, the vessel was repowered, increasing its combined horsepower from 760 to 1,000. The vessel was used as a fleet towboat to move barges and to build and take apart tows in fleeting areas.² The vessel operated continuously with two crewmembers (a captain and a deckhand) for each 12-hour shift.

The Tennessee River originates in Knoxville, Tennessee, at mile 652.1 and flows into the Ohio River at Paducah, Kentucky (mile 934.5 on the Ohio River). The Tennessee River has a projected navigable channel depth of 9 feet. At the time of the accident, there were no US Coast Guard restrictions on the Tennessee River at the accident location. The river around the Interstate 24 bridge (about 5 miles upriver of the accident) was at watch phase (per the Coast Guard Sector Ohio Valley Waterways Action Plan), with an estimated 4.6-mph current. The navigable channel where the vessel sank at mile 15 was about 42 feet deep and 650 feet wide.

Accident Events

On January 7, 2019, at 1700, the captain and deckhand reported aboard the *Tom Bussler*, located on the left descending bank at mile 4 of the Tennessee River, to begin their 12-hour shift.³

² A fleeting area is a geographic location where a group of barges, or fleets, are moored and later assembled to comprise a tow.

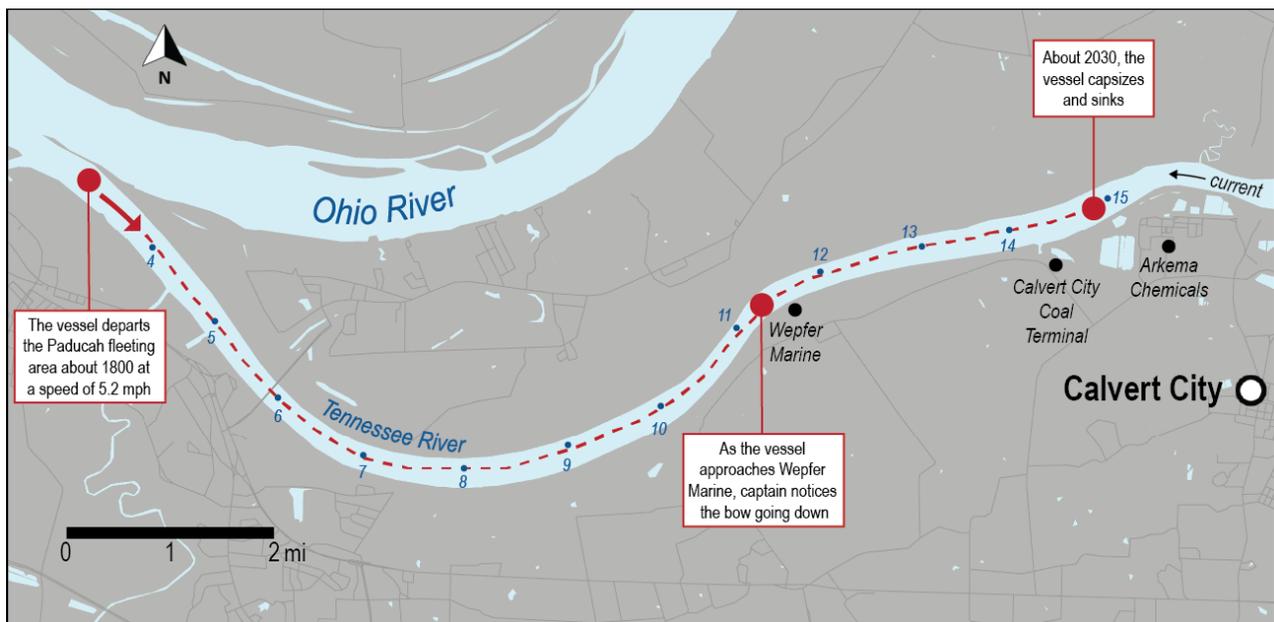
³ The inland towing industry refers to the shorelines of western rivers as the left and right banks when traveling (facing) downstream. The left bank is called the *left descending bank*, and the right bank is called the *right descending bank*.

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The deckhand completed his daily check of the engines, generators, day tanks, shaft, and voids, which were all satisfactory, and the vessel got underway at 1730 to work in the adjacent Paducah River Service Fleeting Area. At 1800, the vessel departed the area in light boat condition in the dark (sunset was at 1653), transiting at a speed over ground of 5.2 mph upriver (about 9.8 mph through water) to Arkema Chemicals at mile 16.2 to pick up an empty barge. The captain was in the wheelhouse, and the deckhand was in the crewlocker below the wheelhouse. The captain described the weather as “a little bit windy, but not bad—good weather.”

As the captain approached Wepfer Marine of Calvert City at mile 11, he noticed the bow of the boat going down, and he reduced the vessel’s speed to 1.5 mph. About 2021, as the vessel approached the Calvert City Coal dock at mile 14, the captain noticed the bow of the boat going down further. He slowed the vessel’s speed further by bringing the engines to nearly idle and instructed the deckhand to go to the bow of the boat and check the voids. The deckhand went to the bow, discovered it was “underwater,” and ran to the wheelhouse to tell the captain to steer toward the river bank.

About 2025, as the captain turned toward the left descending bank, the vessel began to list to starboard. The deckhand stated that he grabbed his lifejacket in the crewlocker, and as he was running up the ladder to the wheelhouse, the generator shut down, and the vessel lost all power. The deckhand escaped the vessel through the starboard door of the wheelhouse. The captain grabbed his life jacket but was only able to get one arm through before water began to fill the wheelhouse. He ran to the wheelhouse’s starboard door and escaped just as the *Tom Bussler* capsized to starboard and sank, bow first, into the navigational channel about 2030. The captain was not able to send out a mayday call before the *Tom Bussler* sank. The captain surfaced about 20 feet away from the deckhand, and they swam toward the nearby Calvert City Coal Dock.



Trackline of the *Tom Bussler* as it departed the Paducah area en route to Arkema Chemicals. (Background source: Google Maps)

Unable to reach the coal dock, both men were in the river (45°F) about 20–25 minutes before a passing Good Samaritan vessel, the Wepfer Marine fleet towboat *George Leavell*, located

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and recovered them and took them to the Calvert City Landing, where they were transported to a hospital in Paducah. The captain was treated for mild hypothermia, and the deckhand was treated for aspiration (inhalation of water) and cold exposure (both crewmembers were discharged from the hospital the following day). While in the hospital, samples were taken from both crewmembers for postaccident toxicological testing, and all alcohol and drug tests were negative.

About 2038, Coast Guard Sector Ohio Valley received a phone call from the Good Samaritan vessel's company reporting the accident, and a 29-foot response boat from Marine Safety Unit Paducah was launched to the scene. The Coast Guard closed the section of the river to search for the sunken vessel, and the US Army Corps of Engineers ceased locking operations at the Kentucky Dam located upriver at mile 22.4.

On January 9 at 0740, the wreck was located resting upright near mile 15 of the Tennessee River, about 500 feet off the left descending bank and about 100 feet inside the red buoy line of the navigable channel. About 1225, the Coast Guard marked the wreck with a hazard buoy and opened this section of the river to one-way traffic, and the Corps of Engineers opened the Kentucky Lock for one-way locking operations. Due to hazardous river conditions, the *Tom Bussler* could not be salvaged until January 18, and about 1930, after the vessel was raised, dewatered, and towed away from the scene, river and lock restrictions ceased.

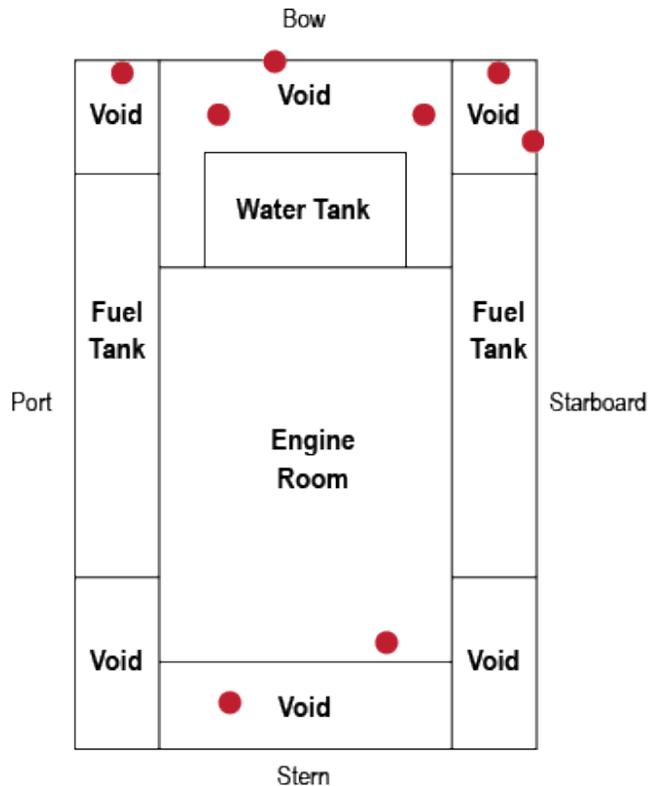
Additional Information

On January 19 the vessel was drydocked, and a marine surveyor inspected the vessel for damages and noted several fractures at multiple points in the hull that appeared to "pre-exist the incident." The upper 12 inches of the port bow corner plating contained an approximate total of 30 inches of fractures, and the starboard bow corner plating contained an 18-inch fracture, all open to a width of 0.25 inch. On the inboard sides of both the port and starboard towknees, the forward extreme of the bow deck plating of each contained a 12-inch transfer fracture open to 0.25 inch. There were also fractures at the base of the headlog plating just starboard of centerline, in the hull bottom plating at a point adjacent to the inboard side of the starboard inboard fair water angle, and in the hull bottom plating inboard from the inboard leg of the port strut. The surveyor also noted that "the lower [5 feet] of the shredded tire bumper on the starboard towknee was adrift and partially missing." The estimated cost to repair the vessel was \$297,368, and the company decided to scrap the vessel.

The captain was 62 years old and had held a master of towing vessels upon Western Rivers credential for 32 years. He had worked for the company for 2 years and had 42 years experience in the maritime industry. The deckhand had worked for the company for 3 years and had 8 years experience in the maritime industry. Both crewmembers worked rotating, 12-hour shifts: 1700–0500 (nights) for seven days, off for three days, 0500–1700 (days) for seven days, then off for three days. Both were on the third of seven night shifts.

Both the captain and deckhand stated that the bow centerline void had a pre-existing crack slightly above the waterline. The vessel was equipped with two portable sump pumps: one was placed at the bow to dewater the forward voids, and a second pump was placed on the stern to dewater the aft voids. Three voids (centerline forward, port stern and starboard stern) were pumped out daily. Both electric pumps were capable of pumping 43 gallons per minute. They were operated by placing them through a main deck hatch to the void.

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Simplified layout of the *Tom Bussler's* voids and fuel tanks. Pre-existing damage is marked with red circles.

Under the company's safety management system (SMS) for vessel maintenance, the port engineer was responsible for developing, enacting, and maintaining a preventative maintenance program for the vessel. The SMS required the captain to report any problems with the vessel to the port engineer or the harbor manager, but any maintenance work that would result in the "vessel's maneuverability being impaired" required prior approval to be obtained from the company's upper management, who would "evaluate the problem to determine if it is critical or non-critical and appropriate corrective action." The SMS also stressed that "if such work is unavoidable, every possible effort should be made to minimize vessel downtime; and routine maintenance or inspections should be planned to avoid unnecessary delays."

The vessel's last drydock was in January 2018, but there were no repairs to the hull at that time. The vessel's April 2018 maintenance log noted that the bow and stern voids were pumped dry and checked for leaks, and none were found. The end-of-the-year repair summary in December 2018 did not list any hull repairs completed for the vessel. However, the repair summary listed 10 maintenance issues related to the hull that the crew reported, which were not completed during the year. According to the report, the "bow of [the] boat takes on water, [which] goes into bow tank plus through eng [sic] room wall over electrical boxes and wiring." Additionally, "3 of the hatches are leaking and need to be pumped daily; 3 of the voids have leaks and need patched; stern on both stab [sic] and port sides are leaking."

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Pre-existing damage on the *Tom Bussler*. Left: severely corroded deck on the bow inboard of the port towknee. Right: corroded hole in the hull from within the bow void.

Analysis

Based on the numerous cracks in the *Tom Bussler*'s hull found during the postaccident survey, and the documented reports from the crew of water leaking into voids, investigators attempted to determine how long the watertight integrity issues had existed and what actions, if any, had been taken to mitigate them. The vessel had last been drydocked in January 2018, about a year before the accident. No hull repairs related to watertight integrity were scheduled or completed. Throughout 2018, multiple issues with the hull were reported by crewmembers. However, attempts to find the leaks were unsuccessful, and the reported issues were not resolved. Instead, portable pumps were used to control the water ingress. The postaccident survey showed seven pre-existing hull fractures that compromised the integrity of the bow voids, the centerline aft void, and the engine room.

When the vessel was pushing a barge ahead, its bow was protected from the bow wave by the barge ahead, and the pre-existing fractures in the hull therefore remained above the effective waterline. However, at the time of the accident, the vessel was under way in light boat condition, without a barge to deflect water, and the bow therefore was subject to the water build up as it moved through the river.

Intermittent flooding of the bow voids likely began as water from the bow wave entered fractures in the forward part of the hull. As the vessel's forward draft increased (from the flooding), fractures in the hull near the bow were submerged, allowing water to enter into the voids at a higher rate. Additionally, water that went over the bow and onto the main deck flooded the bow voids through fractures and leaking hatches, until the vessel lost stability, capsized, and sank, bow first.

Although the crew knew about and reported several hull leaks to management in the months prior to the accident, the lack of hull repair evidence and daily pumping of the towboat's voids indicated that management did not address issues with the vessel's watertight integrity in a timely manner. The company's SMS required senior management to evaluate and determine if reported problems were critical or non-critical and approve and coordinate any maintenance that

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impaired a vessel's maneuverability. The lack of action by the operating company to repair these several known hull deficiencies in a timely manner, once identified by the vessel's crew, was counter to the guidance outlined in their SMS, and was directly related to the flooding.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the flooding and sinking of the tugboat *Tom Bussler* was the company's lack of an effective hull maintenance and repair program, which resulted in flooding into the bow voids and engine room through fractures in the hull.

Effective Hull Inspection and Maintenance

To protect vessels and the environment, it is good marine practice for owners to conduct regular oversight and maintenance of hulls, including between drydock periods. Regardless of inspection requirements, owners are obligated to ensure vessels are properly maintained, equipped, and operated in a safe condition. Issues with watertight integrity and wastage should be addressed immediately.

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Vessel Particulars

Vessel	<i>Tom Bussler</i>
Owner/operator	McGinnis Equipment Company, Inc. / National Maintenance & Repair of Kentucky
Port of registry	South Point, Ohio
Flag	United States
Type	Towing vessel (push ahead)
Year built	1968
Official number (US)	522756
IMO number	Not applicable
Classification society	Not applicable
Construction	Steel
Length	58 ft (17.7 m)
Draft	5.5 ft (1.7 m)
Beam/width	22 ft (6.7 m)
Tonnage	75 GRT
Engine power; manufacturer	2 x 500 hp (373 kW) Cummins KTA19-M1 diesel engines
Persons on board	2

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.nts.gov and search for NTSB accident ID DCA19FM013.

Issued: February 5, 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).
