



National Transportation Safety Board

Marine Accident Brief

Collision Between *Miss Dixie* Tow and *D. & R. Boney* Tow

Accident type	Collision	No. DCA19FM017
Vessel names	<i>Miss Dixie</i> , <i>D. & R. Boney</i> , and barges <i>AEP 7235</i> , <i>005024</i> , <i>005028</i> , <i>005492</i> , and <i>005495</i>	
Location	Lower Mississippi River, Mile 104, New Orleans, Louisiana 29°56.91' N, 90°8.44' W	
Date	February 13, 2019	
Time	1917 central standard time (coordinated universal time – 6 hours)	
Injuries	None	
Property damage	\$294,530 for barges <i>AEP 7235</i> , <i>005024</i> , <i>005028</i> , <i>005495</i>	
Environmental damage	None	
Weather	Visibility 15 miles, clear, winds from the south at 5 miles per hour (mph), air temperature 51°F	
Waterway information	Carrollton Bend at mile 104 near Nine Mile Point in the Lower Mississippi River, approximately 2 miles downriver from Huey P. Long Bridge. ¹ Current estimated at 4–5 mph. The Carrollton river gage was 13.6 feet.	

At 1917 local time on February 13, 2019, the towing vessel *Miss Dixie* was transiting downbound with a crew of four and pushing five barges on the Lower Mississippi River near New Orleans, Louisiana, when it collided with the upbound towing vessel *D. & R. Boney*, which was pushing nine barges. Several barges broke loose from their tows and were subsequently gathered up by the crews of the towing vessels. No injuries or pollution were reported. The cost of damages to four barges was \$294,530.



The towing vessel *Miss Dixie* docked in New Orleans after the accident.

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

Collision Between *Miss Dixie* Tow and *D. & R. Boney* Tow



Location of the collision between the tows of *Miss Dixie* and *D. & R. Boney*. (Background source: Google Maps)

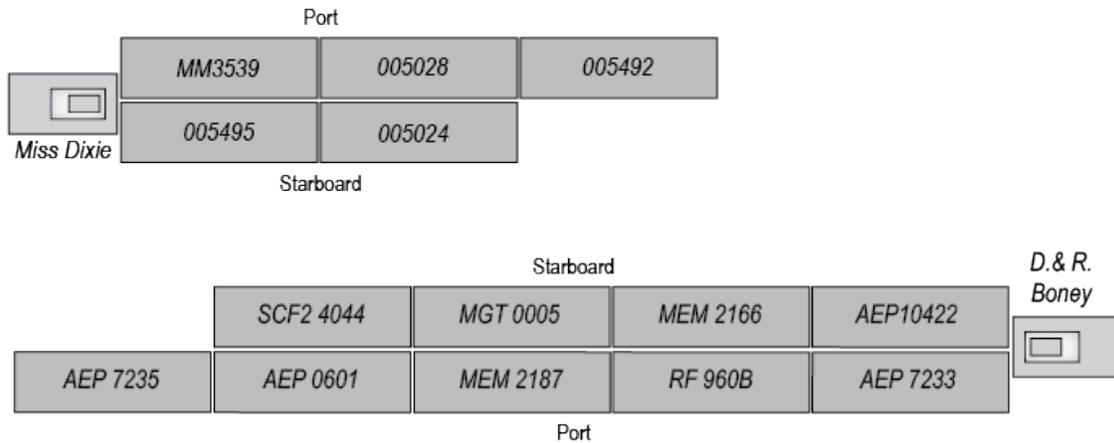
Background

The *Miss Dixie*, a twin-propeller towboat built in 1961, was owned by several companies before being acquired by JRC Marine in 2018. The vessel was equipped with two 1,200-horsepower diesel engines. The *D. & R. Boney* was a twin-propeller towboat built in 1976 that was owned and operated by several companies before being purchased by American Commercial Barge Lines in 2015. The vessel was equipped with two 2,800-horsepower diesel engines.

Accident Events

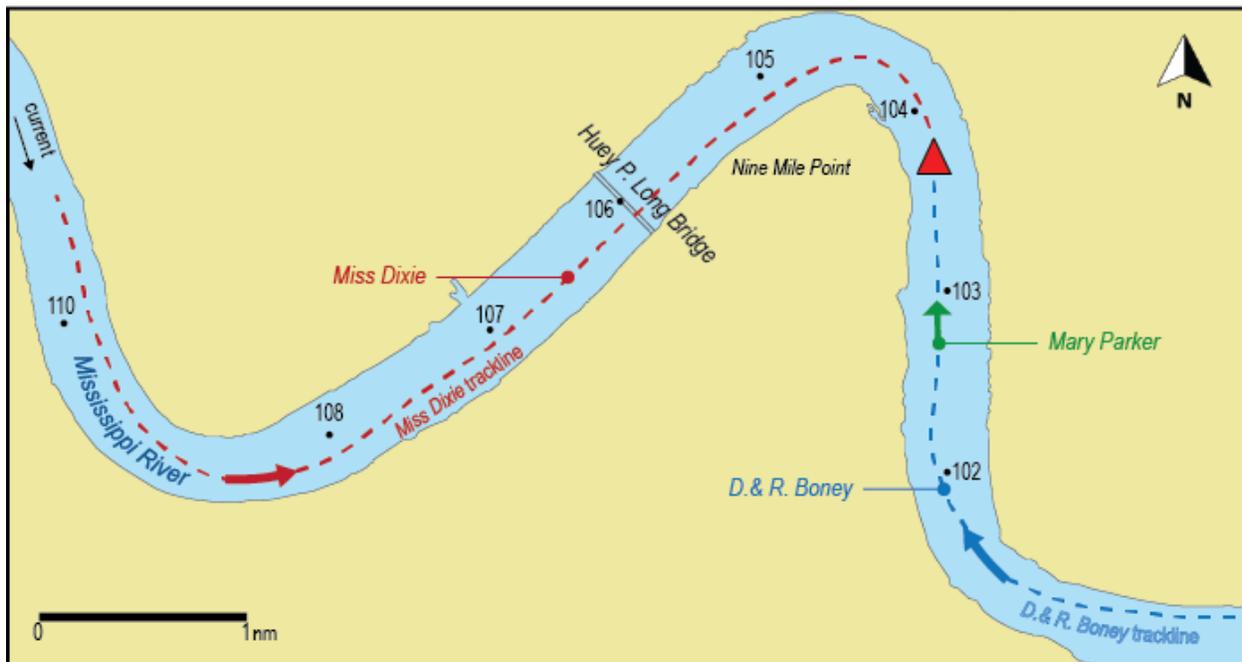
On February 13, the *Miss Dixie*, with a crew of four consisting of a captain, a relief captain, and two deckhands, departed Baton Rouge, Louisiana, on the Lower Mississippi River, en route to New Orleans to deliver five barges loaded with crushed rock. The tow was three barges long on the port side and two barges long on the starboard side. The *D. & R. Boney*, with a crew of eight, departed a fleeting area near Poydras, Louisiana, at mile 82 and was proceeding northbound with nine barges loaded with fertilizer, aluminum bars, and diesel fuel, en route to a facility near Harahan, Louisiana, at mile 107, to offload the barges. The tow was five barges long on the port side and four long on the starboard side.

Collision Between *Miss Dixie* Tow and *D. & R. Boney* Tow



Simplified towing arrangements of the *Miss Dixie* and the *D. & R. Boney* on the evening of the accident (not to scale).

Initially, the *Miss Dixie*'s downbound transit proceeded as expected; no issues with any machinery or equipment were reported. The captain came on watch at 1800, and the vessel continued down the river, meeting and passing several vessels and maneuvering through several turns. The captain was in communication with other vessels via VHF radio to make meeting and passing arrangements. He stated that in this area, it was "standard procedure" to meet "on the 2 whistles," meaning that the vessels would pass each other starboard side to starboard side. On the day of the accident, the captain of the *Miss Dixie* estimated that the following current was running about 4–5 miles per hour (mph), which the captain considered normal, and that the southerly winds were light, about 5 mph. The river gage was 13.6 feet on the day of the accident, which the captain considered normal height for this time of year.

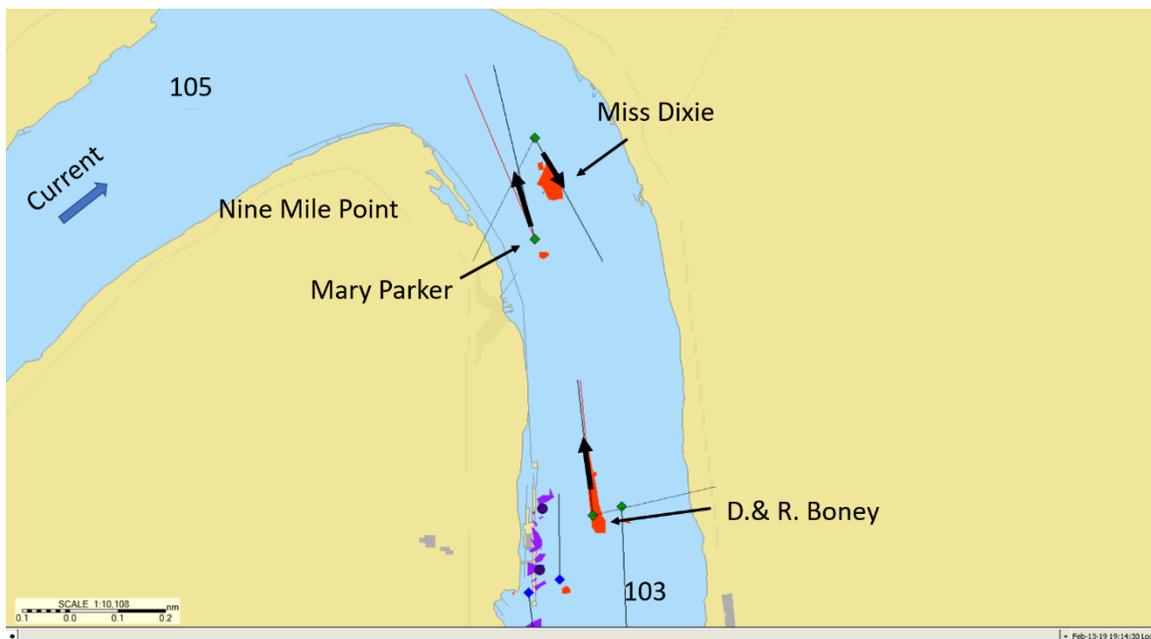


Location of the *Miss Dixie*, *D. & R. Boney*, and *Mary Parker* at 1900 and approximate tracklines of the *Miss Dixie* and the *D. & R. Boney*, with the accident location marked with a red triangle. (Source: US Coast Guard Vessel Traffic Service [VTS])

Collision Between *Miss Dixie* Tow and *D. & R. Boney* Tow

At 1902, the *Miss Dixie* passed under the Huey Long Bridge at 10 mph. About 1912, the vessel was maneuvering around a sharp turn between mile 105 and 104, near Nine Mile Point, where the current created an eddy around the bend, which pushed the bow of the *Miss Dixie*'s tow to the starboard side, and the vessel's speed dropped to about 6 mph. The *D. & R. Boney*'s captain described the eddy as a "whirlpool in the water caused by water wrapping around a point in the river" that would "really affect your maneuvering." The *Miss Dixie* was lined up to meet two northbound tows: the *Mary Parker* and the *D. & R. Boney*. The *Miss Dixie*'s captain had arranged to meet the *Mary Parker* starboard to starboard but had not communicated with the *D. & R. Boney*.

At 1915, after passing the *Mary Parker* near mile 104, the *Miss Dixie*'s captain noticed that the vessel was not responding to his steering and propulsion commands and he was unable to execute the sharp turn as expected. About this time, a deckhand saw smoke in the engine room and reported that there was a fire in the engine room in the area of the port clutch. The captain rang the general alarm, contacted the *D. & R. Boney*, and requested to meet the upbound vessel on "the one whistle," meaning that the vessels would pass each other port side to port side. The captain of the *D. & R. Boney* repeated the request and said, "it don't look good for that," and, "I sure wish you'd go for the two, but all right, I'll shoot her over." Five seconds later, the *D. & R. Boney*'s captain said that he was going to stop his vessel because the vessels would collide if they attempted to meet port side to port side. Fifteen seconds later, the *D. & R. Boney*'s captain took evasive action and broadcasted that he was "backing like hell" (meaning his engines were at maximum astern). About this time, the deckhands aboard the *Miss Dixie* returned to the engine room with a fire extinguisher and searched for the source of the fire. After finding no flames, the deckhands ventilated the space to clear the smoke by opening the engine room doors and then vacated the space. None of the crew reported hearing any fire or smoke alarms during the incident.



Location of the *Miss Dixie* and *D. & R. Boney* at 1914:30. (Coast Guard VTS)

At 1917, the captain of the *Miss Dixie* broadcasted over VHF radio that he had "lost an engine," and about 30 seconds afterwards, the lead barge in the *Miss Dixie*'s tow collided with the lead barge of the *D. & R. Boney*'s tow, bringing the tows to a stop, breaking securing wires, and releasing several barges adrift into the river. Shortly afterwards, the *Miss Dixie*'s captain

Collision Between *Miss Dixie* Tow and *D. & R. Boney* Tow

announced over VHF that there was a fire in the engine room. Immediately after the collision, the Coast Guard VTS contacted nearby vessels to assist and subsequently closed the river at 1922 between miles 101 and 106. Shortly afterwards, the deckhand reported to the captain that there was no fire in the engine room, and the port clutch had “burned up.”



Left: The AEP 7235 laying across the 005492 after the collision. Right: Damage to port bow of the AEP 7235.

Four barges were damaged in the collision. As a result of the impact, the bow of *Miss Dixie*'s lead barge, 005492, was pinned under the damaged rake of the *D. & R. Boney*'s lead barge, AEP 7235 (the 005492 was dented, but not repaired). The hull of AEP 7235 was breached, creating a 20-by-20-foot hole in the bow void compartment, which resulted in flooding. Damage to three other barges in the *Miss Dixie*'s tow consisted of several areas of inset plating, framing, and side shell.

Additional Information

After the collision, the crew of the *Miss Dixie* determined that the port clutch was the source of the smoke. The propulsion system was arranged such that each output shaft of the main engines was connected to their respective propellers via a Lufkin LST reduction gear set. The directional commands (ahead, neutral, astern) from the wheelhouse to the gear sets were controlled through air-actuated marine clutches. Each clutch consisted of two 35-inch-diameter steel rings (one for ahead and one for astern) lined with a tire-like neoprene rubber actuating tube that expanded radially inward when air pressure was applied. The constricting tube forced friction shoe assemblies against an outer cylindrical drum surface on the reduction gear input shaft transmitting engine torque to the propeller shaft. A directional valve delivered compressed air to the respective rings for ahead or astern operation. As actuating air was released, the shoe assemblies retracted, disengaging the propeller shaft from the engine output shaft. If there was a failure of the clutch components or actuating tubes, the rotating components may not have rotated at the same speeds, resulting in friction, increased heat, and overheating of friction pads or rubber tubes. Additionally, the output speed of the propeller shaft would not be consistent with the speed of the engine and would be classified as “slippage.”

After the accident, a service representative specializing in marine industrial gears inspected the port clutch aboard the *Miss Dixie* and determined that the port clutch had “excessive wear” and

Collision Between *Miss Dixie* Tow and *D. & R. Boney* Tow

that the clutch would slip and was “40% operational.” The report also indicated that the bearings of the reduction gears were in satisfactory condition, and the gears had pitting and some sharp edges. Another service company inspected the pneumatic system for the clutch and reported that the control system was operating satisfactorily. After the accident, the port clutch was repaired.



Left: Port clutch assembly steel rings removed from the *Miss Dixie* after the collision during postaccident inspection. Right: Condition of the port engine clutch friction pads aboard the *Miss Dixie* after the accident.

According to the owner of the *Miss Dixie*'s operating company, the vessel was acquired about six months before the accident. The owner indicated that a purchase survey was completed and that the maintenance records came with the vessel. Prior to acquiring the vessel, both main engines were overhauled, but he did not know if this overhaul included the clutches. After the overhaul and before the purchase of *Miss Dixie*, the engines had been operated for 40 hours. He believed that the clutches were inspected, was told that they were in “good standing,” and did not believe that it was necessary to rebuild them. He was not aware of the maintenance requirements and periodic inspections for the type of clutches aboard *Miss Dixie*. When asked about a preventive maintenance system for the vessel, the owner stated that the crews performed daily visual checks on the machinery, and if any issues were detected that exceeded the ability of the crew to address, outside vendors would be hired to effect repairs. Additionally, none of the vessels in the fleet had yet to be inspected under 46 *Code of Federal Regulations (CFR)* Subchapter M.² The owner did not provide any maintenance records to investigators.

The clutch manufacturer's instructions for periodic inspections included checking the air control component settings, the friction lining for signs of wear, and the shoes or drum for contamination. The maintenance section also provided guidance for checking for drum diameter wear, the condition of the air actuating tube, and the friction shoe surfaces. According to the vessel operator, these instructions were not aboard the vessel.

² In July 2016, the Coast Guard released 46 *CFR* Subchapter M, establishing towing vessel safety regulations to oversee inspections, standards, and options for safety management systems. Existing vessels were required to comply by July 2018.

Collision Between *Miss Dixie* Tow and *D. & R. Boney* Tow

The *Miss Dixie* was involved in two other casualties in the weeks after the collision with the *D. & R. Boney* tow. Ten days after, while pushing three barges, the tow of the *Miss Dixie* struck a stationary barge near New Orleans. Two weeks later, the *Miss Dixie* experienced a crankcase explosion in the starboard engine, causing a fire in the engine room. After the fire was extinguished, the *Miss Dixie* was towed to shore. On March 3, 2019 the *Miss Dixie* was removed from active service and subsequently scrapped.

Analysis

As the captain was maneuvering around the bend at Nine Mile Point, he experienced a reduction in thrust from the port propeller, which reduced his ability to steer around the sharp turn. About the same time, a deckhand in the engine room observed smoke in the area of the port clutch and smelled rubber burning. In a hairpin turn, with an eddy from the current and several other vessels transiting the area, the captain needed thrust from both propellers to successfully maneuver the 700-foot tow; without sufficient thrust from the port propeller, the captain was unable to effectively control the tow. After the accident, based on the location of the smoke and the reduction of power from the port propeller, the crew believed that the clutch had been slipping and overheating, which reduced thrust to the port propeller. The crew determined that there had been an issue with the port clutch.

Further, a postaccident inspection by a service representative found that the port clutch had excessive wear, would slip, and was only 40% operational. The air-actuated clutch was designed to transfer torque from the engine to the propeller by inflating a rubber air tube within a steel ring, forcing friction shoes onto the rotating assemblies, which would rotate the propeller at a proportional speed to the engine. Heat is generated by a slipping clutch, producing smoke from the overheating of components in the clutch system, such as the rubber tube, and results in a reduction of power being transferred to the propeller. Without records to show any previous maintenance or inspections of the clutches aboard the *Miss Dixie*, the condition of the units before, or at the time of, the accident is unknown.

The owner indicated that the engines had been overhauled prior to the acquisition of the *Miss Dixie* but was not sure if the overhaul included the clutches. The clutches were not inspected over the 6 months of ownership, and the owner had not developed periodic inspection or maintenance procedures per manufacturer's guidance associated with the clutches, which are critical components of the propulsion system.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the collision between the tows of the towing vessels *Miss Dixie* and *D. & R. Boney* was the lack of an effective maintenance program aboard the *Miss Dixie*, resulting in excessive and undetected wear of the port clutch, which compromised the vessel's maneuverability.

Inspection of Propulsion System Clutch Assemblies

Owners and operators should ensure that all critical equipment associated with propulsion systems, such as clutches, are included in preventative maintenance systems and that they follow the manufacturer's maintenance and inspection interval recommendations.

Collision Between *Miss Dixie* Tow and *D. & R. Boney* Tow

Vessel Particulars

Vessel	<i>Miss Dixie</i>	<i>D. & R. Boney</i>	<i>AEP 7235</i>	<i>005024</i>	<i>005028</i>	<i>005492</i>	<i>005495</i>
Owner/operator	Hex Stone, Inc. / JRC Marine	American Commercial Barge Line / Inland Marine Service	American Commercial Barge Line	U.S. Bank National Association			
Port of registry	Baton Rouge, Louisiana	Lakin, West Virginia	St. Louis, Missouri	Cincinnati, Ohio	Cincinnati, Ohio	Cincinnati, Ohio	Cincinnati, Ohio
Flag	United States	United States	United States	United States	United States	United States	United States
Type	Towing Vessel	Towing Vessel	Freight barge				
Year built	1961	1976	2008	2000	2000	2000	2000
Official number (US)	280525	575824	1216665	1103341	1103346	1097119	1097120
IMO number	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Construction	Steel	Steel	Steel	Steel	Steel	Steel	Steel
Length	102 ft (31 m)	128 ft (39 m)	200 ft (61 m)	200 ft (61 m)	200 ft (61 m)	200 ft (61 m)	200 ft (61 m)
Draft	9 ft (2.7 m)	9.5 ft (2.9 m)	13 ft (4 m)	13 ft (4 m)	13 ft (4 m)	13 ft (4 m)	13 ft (4 m)
Beam/width	34 ft (10.4 m)	42 ft (12.8 m)	35 ft (10.7 m)	35 ft (10.7 m)	35 ft (10.7 m)	35 ft (10.7 m)	35 ft (10.7 m)
Tonnage	201 GRT	483 GRT	764 GRT	764 GRT	764 GRT	764 GRT	764 GRT
Engine power; manufacturer	2,400 hp (1,790 kw); GM L12-645-E2	6,000 hp (4474 kw) GM 16-645-E7	N/A	N/A	N/A	N/A	N/A
Persons on board	4	8	0	0	0	0	0

NTSB investigators worked closely with our counterparts from Coast Guard Sector New Orleans, Louisiana, throughout this investigation.

For more details about this accident, visit www.nts.gov and search for NTSB accident ID DCA19FM017.

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.

Collision Between *Miss Dixie* Tow and *D. & R. Boney* Tow

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).
