



National Transportation Safety Board

Marine Accident Brief

Allision of Bulk Carrier *Mia S* with Nashville Avenue Wharf

Accident no.	DCA17FM023
Vessel name	<i>Mia S</i>
Accident type	Allision
Location	Lower Mississippi River near mile 101, New Orleans, Louisiana 29°54.87' N, 090°07.72' W
Date	August 18, 2017
Time	1920 central daylight time (coordinated universal time – 5 hours)
Injuries	None
Property damage	\$2 million est.
Environmental damage	None
Weather	Visibility clear, winds calm, air temperature 93°F
Waterway information	The Lower Mississippi River has a project depth of 45 feet for over 233 miles, from Southwest Pass near the entrance to the Gulf of Mexico to Baton Rouge, Louisiana (about 135 miles above New Orleans). At the site of the accident, the river measured 1,800 feet wide, and the current was approximately 1 knot.

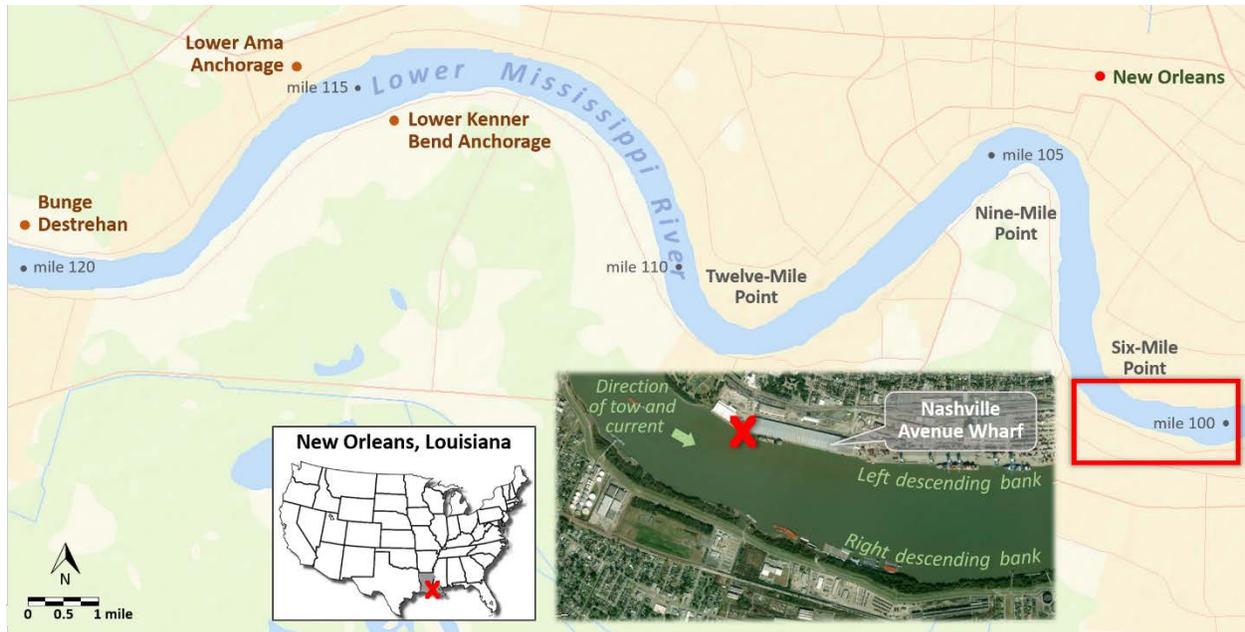
On August 18, 2017, about 1920 local time, the Antigua and Barbuda-flagged bulk carrier *Mia S* was traveling downbound on the Mississippi River near New Orleans, Louisiana, experiencing intermittent engine slowdowns. As the fully loaded vessel began to enter a bend of the river at Six-Mile Point near mile 101, its propulsion engine program restricted the engine to dead slow ahead.¹ Within minutes, the vessel allided with the Nashville Avenue Wharf, damaging its bow above the waterline and the wharf. No pollution or injuries among the 19 crewmembers were reported. Damage to the *Mia S* and the Nashville Avenue Wharf each amounted to an estimated \$1 million.



Bulk carrier *Mia S* before accident. (Photo courtesy of Reederei Rudolf Schepers)

¹ In this report, all miles are statute miles.

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Location of accident where *Mia S* allided with Nashville Avenue Wharf on Lower Mississippi River near New Orleans, Louisiana, following an engine casualty. (Base map and satellite image from NOAA ENC® Viewer)

Accident Events

Built in 2010, the *Mia S* was a 623-foot-long-by-106-foot-wide bulk carrier powered by a slow-speed, direct-drive diesel engine. On August 11, the vessel arrived at Southwest Pass, an entrance to the Mississippi River, and continued upriver. On August 16, after anchoring at two separate locations along the way, the vessel arrived at the Bunge Destrehan facility at mile 120, where the crew began loading a full cargo of soybeans. The *Mia S* was scheduled to deliver the soybeans to Columbia, South America.

After the cargo operations were completed, a pilot boarded the *Mia S* on August 18 at 1545 for the outbound transit. Prior to getting under way, the master completed administrative tasks and conducted a master-pilot exchange of information. All pre-departure tests on the bridge and in the engine room were conducted; no anomalies were identified. In addition to the pilot, the bridge team consisted of the master, the chief mate, and a helmsman.

After the lines were released by 1705, the pilot ordered dead slow ahead at 1709 and then slow ahead at 1711. With the assistance of two facility tugs, the *Mia S* was turned around in the river to head downbound toward New Orleans. The engine order telegraph log showed an engine “safety slowdown” at 1713, after the pilot had released the assist tugs. At that time, the engine alarm logs recorded alarms sounding regarding the vessel’s main propulsion engine. These engine safety slowdown alarms were the first of several that the vessel experienced intermittently on the bridge and in the engine room. The slowdown feature of the engine’s automated system was designed to protect the engine from damage.

The master and the pilot were aware of the engine slowdowns that were causing the rpms to fluctuate. As the alarms sounded, the engineers attempted to restore the engine’s full maneuvering capabilities. The chief engineer later told investigators that a fuel pump for one of

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the six engine cylinders was not providing fuel. Over the next 20 minutes (between about 1717 and 1738), the slowdown alarm was acknowledged by the master each time it activated. An engine order of full ahead was recorded at 1729, but as the engine's speed increased to 100 rpm, another safety slowdown occurred. In slowdown mode, the engine was limited to dead slow ahead, which was 5 knots at 45 rpm according to the vessel's pilot information card.

The pilot told investigators that he would have immediately anchored the vessel due to the engine problems; however, the closest anchorage downriver that could accommodate a laden bulker the size of the *Mia S* was the Lower Ama Anchorage at mile 115.5 (approximately 3 miles downriver), which was full. He therefore determined that at dead slow ahead the vessel would be able to safely continue the transit farther down the river to the next available anchorage, Belle Chasse Anchorage, south of New Orleans at mile 75.

Engine order	Rpm	Speed
Full ahead	115	14
Half ahead	90	9
Slow ahead	80	7
Dead slow ahead	45	5

Excerpted from pilot card for *Mia S*.

At 1738, because of the frequent reductions in engine rpms, the pilot requested tug assistance via radio. Although the vessel operated between 76 and 100 rpm for the next 10 minutes, the rpms dropped to less than 50 at 1747, according to the engine order telegraph log. At that time, Vessel Traffic Service (VTS) New Orleans was notified when the *Mia S* pilot used his cell phone to brief the pilot on watch at VTS. At 1749, the vessel passed the Ama Anchorage in the Kenner Bend of the river at 44 rpm. The command center for the US Coast Guard Sector New Orleans learned soon afterward of the situation concerning the *Mia S*, when the pilot contacted the Coast Guard in a separate phone call. At 1804, as the harbor tug *Ervin Cooper* approached the *Mia S* at the Kenner Bend Anchorage near mile 115, the *Mia S* pilot told the tug's captain not to attach any lines but to accompany the vessel downriver instead, in case he needed tug assistance.

For about an hour, while the vessel continued its voyage, which included passage through the bend at Twelve-Mile Point (mile 109) and the approach to the bend at Nine-Mile Point (mile 105), the slowdown alarms continued, as the rpms fluctuated between 50 and 70.

At about 1850, with the *Mia S*'s speed at 7 knots and engine at 45 rpm, the chief engineer informed the master that the issue with the fuel pump was resolved and thereby full speed could be attained. Based on that report, the pilot ordered full ahead at 1857. The vessel attained a speed of almost 13 knots at 103 rpm just as it entered the bend at Nine-Mile Point. The pilot called VTS at 1901 to report that the engine was at full speed and the problem was resolved, but he still planned to anchor the vessel at the nearest anchorage past New Orleans. When the VTS watchstander asked if he still needed a tug escort, the pilot acknowledged that he did. The engine order telegraph log recorded that the vessel maintained the speed and rpm until 1916, during which time the vessel was in the 108-degree bend at Six-Mile Point (mile 102) turning to port.

Following a 20-minute period of no alarms, the engine's automated alarm system warned of high exhaust temperatures, and seconds later, the slowdown feature again activated and limited the rpm. At 1916, the pilot contacted the captain of the *Ervin Cooper* to inform him that the bulk carrier had again experienced an engine slowdown, just as he began to steer the *Mia S* through the bend at Six-Mile Point.

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Trackline of *Mia S* over last 4 minutes leading up to accident shows change in vessel's heading and speed over ground following engine slowdown. (Background from Google Maps)

As the *Mia S* continued its transit downriver, the slowing speed reduced the rudder's effectiveness in the following current, which was flowing at 1 knot. Despite the pilot's order of hard to starboard (35 degrees) at 19:17:30, the vessel's heading continued to swing to port.

At 19:18, the pilot ordered the sounding of the vessel's whistle to warn the personnel on the Nashville Avenue Wharf and aboard the vessels moored alongside, as the *Mia S* continued at approximately 10 knots in the center of the bend, less than 0.3 miles from the wharf. The pilot also ordered the crew to put a line on the *Ervin Cooper*. However, less than 15 seconds later, he countermanded that order and told the tug's captain to "get out of here." The pilot then ordered the crew to let go the port anchor and warned vessels nearby on VHF channel 16 of the impending allision, saying, "Thirty-four [the pilot's number] going into the dock."

Neither the rudder at hard right nor the anchor on the river bottom had a significant effect on the *Mia S* as the vessel continued to swing to port and move toward the left descending bank. At 19:19, again broadcasting on VHF channel 16, the pilot urged anyone listening to help evacuate crewmembers on the *Dredge Reed*, which was moored at the wharf. At 19:19:25, he also ordered full astern to slow the vessel, just after ordering the sounding of the danger signal. At 19:20:06, the *Mia S* allided with the Nashville Avenue Wharf, on a heading of 044 degrees and at 6.1 knots. The vessel had just missed the dredge that had been secured for the evening.

Immediately after alliding with the wharf, the starboard anchor was let go. The *Mia S* remained anchored on the left descending bank until the next evening.

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Damage to the wharf included destruction of the concrete dock—reinforced with rebar, crossbeams, stringers, and timber pilings—where the *Mia S* struck at a 90-degree angle. The vessel incurred damage above the waterline: to the hull plate, web frames, and stiffeners; to the forward bulkhead of the no. 1 ballast tank on the port side; and to the main and forecastle deck.



Damage to Nashville Avenue Wharf where vessel left impression of bow. (Photo by Coast Guard; satellite image from Google Maps)

Additional Information

The chief engineer told investigators that the fuel pump for the no. 2 main diesel engine cylinder had not been providing fuel. He said that the exhaust temperature for the cylinder did not rise when the engine began operation, which indicated that the fuel injection system for that cylinder was not operating properly. The exhaust temperature was only about 100 degrees Celsius (212 degrees Fahrenheit), when it should have been near 275 degrees Celsius (527 degrees Fahrenheit). The chief engineer said the non-return valve for the fuel pump “remained stuck, not injecting fuel [into the cylinder]” and that attempts were made “to unstuck” the valve, but the fixes were temporary as the problem persisted.

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According to the chief engineer, the engine control system on board the *Mia S* monitored exhaust temperatures on each cylinder and compared them to one another. When temperatures reached a differential greater than 50 degrees Celsius (122 degrees Fahrenheit), the control system would automatically protect the engine through a “safety slowdown” by reducing the engine’s rpm (and subsequently the vessel’s speed) to dead slow ahead. The reduced rpms required less fuel and thereby kept the cylinders from overheating, which otherwise could have led to damage of the engine’s internal components. The safety slowdown meant that the *Mia S* could not exceed 45 rpm (a speed of about 5 knots), compared to full ahead at 115 rpm (a speed of about 14 knots).



Bow damage sustained by *Mia S*.

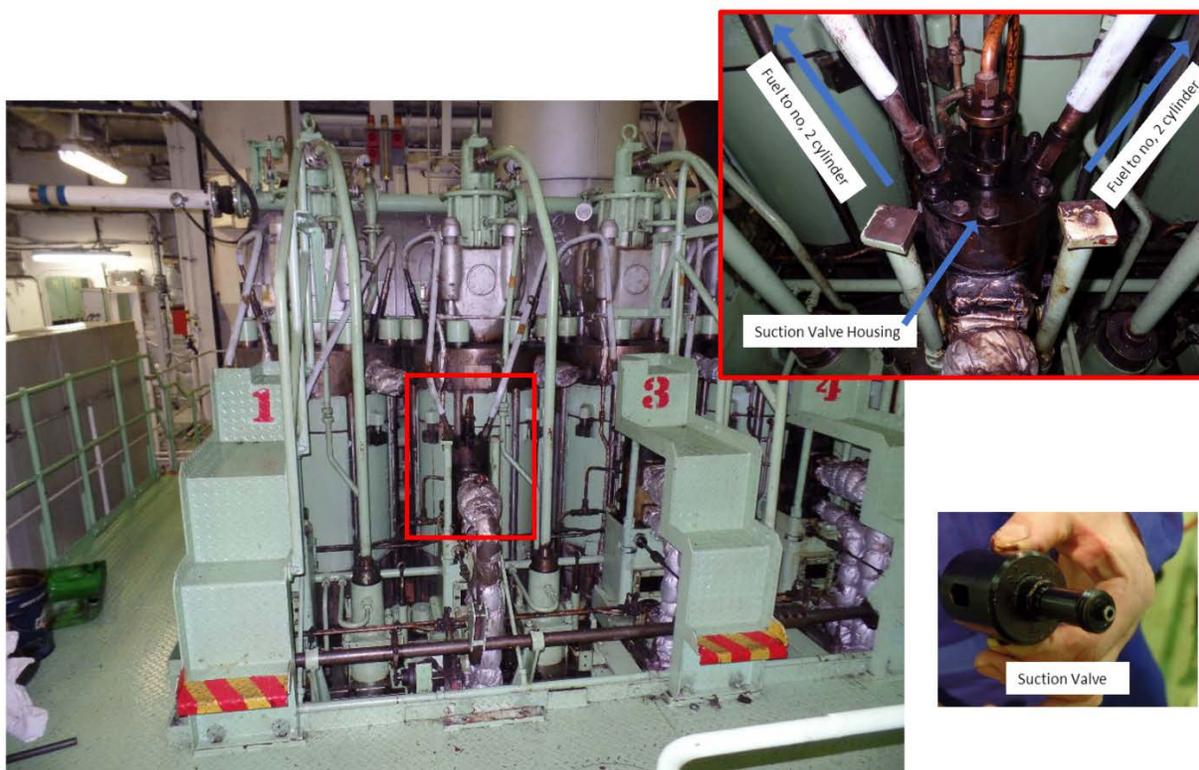
In addition to fuel not flowing to the no. 2 cylinder, the bulk carrier experienced the same issue with the fuel injection pump for the no. 5 cylinder the day following the accident, during a nearly 2.5-hour transit to Belle Chasse Anchorage. While anchored there, each non-return valve for the six fuel injection pumps of the main engine were replaced by the crew. The previously installed valves had another 833 hours of service until they were due for an overhaul at 8,000 hours.

In assessing why the non-return valve did not function during the time leading up to the accident, the crew considered the use of low-sulfur fuel. Considering that sulfur improves the lubricating properties of the fuel, the lack of sulfur in the fuel oil may have caused the non-return valve to seize and thereby prevented fuel from injecting into the cylinders. The fuel required for usage when the vessel was within 200 miles of land contained less sulfur (to reduce emissions) than the “heavy” fuel used when the vessel was in the open ocean. Also, given that the fuel injection valves were scheduled to be replaced soon, based on the engine’s operating hours, the crew believed that the non-return valves may have been worn. Non-return valves have precision tolerances and can malfunction when those tolerances are not met.

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The Coast Guard, international regulators, and class societies are aware of potential problems to marine engines caused by switching from heavy fuel oil (HFO) to low-sulfur fuel (sometimes referred to as marine gas oil [MGO]). Advisory notices from these stakeholders note that most machinery was not designed to operate on low-sulfur fuel and difficulties can arise from the switching process and sustained operation. According to the American Bureau of Shipping, “these [difficulties] stem from the effects of the low-sulfur and low viscosity MGO on machinery plants designed for HFO.”

On August 25, while the vessel was still in Belle Chasse Anchorage, a test was conducted on the main engine; the newly installed non-return valves were found to be operating satisfactorily.



Clockwise from left: cylinder nos. 1 through 4 of the direct-drive diesel engine on *Mia S*; fuel pump for no. 2 cylinder; and non-return/suction valve for no. 2 cylinder fuel pump. (Photos by Coast Guard)

Analysis

All pre-departure tests on the *Mia S* were satisfactory, but the first automatic main propulsion engine safety slowdowns began shortly after the tugs were released and the engine order of slow ahead was given. The master and the pilot decided that they could successfully navigate the vessel at dead slow ahead until they reached the next available anchorage, about 40 miles downriver. The anchorage approximately 3 miles downriver where the pilot and the master would have preferred to anchor was full.

After about 2 hours of the engineers' troubleshooting the frequent “safety slowdowns” that caused the engine to drop to 45 rpm at each occurrence, the chief engineer informed the master that the no. 2 cylinder was operating properly. However, in his report, the chief engineer did not convey the potential for recurring engine slowdowns in view of the previous 2 hours of temporary

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fixes and failures. Based on his conversation with the chief engineer, the master therefore determined that the fuel pump issue had been resolved and allowed the vessel to proceed at full ahead, reaching nearly 13 knots at the approach to the bend at Six-Mile Point. Based on the chief engineer's assessment, the master likely believed that the engine would perform as expected, thus permitting the vessel to travel at a higher speed. Furthermore, the 20 minutes during which the vessel operated without an engine alarm or slowdown after the chief engineer's report likely strengthened the master's confidence that the problem had been fixed. The pilot nevertheless was still intending to anchor south of New Orleans so that the crew could attend to the engine problems.

Given the *Mia S*'s speed while turning through the bend near the accident site after the engine slowdown, the *Ervin Cooper* was unable to assist the laden bulk carrier and therefore prevent the vessel's allision with the wharf. Following the allision, the tug escort, in conjunction with the *Mia S* letting go the starboard anchor, was then able to provide assistance by arresting the bulk carrier's continued movement and drift.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the allision of the bulk carrier *Mia S* with the Nashville Avenue Wharf was the chief engineer's poor communication to the master regarding the potential for additional protective engine slowdowns at orders above dead slow ahead, and the master and pilot's decision to proceed at full ahead, which resulted in a reduction in engine speed and subsequent loss of maneuverability while navigating through a sharp river bend.

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Vessel Particulars

Vessel	<i>Mia S</i>
Owner/operator	Navesco S.A.
Port of registry	St. John's, Antigua and Barbuda
Flag	Antigua and Barbuda
Type	Bulk carrier
Year built	2010
Official number (US)	N/A
IMO number	9456147
Classification Society	Lloyd's Register
Construction	Steel
Length	623.3 ft (189.99 m)
Draft	42.7 ft (13.0 m) aft; 39.0 ft (11.9 m) forward
Beam/width	105.8 ft (32.26 m)
Gross and/or ITC tonnage	32,987 ITC tons
Engine power; manufacturer	12,713 hp (9,480 kW); Man-B&W
Persons on board	19

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

For more details about this accident, visit www.nts.gov and search for NTSB accident ID DCA17FM023.

Issued: October 16, 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*, 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).