National Transportation Safety Board

Marine Accident Brief

Contact of Tanker *Dank Silver* with Sunshine Bridge

Accident type	Contact	**No.** DCA19FM040
Vessel name	*Dank Silver*	
Location	Lower Mississippi River, mile 167.4, St. James Parish, Louisiana[1] 30°05.88' N,090°54.75' W	
Date	June 16, 2019	
Time	1322 central daylight time (coordinated universal time – 5 hours)	
Injuries	None	
Property damage	$4.55 million est.	
Environmental damage	None reported	
Weather	Visibility 10 miles, sunny, winds south-southwest 10 knots, slight chop, air temperature 92°F, water temperature 78°F	
Waterway information	The Mississippi River at the Sunshine Bridge is about 2,550 feet wide, bank to bank. At the time of the accident, the river gage at Donaldsonville was 31.33 feet, and the current near the accident site was 5–6 knots. (Flood state was in effect at 27 feet.)[2]	

On June 16, 2019, about 1322 local time, the bulk liquid cargo vessel *Dank Silver* was transiting downbound on the Mississippi River, near Donaldsonville, Louisiana, when it struck the fender of the western pier to the main (channel) span of the Sunshine Bridge. No pollution or injuries to the 19 crewmembers on board the *Dank Silver* were reported. Damage to the vessel was about $1.05 million, and damage to the bridge was estimated at $3.5 million.

***Dank Silver* under way before the accident. (Source: Hannes van Rijn/FleetMon)**

[1] All miles in this report are statute miles.

[2] A knot is equal to about 1.15 miles per hour.

NOTE: This report was reissued on June 17, 2020, with a correction to the map on page 2.

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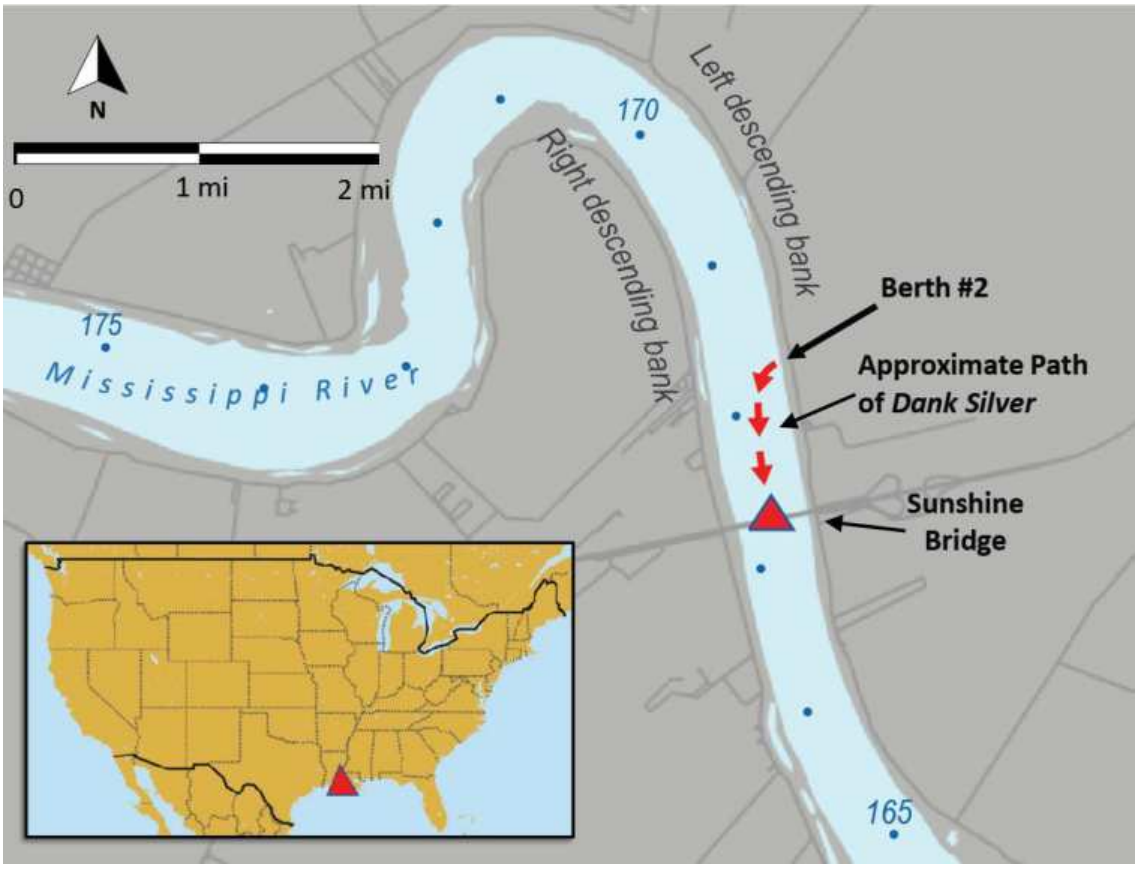
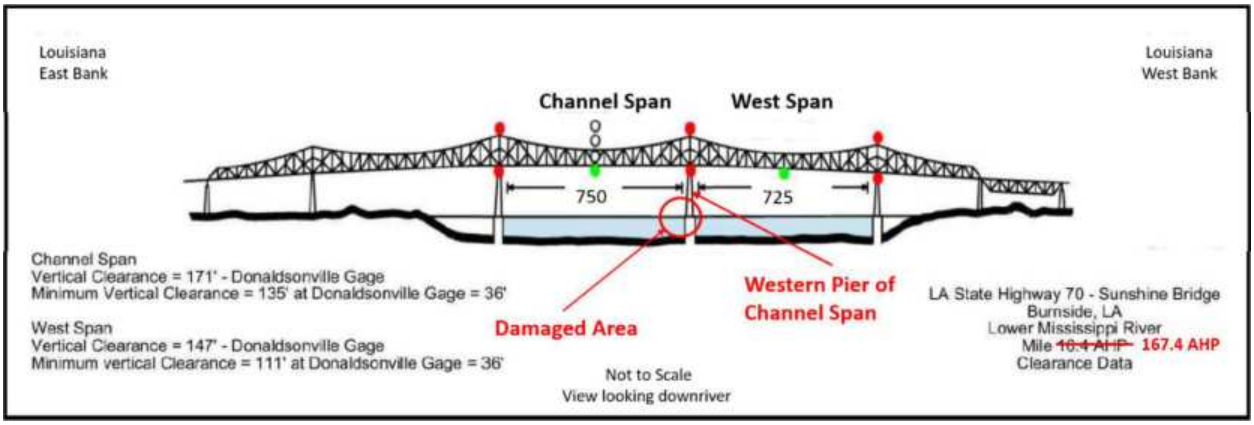


Area of accident where the *Dank Silver* struck the Sunshine Bridge, as indicated by the red triangle. (Background source: Google Maps)

Background

The *Dank Silver* was a bulk liquid cargo vessel (tanker) classed by the American Bureau of Shipping to carry oil and chemical products. It was built in 2016 and flagged in the Marshall Islands. The vessel was double-hulled, meaning its cargo tanks were within an inner watertight hull separated by tanks or other spaces from its outer hull. Double-hull construction is intended to minimize the chances of cargo loss to the environment by providing protection from side or bottom damage. It was propelled by a slow-speed diesel engine directly driving a single propeller, had one rudder and no thrusters, with the house and navigation bridge located aft. It was manned by a crew of 19.

The Sunshine Bridge, a cantilever bridge crossing the Mississippi River at mile 167.5, carries Louisiana Highway 70 (LA-70), connecting Donaldsonville on the west side with Sorrento on the east side, both in Ascension Parish. The bridge had two navigable spans through which vessels could transit: a channel (main) and west span. The horizontal clearance for the channel span of the Sunshine Bridge was 750 feet. Both banks of the river contain berths for loading and discharging solid and liquid bulk cargoes from barges and ships. The minimum charted depth of the channel near the bridge was 58 feet.



Drawing of Sunshine Bridge looking downriver. (Source: US Army Corps of Engineers -reversed and annotated by NTSB)

Accident Events

On June 13, 2019, *Dank Silver* arrived at the Shell Oil Convent Refinery (previously the Motiva Refinery) located on the left descending bank of the Mississippi River. The refinery had two loading berths. Ships and barges loaded "clean" or refined products from berth no. 2, the upriver berth at mile 168.3 (0.8 mile up river from the Sunshine Bridge), and offloaded crude oil and other "dirty" cargoes that needed refining at berth no. 1, the downriver berth.

The *Dank Silver* docked starboard side to berth no. 2, facing upriver. The dock was parallel to the bank, so the *Dank Silver* needed to turn about 180° to head downriver. It was a routine practice to use "hold-in" tugs at this facility during high river conditions due to the tendency of the current to push the ship off the berth, so the 6,000-horsepower (hp) tug *Crosby Crusader* was positioned on the port bow, and the 4,200-hp tug *Ned Ferry* was on the port quarter. Both tugs had twin, fixed-pitch propellers for propulsion. The *Dank Silver* readied for departure after loading 34,758 long tons (35,315 metric tons) of regular and premium grade gasoline bound for Montréal, Canada. After the tanker completed loading and prior to undocking, the *Crosby Crusader* was relieved on the port bow by the 5,200-hp twin Z-drive tractor tug *Point Clear*.

As a foreign-flagged vessel, the *Dank Silver* was required to carry a state pilot when under way on the lower Mississippi River. The New Orleans Baton Rouge Steamship Pilots Association (NOBRA) provided pilotage services for the area of the river where the accident occurred. At 1212on June 16, a NOBRA pilot boarded the *Dank Silver* to provide guidance to the ship's master for undocking from berth no. 2 and to direct the tanker's movement downriver.[3] The NOBRA pilot for undocking the *Dank Silver* had been a NOBRA pilot for about 14 years. Two tugs were ordered for the undocking, which the pilot believed to be sufficient for the job. He also noted that, in the past, he had ordered an additional tug or a different tug than the original one dispatched without a problem. The tug *Ned Ferry* remained at the *Dank Silver*'s port quarter to assist in undocking. It did not put a line up to the tanker.

[3] Times have been compiled from the vessel's ECDIS, VDR, and CCTV data. Time data has been corrected and may have a margin of error up to one second.

Between 1232 and 1234, the ship's voyage data recorder (VDR) captured the master/pilot exchange where the pilot and the *Dank Silver*'s master discussed the tugs' positions and the sequence the pilot wanted the ship's crew to let go the mooring lines. The master then conveyed this information, via portable radio, to the chief mate and third mate who were overseeing unmooring operations at the forward and aft docking stations aboard the tanker. The pilot told investigators that he planned to pass beneath the channel span of the Sunshine Bridge but the VDR did not capture this plan being discussed with the master during their exchange. After the accident, playback of the ship's electronic chart display and information system (ECDIS) showed the intended course line passing beneath this same span. [4]

Sunshine Bridge looking downriver from the berth where the *Dank Silver* undocked.

At 1238, the tug *Point Clear* arrived for the undocking and positioned itself at the port bow, where the ship's crew made it fast with one head line. The pilot assumed the conn after the master/pilot exchange of information and satisfactory testing of the ship's navigation and control equipment were completed. Between 1239 and 1241, the pilot asked the captain of the *Point Clear* what the tug's maximum bollard pull was; he then asked the master of the *Dank Silver* the maximum allowable bollard pulls for the tanker's bitts and chocks. [5] Since the bollard pull of the tug was 70 tons, and the maximum allowable bollard pull for the ship's bitts and chocks was 55 tons, it was agreed that the *Point Clear* would only provide about two-third power when the pilot ordered the tug to pull at full power.

At about 1242, well before the ship began undocking, the tanker's VDR captured the *Point Clear*'s captain asking the *Dank Silver*'s pilot if he was going to head upriver a little bit before he turned the ship. The pilot replied, "Negative, we'll go right here." The audio recording from the

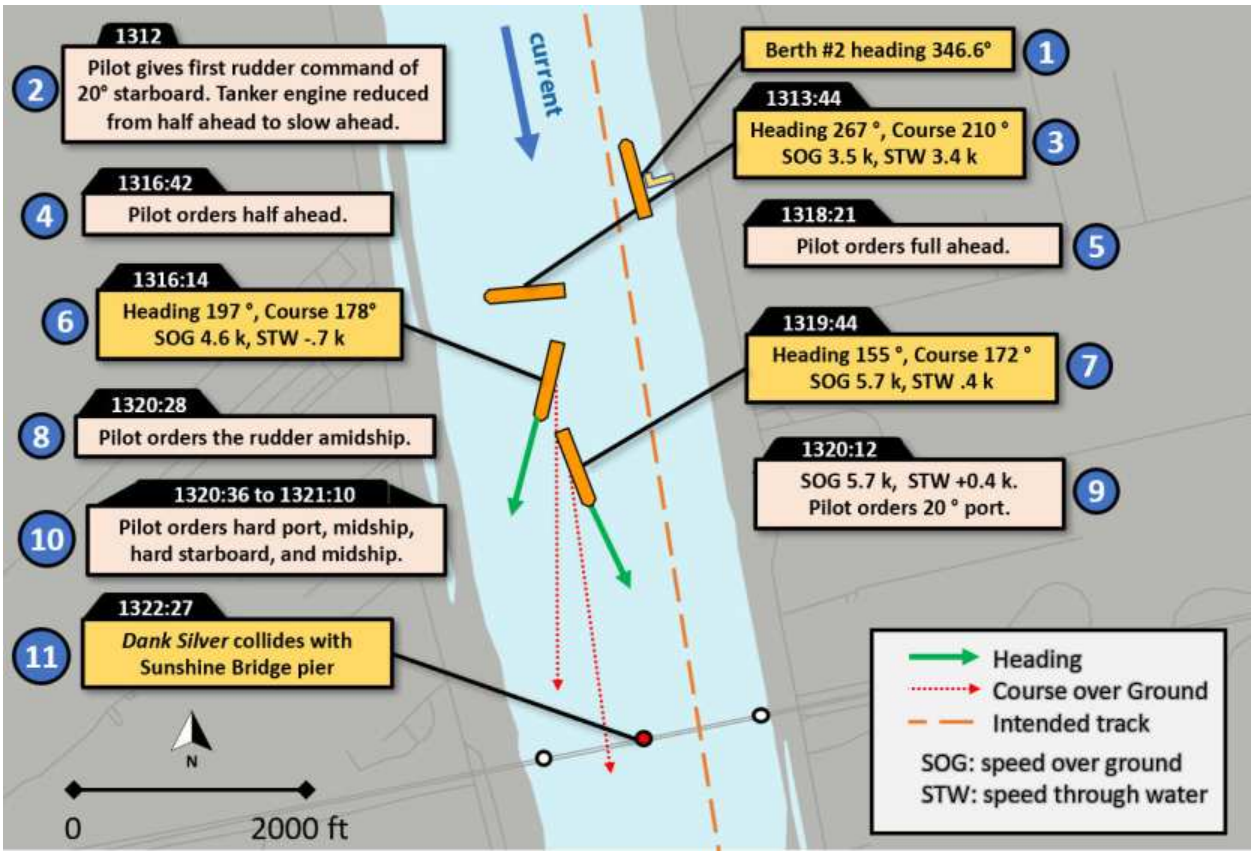
[4] International regulations require an ECDIS to be aboard the *Dank Silver.* It contains hardware and software that allow ship personnel to upload electronic navigation charts and integrate information from sensors to safely navigate the vessel.

[5] (a) *Bollard pull* is a measure of the maximum force that a tugboat can exert on a stationary or fixed object. (b) *Bitts* are round tubular structures welded to the deck of the ship used to secure mooring and tug lines. *Chocks* are openings in the side or bulwarks of a ship where lines pass through to bitts and winches.

VDR did not capture any acknowledgement by the master of this decision, nor was a discussion of this maneuver recorded during the master/pilot exchange.

At 1249, the second mate stated that the engine was ready. From 1251 to 1309, the master ordered the chief mate and third mate to let go the lines. The pilot told investigators that he had trouble keeping the tanker's bow from coming off the berth during the undocking sequence, so he ordered the *Ned Ferry* to slide forward along the port side of the hull while continuing to push on the ship. The captain of the *Ned Ferry* told investigators that he moved to the port bow area to push but, as soon as he started pushing, the pilot told him to drop back to the stern again and "try to hold his stern up in the current." According to the pilot and a tug captain, the currents were as they had anticipated.

At 1309, just before the last lines were let go, the pilot gave the first engine order of dead slow ahead, with the vessel heading about 344°. Between 1309 and 1312, the pilot gave numerous engine commands. At 1312:41, he ordered stop engine. At 1312:43, the mooring lines were reported to be all clear aft, and the vessel was turning counterclockwise with a heading of 324.5°. At this time, the pilot gave the first rudder command of 20° starboard, and the tanker's engine was reduced from half ahead to slow ahead. At 1312:56, the pilot ordered hard port.



Course of the *Dank Silver* from ECDIS data. (Background source: Google Maps)

At 1314:12, ECDIS showed the *Dank Silver* turning to port, on a heading of 267.4°, making a course of 210°, and at a speed over the ground of 3.5 knots. The ship's rudder was hard to port, and propulsion was stopped. As the tanker continued to turn counterclockwise, at about 1316:08,

the *Ned Ferry* backed clear from the tanker and headed toward the *Dank Silver*'s starboard bow to assist if needed, while the *Point Clear* remained tied to the tanker's port bow. The captain of the *Ned Ferry* told investigators that after he got to the starboard bow he stood by until the pilot released him.

At 1316:42, about 6 minutes before the collision, the tanker was about 0.7 miles from the bridge, and the pilot ordered half ahead on the ship's engine. ECDIS showed *Dank Silver* heading 197°.4, making a course of 178°.9, with a speed over the ground of 4.6 knots and a speed through the water of -0.7 knots. At 1318:21, the pilot ordered full ahead, and at 1319:37, the ship's speed through the water was a positive 0.1 knots.

At 1320:12, about 2-1/2 minutes before the collision, the *Dank Silver* was about a quarter mile from the bridge. The ship's speed over the ground had increased to 5.7 knots, and the speed through the water was +0.4 knots. About this same time, the pilot ordered 20 degrees port rudder.

At 1320:28, the pilot ordered the rudder a midship, and between 1320:36 and 1321:10 he ordered hard port, midship, hard starboard, and midship. He told investigators that the current caught them, but he believed they were going to make it (safely) until "a couple of minutes before impact." At 1321:29, the VDR captured the ship's whistle sounding continuously.

At 1322:27, the forward part of *Dank Silver*'s starboard side struck the western pier to the channel span of the Sunshine Bridge. The strike caused about $3.5 million in damage to the bridge fendering system. Four of the tanker's water ballast tanks sustained deformation damages to the hull plating and internals, but damage did not reach the cargo tanks. Additionally, the hull plating comprising one of the ballast tanks was breached.

Photos showing the *Dank Silver* striking the Sunshine Bridge. (Source: Crescent Towing)

A few minutes after the strike, the Coast Guard ordered the tanker to anchor at Grandview Anchorage for a damage assessment. The tanker anchored near mile 146.5 around 1600. Temporary repairs were made, and the vessel proceeded to Montréal to discharge its cargo and to complete permanent repairs. It cost almost $1.05 million to repair the damage to the *Dank Silver.*

Damage to the fendering system for the western pier of the Sunshine Bridge, from the north. (Source: Louisiana Department of Transportation and Development)

Additional Information

The NOBRA pilot told investigators that he had undocked over 10 ships at this berth, that the current was running parallel to the dock, and that he had undocked "plenty" of tankers under similar current conditions.

The Corps of Engineers maintains a system of river gages to measure the river level. The nearest gage to the accident site was the Donaldsonville gage, about 6 miles upriver. The flood stage level of the river at this gauge was 27 feet; at the time of the accident, the river level at Donaldsonville was about 31.33 feet. The river had been measuring above flood stage level for about 4 months, since February 22, 2019. Higher river levels (such as flood stage levels and above) generally mean that strong currents will be encountered. The pilot estimated the current to be about 4 knots. The current for the transit downriver was measured at 5–6 knots by the *Dank Silver*'s ECDIS.

Investigators reviewed AIS from six other tankers that had recently undocked from berth no. 2. All the ships were about the same size and draft as the *Dank Silver* and all undocked from berth no. 2 during river levels that exceeded those experienced by the *Dank Silver.* All the vessels used three tugs to come off the dock and turn around, and the tugs used in these maneuvers had combined horsepower ranging from 11,020 to 13,200. The two tugs used by the *Dank Silver* had a combined horsepower of only 9,400, and one tug was operating at reduced power. In addition, these vessels all maneuvered upriver first by a distance of 0.15 to 0.56 miles before turning and heading downriver toward the bridge.

Analysis

Investigators reviewed toxicological results and 96-hour work/rest records for relevant crew and the NOBRA pilot and determined that drugs, alcohol, and fatigue were not factors in causing this accident. Statements from the ship's crew, the pilot, and the tug masters ruled out equipment problems as causative.

Before getting underway, the NOBRA pilot was aware of the high river level and the resulting strong currents. He told investigators that he had handled many ships in similar conditions

and that the current was as he had anticipated, so investigators do not believe that the high river conditions were a factor in the strike.

The VDR recording of the master/pilot exchange did not include a discussion of the pilot's plan for maneuvering through the bridge, and no subsequent discussion of the ship's course, other than the bridge team's confirmation responses to the pilot's conning orders, were recorded as the vessel neared the bridge. Clear and concise communication is a characteristic of sound bridge resource management, but it is unlikely that input from the master or second mate after getting under way could have averted the contact, given the current and the vessel's trajectory.

When the pilot ordered the rudder hard to port, thrust from the propeller was stopped, so the ship's rudder had less effect on turning the ship. At this point, the tanker was essentially drifting in the strong current, as the ship's speed through water was minimal or negative while its speed over the ground was substantially higher, which was setting it to the right of the pilot's intended track. It appeared that the pilot never gained control of the ship. The ship's ECDIS recordings show the tanker towards the right descending (west) bank, rather than the left descending (east) bank, where the bridge's channel span was. Given the negative or low speeds through the water, using greater propeller thrust earlier would have improved the ship's response to rudder inputs.

The pilot knew before getting under way that he would get two-third power from the forward tug because of the reduced propulsion stipulation imposed by the strength of the ship's bitts and chocks. Reduced power from the tug reduced the speed that the tanker could be turned, so the near-180° turn required to head downriver took longer to complete than if the pilot had used another tug in a different location to provide more force to turn the ship faster. The pilot ceased to use the after tug while the tanker was still more than 30° from the heading the ship needed to safely pass beneath the bridge, and he also had the option to use another tug to slow the ship's downriver headway as it was being turned.

Ultimately, because the pilot decided to turn the ship immediately off the dock rather than heading upriver to turn, he had less distance to gain control of the movement of the ship above the bridge.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the tank vessel *Dank Silver*'s contact with the Sunshine Bridge was the pilot's decision to turn the vessel off the dock instead of going upriver to gain sufficient steerageway to maneuver downriver through the bridge.

Vessel Particulars

Vessel	*Dank Silver*
Owner/operator	Oman Shipping Co SAOC
Port of registry	Majuro
Flag	Republic of the Marshall Islands
Type	Tanker
Year built	2016
IMO number	9718806
Classification society	American Bureau of Shipping
Construction	Steel
Length (LOA)	600.6 ft (183.06 m)
Draft	40.91 ft (12.47 m)
Beam/width	105.5 ft (32.2 m)
Tonnage	29,354 GT ITC
Engine power; manufacturer	10,326 hp (7,700 kW); Hyundai-B&W 6G50ME-B9.3 slow speed diesel
Persons on board	19