



National Transportation Safety Board

Marine Accident Brief

Grounding of Bulk Carrier *Sparna*

Accident no.	DCA16FM032
Vessel name	<i>Sparna</i>
Accident type	Grounding
Location	Wauna Channel, Columbia River, about 50 miles northwest of Portland, Oregon
Date	March 20, 2016
Time	2337 Pacific daylight time (coordinated universal time – 7 hours)
Injuries	None
Property damage	>\$560,000 est.
Environmental damage	None
Weather	Overcast, no precipitation, winds <5 knots, air temperature 52°F
Waterway information	The Columbia River runs between the states of Oregon and Washington. It is the main conduit for deep-draft vessels to and from Portland/surrounding ports and the Pacific Ocean. At the time of the accident, the current was ebbing at 1–1.5 knots.

Just before midnight on March 20, 2016, the bulk carrier *Sparna* was transiting outbound on the Columbia River when it departed the navigation channel and struck a rocky shallow area. No one was injured and no pollution resulted, but the grounding caused damage and flooding to the vessel's forward tanks. Damage to the *Sparna* was estimated at more than \$500,000 and to a nearby dock about \$60,000.



The *Sparna* at anchor after the grounding. (Photo by US Coast Guard)

The *Sparna* was loaded with 44,256 metric tons of wheat destined for Japan. At 1837 on the evening of the accident, a pilot from the Columbia River Pilots Association (COLRIP) boarded the vessel at the Columbia Grain Terminal 5, located near the confluence of the Willamette and Columbia Rivers, and began preparing for the outbound transit. He set up his

Grounding of Bulk Carrier *Sparna*

portable pilot unit (PPU; a laptop computer with navigation software) by connecting it to the ship's automatic identification system (AIS) and adjusted the ship's radars to his preferred settings. He told investigators that he reviewed the pilot card with ship information that one of the bridge officers presented to him and had no questions about it. Shortly before departure, the master entered the bridge and conducted a master/pilot information exchange with the pilot. The ship's voyage data recorder (VDR) recorded them discussing the use of tugboats for the departure and the deepest draft of the vessel. According to the information contained on the pilot card, the draft forward was 11.37 meters (37.3 feet) and aft was 11.95 meters (39.21 feet). The VDR did not capture any discussion about the upcoming passage or the navigation/maneuverability of the vessel.



Satellite image of parts of the states of Oregon and Washington. A red triangle marks the site of the grounding. (Background by Google Earth)

About 1900, the *Sparna* departed the terminal headed for sea, with the pilot directing the navigation of the vessel. There were no reported problems with the vessel's navigation equipment, machinery, and steering system. The pilot said that the ship was "sluggish" but that this was expected for a loaded bulk carrier. Shortly after getting under way, he told the *Sparna* bridge team not to hesitate letting him know if they had any questions. He told investigators that in using this opportunity to determine the English proficiency of the team, who spoke primarily Bengali, he specifically asked if they spoke English, to which he received an answer of, "Yeah." At that time, the pilot also requested that a person remain on the port side of the bridge because the ship's cranes obstructed his view on that side. In response, the third mate positioned himself at the propulsion controls located on the port side of the bridge.

Grounding of Bulk Carrier *Sparna*



The *Sparna* navigation bridge: at left, the location of the pilot chair, which was about 5 feet from the ship's centerline; at right, the pilot's view forward from the chair. The images reveal the ship's list to port after the accident.

At 1934, the master informed the pilot that he was leaving the bridge. Up to the time of the accident, the bridge team consisted of the pilot, the third mate, and the rotating helmsmen (standing at the helm in about 1-hour intervals). During that time the master returned to the bridge periodically. The ship's boatswain was stationed on the bow as the lookout/anchor watch.

Proceeding inbound and destined for Portland was the 623-foot-long bulk carrier *Yasa Gulten* that was in ballast (27.3-foot draft). At 2325, the pilot on the *Sparna* radioed the pilot on the *Yasa Gulten* to tell him they would meet starboard to starboard in the Wauna Channel. The pilot on the *Yasa Gulten* agreed to this arrangement.

According to both pilots and COLRIP representatives, a starboard-to-starboard meeting arrangement between a loaded outbound and an unloaded inbound vessel in that area of the Columbia River was acceptable practice. The arrangement would give the loaded outbound, deeper-draft vessel more space to complete a necessary heading change from about 284 degrees to 315 degrees in the area, and allow for more options and depth for the outbound vessel transiting on the west (or Oregon) side of the channel. The pilots also stated that a loaded outbound vessel would experience bank effect from the east (or Washington) side of the channel.¹ All COLRIP-issued PPUs display supplemental markings in red to highlight shallow areas in that waterway.

About 2330, as the *Sparna* approached the entrance to the Wauna Channel, the pilot requested an engine rpm reduction from 96 rpm to 80 rpm. He did not inform the bridge team why he decreased the speed, but he later told investigators that it was customary to minimize wake in that area because on the Oregon side of the channel was a Georgia Pacific dock where barges from a nearby paper mill would load wood chips. Wake reduction decreased the risk of damage to the barges and facility as well as the risk of barges breaking free.

¹ *Bank effect* is the tendency of a ship's stern to swing toward the bank and the bow toward the center of the channel when the ship is transiting in a river or restricted waterway.

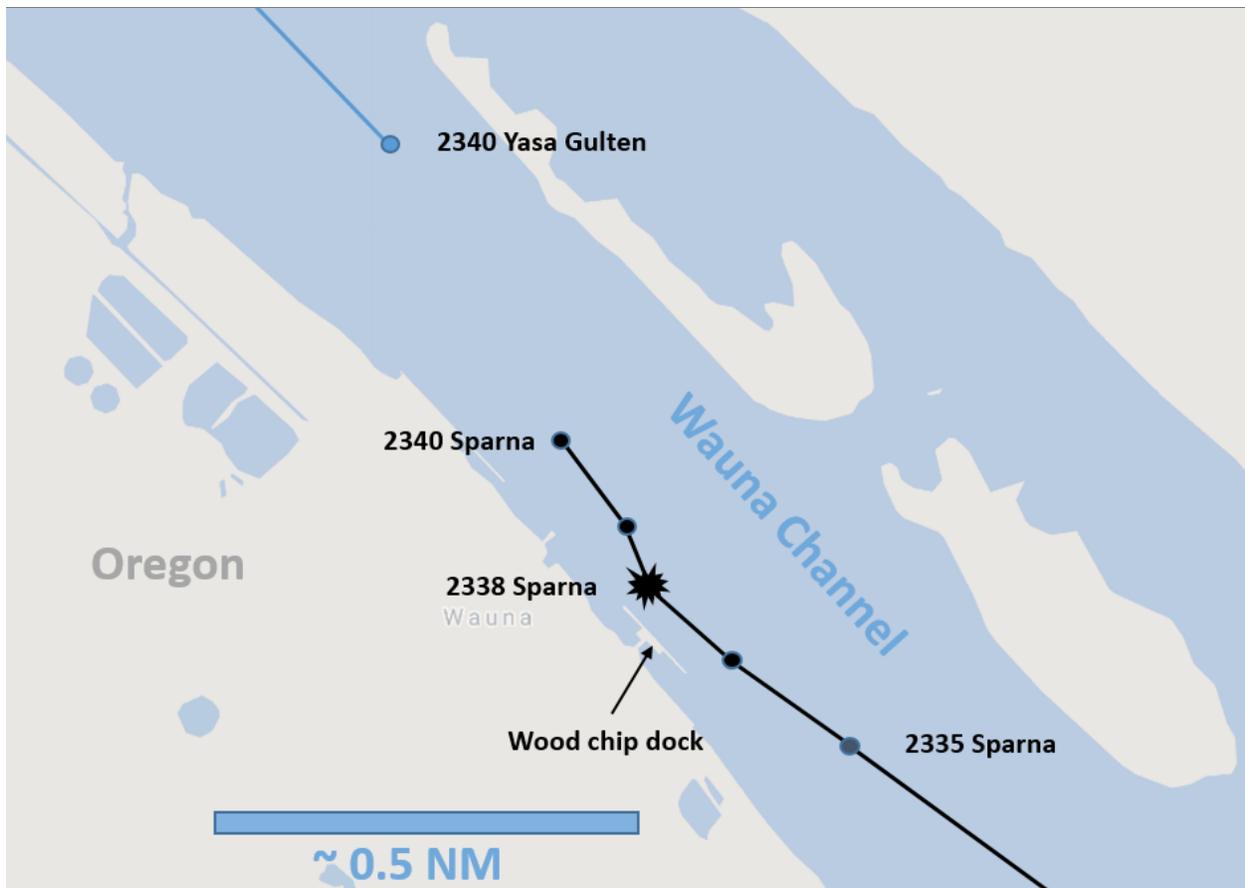
Grounding of Bulk Carrier *Sparna*

At the Georgia Pacific dock that evening were two barges (partially loaded barge no. 34 and empty barge no. 51) and tugboat *Western Star*, which tended the barges. Dock operations had ceased for the night; the only people in the area were the captain and the mate of the *Western Star*, which was moored inboard of the dock.

At 2332, the pilot on the *Sparna* used his mobile phone to call the pilot on the *Yasa Gulten* to discuss the starboard-to-starboard meeting arrangement. The VDR recorded the pilot on the *Sparna* telling the pilot on the *Yasa Gulten* that he would “hold the ship off the barges and stuff” and that it “may look a little strange to you,” the latter of which he repeated twice. While on that call, the pilot on the *Sparna* ordered a starboard 15-rudder order to initiate the turn into the channel. After that, he continued the conversation, stating, “I’m not worried about it,” before speaking of the aspect of the vessel. Meanwhile, the *Sparna*’s heading was 300 degrees and the speed was about 10 knots. Although the pilot explained his plan to the pilot on the *Yasa Gulten*, he did not explain it to the bridge team on his vessel, nor did they ask him about it.

The rpm reductions decreased movement of water across the rudder from the propeller, making the rudder less effective. To improve the rudder’s responsiveness, the pilot therefore ordered a speed increase to full ahead and the rudder to midship, followed by a port-20 rudder order at 2334. Sixteen seconds later, after the *Sparna* reached a heading of 310 degrees, the pilot requested half-ahead speed, followed 10 seconds later by a rudder order of “hard a port,” with which the helmsman complied. On noticing the rudder angle indication of 35 degrees to port, which was the established norm for hard rudder on the *Sparna*, the pilot said, “Forty! Forty! Maximum rudder, please! Hard to port means hard to port. It doesn’t mean five or six short.” The helmsman responded by increasing the rudder to 41 degrees to port, and the heading reached 314 degrees. The pilot then informed the master who had recently returned to the bridge that they were going to meet the *Yasa Gulten* starboard to starboard.

Grounding of Bulk Carrier *Sparna*

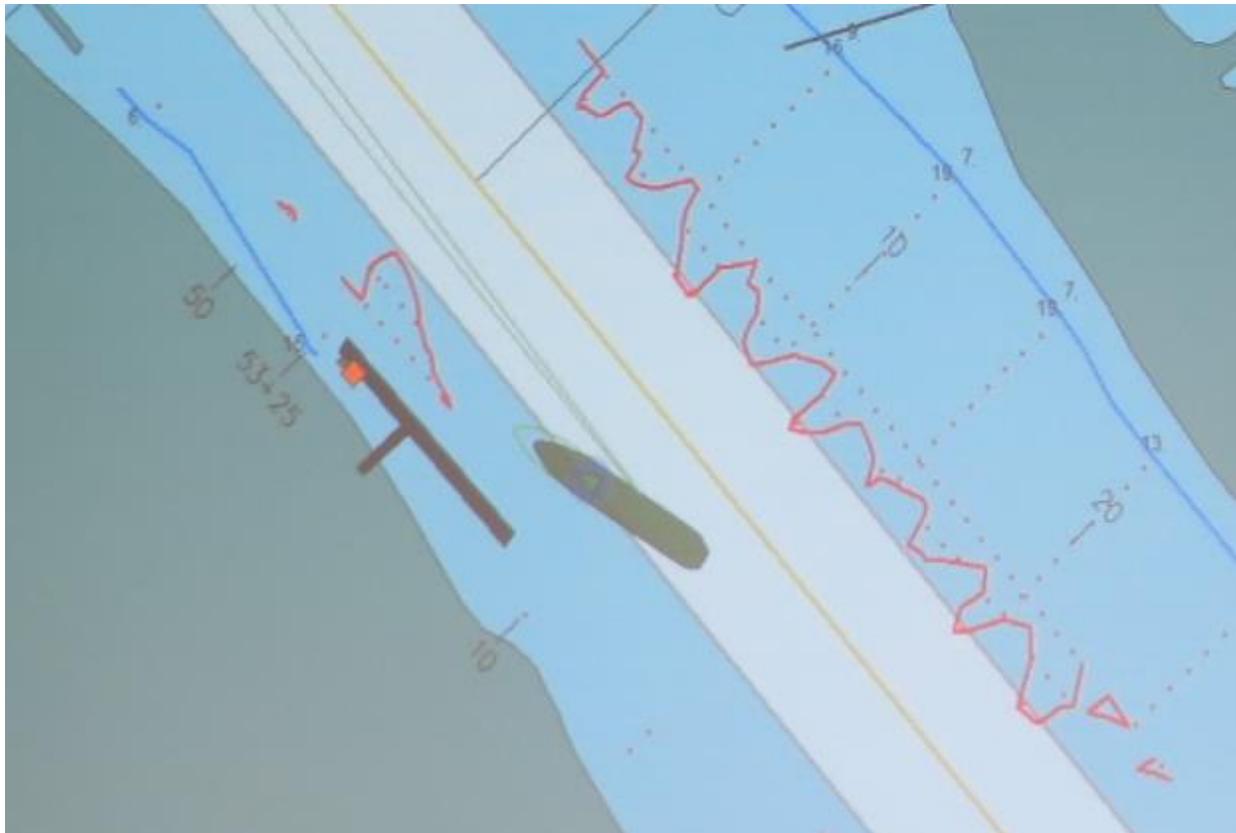


Track of the *Sparna* as the bulk carrier approached the wood chip dock and grounded. Times are rounded to the nearest minute. (Background by Google Maps)

About 26 seconds after his order of hard to port, the pilot requested the rudder to midship, which the helmsman applied. About 14 seconds after the midship order, while nearing the wood chip dock at a speed of 9.3 knots, the pilot ordered starboard 20 degrees. The helmsman acknowledged with “starboard twenty.” However, the rudder, which was still moving from the previous hard-to-port position toward midship, then began moving back to port, ultimately reaching port 20 degrees. Next, at 2335, the pilot requested slow-ahead speed. Immediately thereafter, the helmsman replied, “Rudder starboard twenty, sir.” However, the rudder was still at port 20 degrees. Neither the pilot nor the bridge team noticed the helmsman’s error.

As the ship continued to turn toward the wood chip dock and barges, the pilot ordered hard-to-starboard rudder and half-ahead speed, to which the helmsman replied, “Hard to starboard.” Yet, the VDR captured an initial increase to port before the rudder started moving toward hard to starboard. Seconds later, the pilot shouted, “Hard to starboard! Hard to starboard!” and ordered full-ahead speed. The helmsman replied, “Rudder coming hard to starboard now, sir.” At this time, the rudder indicated starboard 40 degrees and the engine 76 rpm. Both the pilot and the master then went to the port bridge wing to monitor the proximity of the *Sparna* to the barges at the Georgia Pacific dock. They did not activate any sound signals as the ship approached the dock. At 2336, the boatswain on the bow radioed the bridge and said that the *Sparna*’s port side was passing a barge at a distance of 1 meter. As the *Sparna*’s bow started to turn away from the barge, both the pilot and the master monitored the port quarter of the ship as it passed close to, but clear of, the barge. Next, the pilot ordered midship and then hard to port. He then radioed the pilot on the *Yasa Gulten* and said, “We’re coming your way.” The *Yasa Gulten* pilot acknowledged.

Grounding of Bulk Carrier *Sparna*



Screen shot of the playback from the pilot's PPU at 2336. Shallow areas are outlined in red.

At 2337, the *Sparna* VDR recorded a series of bangs, vibration noise, and the water speed decreasing from 8.5 knots to 3.5 knots as the vessel struck a charted shallow rock area just off the wood chip dock. As the ship headed back into the channel, the pilot continued giving helm orders to stabilize the ship's heading. Then, at 2338, the VDR recorded the boatswain on the ship's internal radio speaking in a raised and excited voice in Bengali. When interviewed by investigators, he explained that he radioed the bridge after hearing a loud bang and the sound of air escaping from the forepeak vent valve on the portside deck near cargo hatch no. 1. The master informed the pilot that the boatswain said the ship was "going down forward." Indeed, the ship began to list to port as the *Sparna* passed the *Yasa Gulten* at a distance of 400–500 feet at 2341.

Aboard tugboat *Western Star*, the captain and the mate were in the galley when they heard a loud noise and sensed their vessel moving. Startled, they looked outside and saw the stern of the *Sparna* an estimated 10 feet away from the partially loaded wood chip barge no. 34, the wake generated by the ship causing the motion on the tugboat and the barges. The captain and the mate could hear the popping sound of nearby mooring lines parting. Recognizing that their lines might also part, the captain started the *Western Star*'s engine, released the moorings, and got under way. He and the mate then noticed that barge no. 34 had broken free of its moorings and was adrift. The captain maneuvered the *Western Star* to the barge and pushed it back to the dock, where he and the mate temporarily moored it to the empty barge no. 51, which was still secured.

Aboard the *Sparna*, the pilot and the master began notifying COLRIP and the ship operating company about the accident and requesting their assistance. A COLRIP representative notified the Coast Guard of the accident about 0016 via telephone. The *Sparna* continued

Grounding of Bulk Carrier *Sparna*

downriver about 5 miles to a safe anchorage location (about 3 miles northwest of Cathlamet, Washington).

Just after midnight, the *Western Star* captain called the *Sparna* and told the pilot that the barge had been secured. He also offered assistance, which the pilot accepted. The *Western Star* then proceeded to the *Sparna* to help steady the bulk carrier into position at the anchorage. Afterwards, the pilot requested that readings be obtained from the ship's draft marks. VDR audio captured the initial draft readings of the port bow at 13 meters, port midship at 12.8 meters, and port aft at 7.8 meters, with 11 meters on the starboard bow. It was estimated that the ship was listing 3 degrees to port. The *Western Star* remained on scene until another tugboat arrived with specific dispatch orders to stand by to assist the *Sparna*.

Toxicological testing was conducted on the pilot and bridge team in accordance with regulations: all results were negative. In addition, the work/rest logs provided by the pilot and bridge team indicated that all persons involved in the accident had rested in accordance with regulations.

The *Sparna* sustained damage to the forward section of the hull, including scrapes, indentations, and fractures along the bottom near the bulbous bow on both the port and starboard sides. The forepeak tank on the starboard-side turn of the bilge sustained a breach about 10 feet long, 5 feet wide, and 7 feet tall, with a large piece of rock inside. The no. 1 portside ballast tank, from which the boatswain initially saw signs of flooding, had two penetrations, the largest about 25 feet long and 5 feet wide and the other about 6 feet long and 3 inches wide. A rock, about 3 feet by 4 feet, was embedded in the ballast tank.



Rocks inside the *Sparna*'s no. 1 portside ballast tank. (Photo by Donjon-Smit, LLC)

Grounding of Bulk Carrier *Sparna*

At the Georgia Pacific wood chip dock, mooring equipment, a fairlead, mooring lines, a ladder, and handrails sustained damage estimated at \$60,000.

All involved personnel had valid mariner credentials and endorsements. In addition, the *Sparna* master, the third mate, and the pilot were trained in bridge resource management: The third mate held a certificate of training from 2015, the master from 2008, and the pilot had completed a refresher course in bridge resource management for pilots in 2013. The pilot and bridge team were drug-tested; all results were negative.

At 2230 on the evening of the accident, the master had left written orders on the bridge, which the officer of the watch signed. These orders specifically required observing and confirming the pilot's orders, paying attention to the helmsman's response, and monitoring the vessel's movement and under-keel clearance. Despite these orders, however, in the minutes leading up to the grounding, no bridge team member detected the helmsman's incorrect rudder input or noticed that the *Sparna* was moving toward the wood chip dock and grounding line.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the grounding of bulk carrier *Sparna* was the failure of the pilot and the bridge team to monitor the helmsman's response to the pilot's rudder orders.

Monitoring Rudder Order Response

Bridge team members should always monitor the helmsman's response to a rudder order for correct angle and direction of movement. If an error is detected, or if there is confusion about the order given, a correction or clarification should follow. The presence of a pilot on the bridge does not relieve the other bridge team members of their duty to actively monitor the vessel's position.

Vessel Particulars

Vessel	<i>Sparna</i>
Owner/operator	Lucretia Shipping S.A./K LINE
Port of registry	Panama
Flag	Panama
Type	Bulk carrier
Year built	2006
Official number	31450-06A
IMO number	9317353
Construction	Welded steel
Length	623.33 ft (189.99 m)
Draft	39.27 ft (11.97 m)
Beam/width	105.84 ft (32.26 m)
Gross and/or ITC tonnage	31,385 gross tons
Engine power; manufacturer	11,160 hp (8,208 kW); Kawasaki Man B&W 6S50MC-C
Persons on board	20

NTSB investigators worked closely with our counterparts from Coast Guard Marine Safety Unit Portland throughout this investigation.

For more details about this accident, visit www.nts.gov and search for NTSB accident ID DCA16FM032.

Approved April 10, 2017

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).
