National Transportation Safety Board

Marine Accident Brief

Allision of Passenger Vessel *Carnival Pride* with Pier and Passenger Walkway

Accident no.	DCA16FM038
Vessel name	*Carnival Pride*
Accident type	Allision
Location	Cruise Maryland Terminal, South Locust Point, Baltimore Harbor, Maryland 39°15.8' N, 076°35.8' W
Date	May 8, 2016
Time	0800 eastern daylight time (coordinated universal time – 4 hours)
Injuries	None
Property damage	$2,085,000 est.
Environmental damage	None
Weather	Scattered clouds, clear visibility at 10 miles, air temperature 57°F, winds west-southwest at 4–6 knots
Waterway information	The Port of Baltimore, also known as Baltimore Harbor, is at the head of tidewater navigation on the Patapsco River in Chesapeake Bay. It is one of the major ports on the east coast of the United States. Currents in the harbor are 0.8 knot on the flood and ebb, with a mean range of tides at only 1.1 feet.[1]

On the morning of May 8, 2016, at 0800 local time, the passenger vessel *Carnival Pride* was attempting to dock at the Cruise Maryland Terminal at South Locust Point in Baltimore, Maryland, when its bow struck the pier and fendering, along with an elevated passenger embarkation walkway on shore. The allision caused nearly $2.1 million in damages. The walkway was destroyed, three vehicles that were under the walkway as it collapsed were damaged, and the vessel sustained minor cosmetic damage. There were no injuries and no pollution was reported.

***Carnival Pride* at the Cruise Maryland Terminal berth following the accident.**

[1] National Oceanic and Atmospheric Administration (NOAA), *United States Coast Pilot 3* (Washington, DC: US Department of Commerce, 2017).

Accident Events

The *Carnival Pride* was returning to Baltimore from a 7-day round trip cruise to Florida and the Bahamas. The vessel departed Freeport, Grand Bahama Island, on May 6, and the following evening it arrived at the entrance to Chesapeake Bay where a Maryland pilot embarked for the transit north toward Baltimore.[2]

The vessel's main propulsion was provided by two azimuthing electric-drive motors and propellers contained in pods outside the hull at the stern of the ship (termed "Azipod gearless propulsors" by the manufacturer or simply "azipods" by industry). It also had three tunnel thrusters at the bow to provide lateral control forward. Each azipod and thruster could be operated independently via separate controllers, or together via an integrated joystick that combined control of the amount of thrust and direction of all three bow tunnel thrusters and the two stern azipods. All systems worked satisfactorily throughout the cruise and subsequently during the *Carnival Pride*'s transit up Chesapeake Bay.

About 0400 on May 8, the *Carnival Pride* slowed near Solomons Island, Maryland, to embark a second pilot. Following an exchange of navigational information, the second pilot relieved the first pilot, who went below deck for the remainder of the transit. The pilot now conning the *Carnival Pride* (hereafter referred to as "the pilot") had been a Maryland pilot for 20 years and had navigated numerous trips aboard this vessel—approximately a dozen trips, as he told investigators—as well as other cruise ships calling in the Port of Baltimore. The pilot had developed a familiar working relationship with the *Carnival Pride* captain during some of these earlier transits, but he had never before met the staff captain, the ship's second in command.

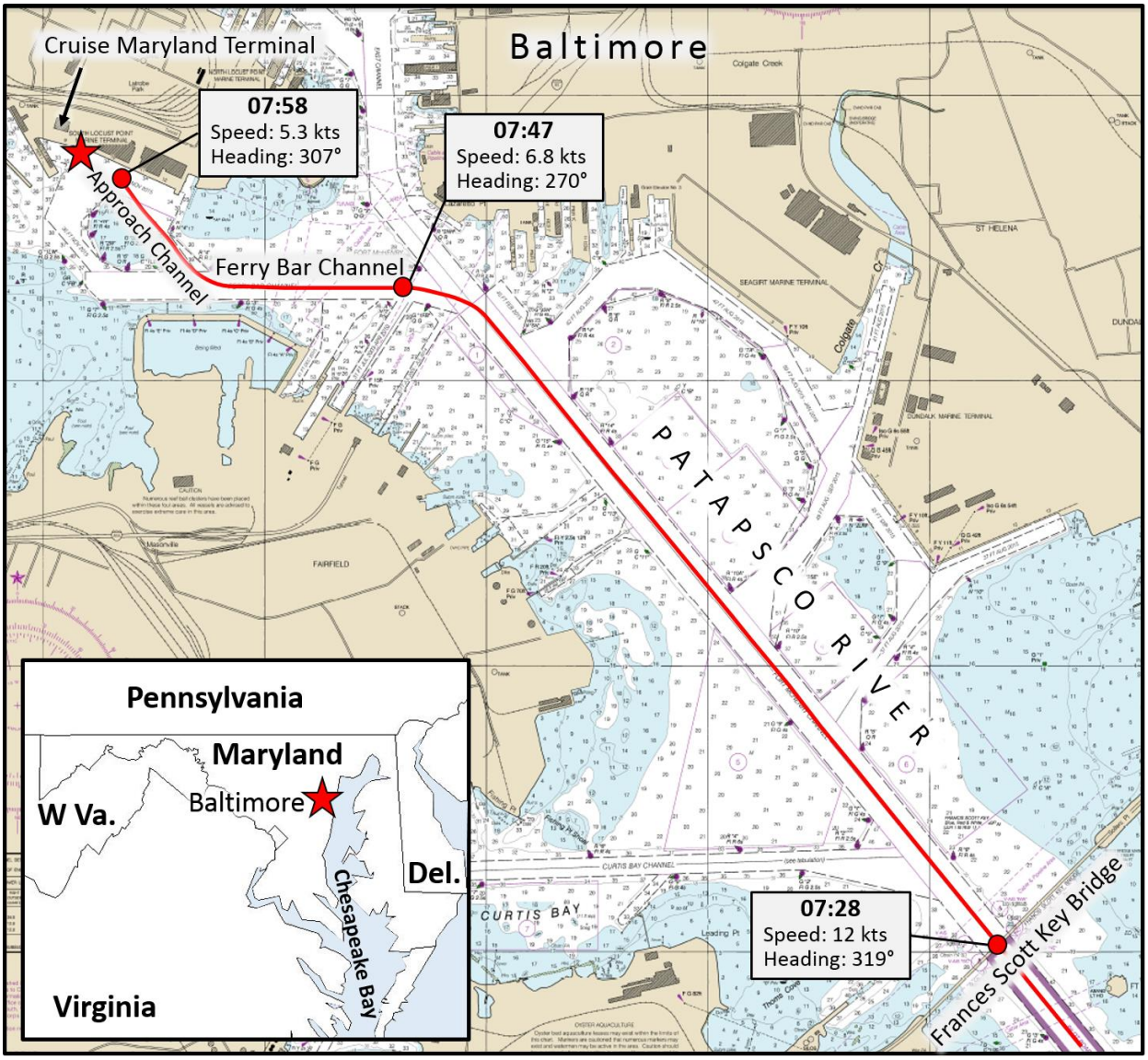
As the *Carnival Pride* continued through the northern reaches of the bay and into the Patapsco River channel that leads to Baltimore Harbor, the pilot was supported by various deck officers and crewmembers of the ship's bridge team who were tending to their duties and manning various equipment and the helm. In addition, the staff captain came to the bridge about 0600 and began overseeing operations.

At 0728, the vessel passed under the Frances Scott Key Bridge at the southeast end of Baltimore Harbor, after which the pilot ordered the azipods reduced to 60 rpm and again to 40 rpm prior to turning into Ferry Bar Channel.

Before the vessel made its turn, the captain arrived on the bridge and conducted a briefing with the bridge team in preparation for docking. The pilot conned the vessel through the turn, steadying on a heading of 270 degrees with the vessel's speed about 6.8 knots. At that time, the pilot transferred the conn to the staff captain, who accepted by repeating, "Speed 6.8 knots, 270. Perfect. I have the conn."

It is common practice on commercial vessels for pilots, and in some cases docking pilots, to conn during berthing maneuvers. However, by mutual agreement between the Association of Maryland Pilots and the passenger vessels berthing at the cruise ship terminal, the conn was shifted from the pilot to a ship's officer—in this case the staff captain—for the final approach and docking. Following the changeover, the pilot assumed an advisory role vice giving direct orders for the helm and engines. The staff captain had previous experience, under the captain's supervision, operating the controls during berthing maneuvers.

[2] The addition of a pilot is compulsory for transits through US inland waters.



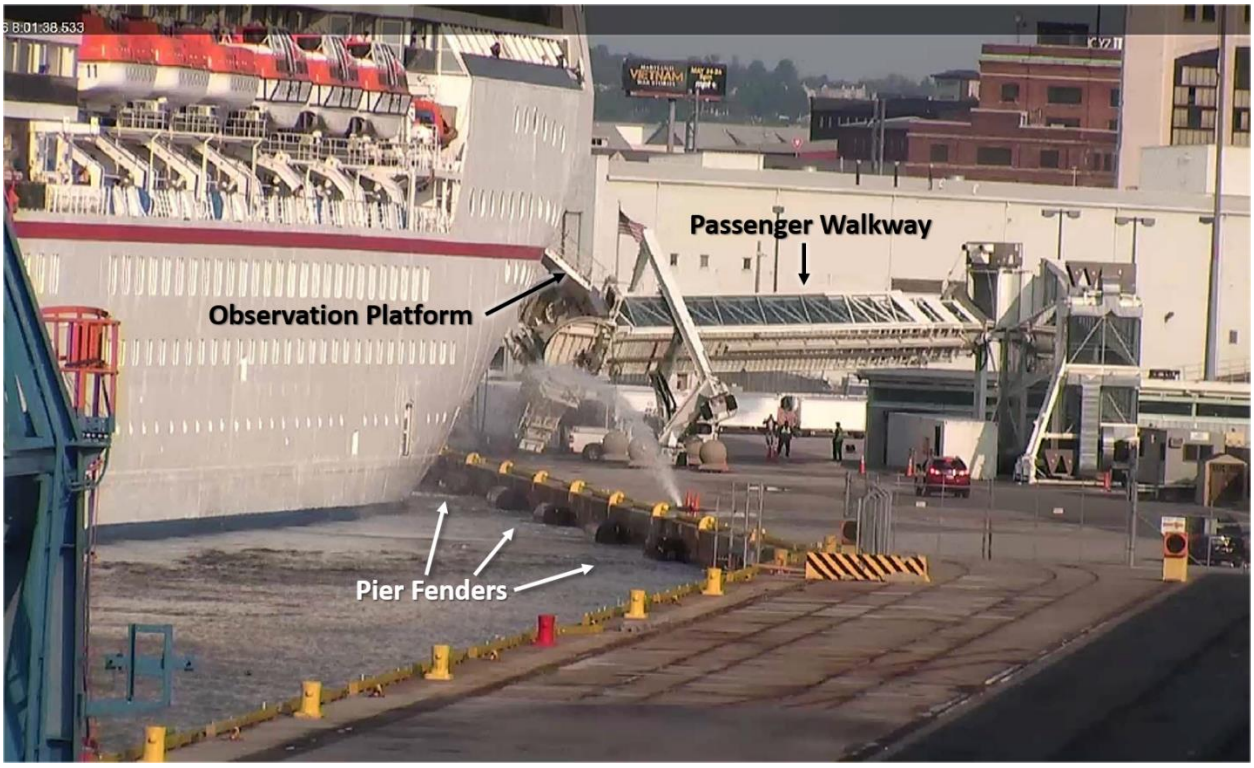
Excerpt from National Oceanic and Atmospheric Administration (NOAA) chart 12281 showing approach to cruise terminal via Patapsco River in Baltimore Harbor. The red star denotes the accident location and the red line shows the track of the *Carnival Pride* as it proceeded to the berth.

Shortly before turning northwest from Ferry Bar Channel into the passenger terminal access channel (known locally as the Fruit Pier Channel), control of the engines and the helm were shifted from the center console and the stand-alone helm station to the starboard bridge wing console. With a push of a button, the staff captain accepted control of the engines and helm at the console, which was in joystick mode. The joystick tested and operated normally to his satisfaction.

The pier heading at the Cruise Maryland Terminal was 284 degrees, yet, when the bow of the *Carnival Pride* was about half a ship's length away from the dock, the vessel was on a heading of 307 degrees at a speed of 5.3 knots. At about that time, the vessel's voyage data recorder (VDR) recorded the pilot cautioning him, "You need to slow down."

The staff captain realized that the angle of approach was too steep and the speed was too fast. In order to gain more thrust as well as control the vessel's rate of closure with the dock, he attempted to transfer from joystick to manual control at the bridge wing console. This action was intended to provide more direct control of the vessel's propulsion in order to maneuver away from the dock.

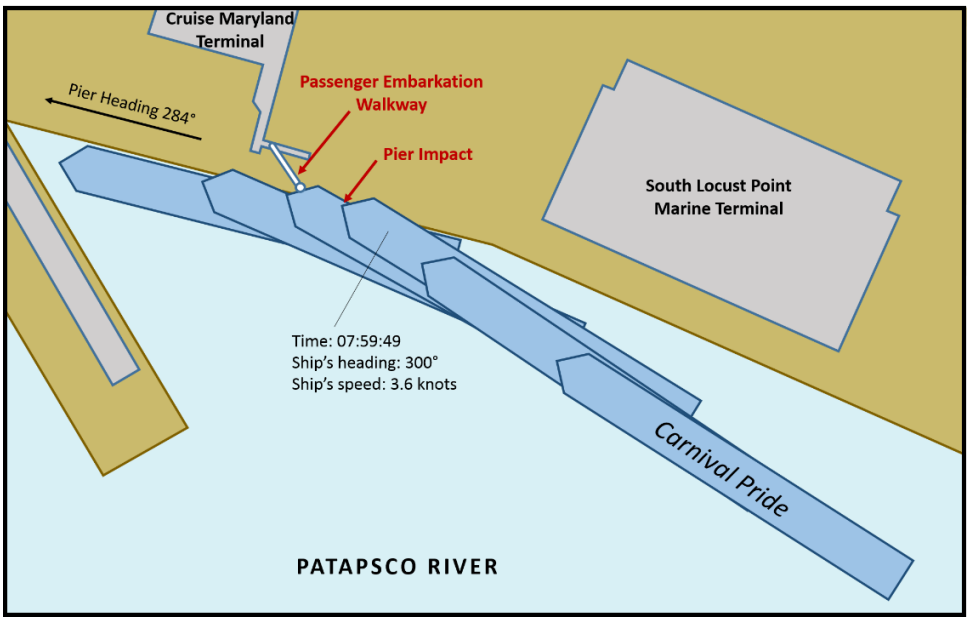
Despite repeated attempts, the staff captain's efforts to transfer control to the manual levers were unsuccessful. As the distance to the dock continued to decrease, the captain took the conn from the staff captain and shifted engine and helm control back to the center console. Once control returned to the center console, the captain regained full control of the azipods and thrusters. He then applied full thrust away from the berth and slowed the ship's forward progress, but not before the bulbous bow struck the fendering and under-pier support columns. As the vessel continued moving forward, the elevated passenger embarkation walkway was first struck by the *Carnival Pride*'s flared bow. The walkway was then struck by the ship's starboard-side retractable observation and mooring platform, deployed and rigged to assist in the mooring operation, which caused the walkway to collapse on top of three port department vehicles parked on the pier.



The elevated passenger embarkation walkway, in the midst of falling to the ground and crushing three vehicles, after it was impacted by *Carnival Pride*'s observation and mooring platform. (Screen capture provided by US Coast Guard)

Analysis

The pilot stated that on the day of the accident the vessel was approaching faster than normal. Statements from the *Carnival Pride*'s bridge team confirmed the pilot's assessment that the speed was faster than normal during the approach.



Positions of *Carnival Pride* as the vessel approached and allided with the pier. (Graphic based on screen capture of ship's electronic chart display and information system [ECDIS], automatic information system [AIS] data, and satellite imagery of the terminal and pier)

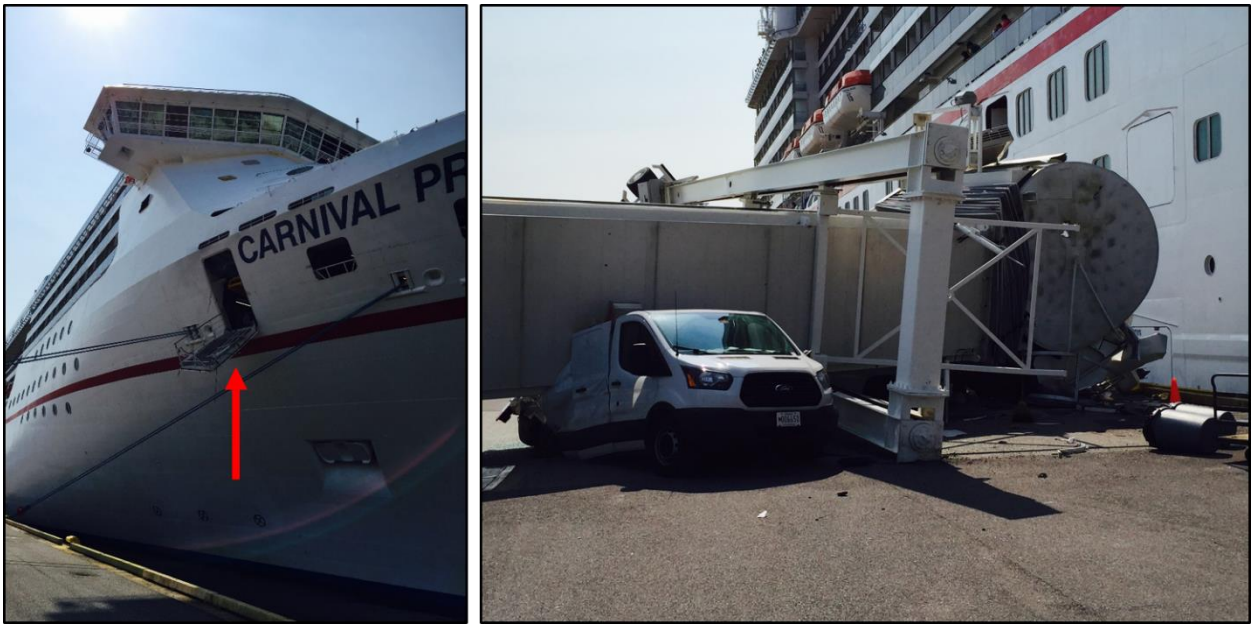
The staff captain allowed the vessel to approach the pier too fast and at an angle too steep because he misjudged the power available in the joystick mode for correcting the maneuver. In the seconds it took him to assess that the joystick control would not be enough, in his opinion, to slow the ship, he lost valuable time in shifting to manual control. In his haste to shift control, he was unable to assume manual control at the bridge wing station, an event the staff captain could not explain. The vessel's operating company was not able to replicate the failed transfer of control from the joystick mode to the manual mode during testing on subsequent voyages. Thus, the company has been unable to determine a cause other than possible human error.

Starboard bridge wing console where the staff captain was conning. The red box outlines the joystick control and the green box, the manual controls.

The elevated passenger embarkation walkway, which connected to the vessel's sideports when embarking and debarking passengers, was retractable and could also be swung away from the side of the pier when not in use. Yet on the morning of the accident, the walkway was extended nearly to the water's edge. If the walkway had been in a position that the flare of the vessel's bow and the observation and mooring platform could not make contact, damage to the walkway would not have occurred.

Damage

The elevated passenger walkway was destroyed at an estimated cost of $2 million. Repair or replacement of the three vehicles damaged when the walkway collapsed onto them totaled $75,000. The retractable observation and mooring platform on the forward starboard side of the *Carnival Pride* absorbed the majority of the impact with the walkway and was bent out of shape, hanging at the ship's side. Additional damage to the vessel included scraping and minor indentation to the side shell plating at the flare of the bow approximately 15 feet below the gunwale. Repairs to the *Carnival Pride* were estimated at $10,000.



At left, *Carnival Pride*'s damaged retractable observation and mooring platform (indicated by red arrow). At right, elevated passenger embarkation walkway lying on its side on top of dockyard vehicles following the allision. (Photos by Coast Guard)

Probable Cause

The National Transportation Safety Board determines that the probable cause of the *Carnival Pride*'s allision with the pier and elevated passenger embarkation walkway was the staff captain's errors during the docking maneuver—approaching the pier with excessive speed and at too steep of an angle—and the captain's insufficient oversight during the maneuver.

Vessel Particulars

Vessel	*Carnival Pride*
Owner/operator	Carnival Corporation
Port of registry	Panama City
Flag	Panama
Type	Passenger vessel
Builder, year	Kvaerner Masa-Yards, 2001
Official number	9223954
Construction	Steel
Length	960 ft (292.5 m)
Draft	29 ft (8.84 m)
Beam/width	105.6 ft (32 m)
Gross tonnage	85,920 gross tons
Engine power	2 x 23,602 hp ABB Azipods 3 x 2,597 hp (1191kW) bow thrusters
Persons on board	2,449 passengers 913 crewmembers

NTSB investigators worked closely with our counterparts from Coast Guard Sector Maryland-National Capital Region throughout this investigation.

For more details about this accident, visit www.ntsb.gov and search for NTSB accident ID DCA16FM038.

Issued: February 24, 2017