



AVIATION



HIGHWAY



MARINE



RAILROAD



PIPELINE

Issued November 9, 2021

MAB-21/23

Contact of *Island Lookout* Tow with Centerville Turnpike Bridge

On November 14, 2020, about 0435 local time, the towing vessel *Island Lookout* was transiting eastbound with a crew of four on the Albemarle and Chesapeake Canal near Chesapeake, Virginia, pushing ahead barge *BH 2903*, which was loaded with scrap steel.¹ As the tow was attempting to pass through the Centerville Turnpike Bridge, the barge struck the swing span of the bridge while it was opening. No pollution or injuries were reported. Estimated damages amounted to \$2.86 million for the bridge and \$34,000 for the barge.



Figure 1. *Island Lookout*, pushing a barge similar to the *BH 2903*, under way before the accident. (Source: William L. Baxter)

¹ (a) In this report, all times are eastern standard time, and all miles are nautical miles (1.15 statute miles). (b) Visit [ntsb.gov](https://www.ntsb.gov) to find additional information in the [public docket](#) for this NTSB accident investigation (case no. DCA21FM005). Use the [CAROL Query](#) to search safety recommendations and investigations.

Accident type	Contact
Location	Albemarle and Chesapeake Canal, mile 15.2 of South Branch of Elizabeth River to Albemarle and Chesapeake Canal section of Atlantic Intracoast Waterway, Chesapeake, Virginia N 36°43.42', W 76°11.19
Date	November 14, 2020
Time	0435 eastern standard time (coordinated universal time -5 hours)
Persons on board	4 (<i>Island Lookout</i>)
Injuries	None
Property damage	\$2.9 million est.
Environmental damage	None
Weather	Visibility 6-10 nm, winds and seas calm, air temperature 44°F, water temperature 63°F
Waterway information	Navigable channel, depth 12 ft, width 250-300 ft, no current

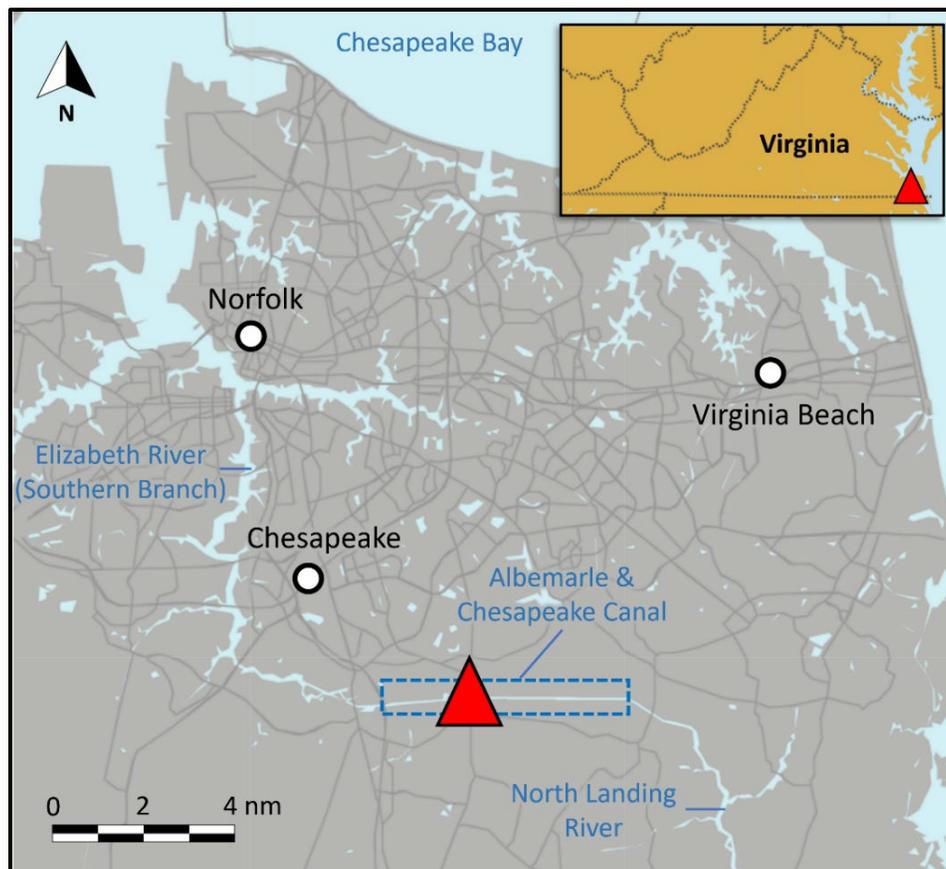


Figure 2. Location of accident where the barge *BH 2903* struck the Centerville Turnpike Bridge, as indicated by the red triangle. (Background source: Google Maps)

1. Factual Information

1.1 Accident Events

At 2335 on November 12, 2020, the 65-foot-long towing vessel *Island Lookout* departed Baltimore, Maryland, pushing ahead the 295-foot-long barge *BH 2903*. The barge was loaded to a draft of 9.6 feet with 3,224 tons of shredded scrap steel bound for a steel plant in Hertford County, North Carolina. The vessel had a crew of four: a captain, a mate, and two deckhands. Both the captain and mate stated that they had sailed along the same route for 10 years or more, making the transit “a thousand times.”

Over the next day, the tow transited south through Chesapeake Bay and into the Elizabeth River, near Norfolk, Virginia. The captain and mate reported no issues with steering or engines during the transit.

On the night of November 13, the mate relieved the captain for his normal 2200-0500 watch at the helm of the *Island Lookout*. After a turnover discussion, the captain went to his cabin to sleep, and the mate was alone in the wheelhouse (the deckhand on watch was making rounds of the vessel and barge). Just before 0400 the next morning, the mate maneuvered the *Island Lookout* and its tow into the Albemarle and Chesapeake Canal from the Elizabeth River after passing through the Great Bridge Lock in Chesapeake.

The 10-mile-long Albemarle and Chesapeake Canal connects the southern branch of the Elizabeth River with the North Landing River, allowing inland passage between Chesapeake Bay and Albemarle Sound as part of the Atlantic Intracoastal Waterway. The canal channel is between 250 and 300 feet wide for most of its length but narrows as it passes through two drawbridge openings. The project depth for the channel is 12 feet.

The second of the two bridge openings was the Centerville Turnpike Bridge, a swing bridge with a 168-foot-long moveable span that opened in the counterclockwise direction and closed in the clockwise direction. The pivot point for the swing span was offset from center, with the section of the span that crossed the navigation channel being 105 feet in length. A fendering system constructed of wood on steel frames was installed on either side of the channel and protected the bridge span and piers from vessel strikes when the bridge was in the fully opened position. The width of the navigation channel between the fenders was 80 feet, and the eastbound orientation of the channel was 084°.

Based on automatic identification system (AIS) data, at 0427:37 the *Island Lookout* was headed eastbound on the canal 0.5 miles from the Centerville Turnpike Bridge. According to the mate, he radioed the bridge’s operator (tender) about this time to

request an opening. The mate told investigators that he had to call the bridge operator four times before he received a response. (VHF channel 13 communications were not recorded.) He said that after each unanswered radio call, he slowed the towing vessel's engines, moving the throttles from 1,610 to 1,500 rpm, then to 1,300 rpm, and finally to 1,200 rpm. Between 0428:07 and 0429:27, the vessel slowed from 4.5 to 3.9 knots.

The mate told investigators that when the bridge operator acknowledged his request for opening after the fourth call, the bridge operator told him to "bring it on." For the next 2 minutes, the speed of the *Island Lookout* remained at 3.9 knots. The mate stated that while approaching the bridge, he trained the towing vessel's two spotlights on the fenders on either side of the bridge opening.

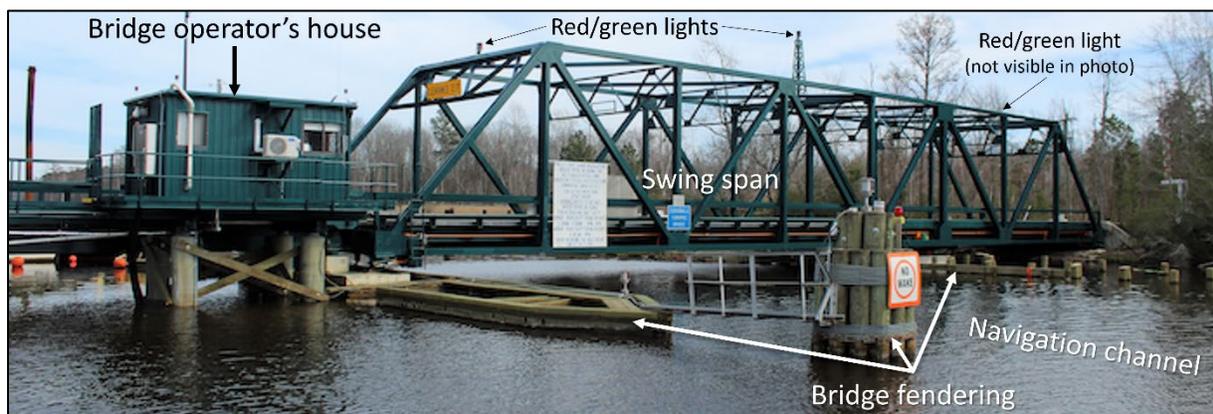


Figure 3. Centerville Turnpike Bridge in the closed position. (Source: City of Chesapeake)

According to the bridge operator, after receiving the call from the *Island Lookout*, he began the procedure for the bridge opening: (1) turning the control power on, (2) activating red stop lights on the roadway approaching the bridge from either side, (3) lowering roadway warning gates, (4) lowering roadway barrier gates, (5) disengaging wedges that locked the swing span of the bridge in place, and (6) opening the span. Each step in the procedure was required to be completed by the bridge operator before the next step was executed. Video footage of the bridge at the time of the accident showed no vehicle traffic on the bridge or approaching roadway, and the operator reported no delay in opening due to vehicles on the bridge. Per the video footage, the warning gates began to close at 0431:46. At 0432:29, the bridge span began to open.

The bridge operator stated that when the swing span began to open, he sounded one prolonged blast of the bridge's horn followed by one short blast of the horn, which is the sound signal specified in regulations for acknowledging a request to open a bridge.² The mate stated that he did not hear, nor had he ever heard in the past, the bridge horn sound when the Centerville Turnpike Bridge was opened. The captain also

² Title 33 *Code of Federal Regulations* part 117.15(b)(3).

stated that he had never heard a horn during previous transits through the Centerville Turnpike Bridge.

According to the *Island Lookout* mate, when the swing bridge was about halfway open, he determined that the bridge would not be open in time for the tow to safely pass through. He stated that he immediately put both engines at 1,800 rpm full astern. However, he said that when he had reversed the engines, the 54-foot-wide barge began to swing to port toward boats that were moored at a marina located adjacent to the bridge. Electronic charting system data, correlated to AIS data, showed that the tow's heading at 04:32:45 was 078°, 6° to port of the channel heading, when the bow of the barge was 600 feet from the bridge. To counteract the port movement and avoid hitting the moored boats, the mate shifted the *Island Lookout's* port engine to 1,000 rpm ahead and turned the main and flanking rudders to starboard. The starboard engine remained at 1,800 rpm astern. These actions turned the tow to starboard, and the mate said that he moved the throttle for the port engine back to 1,800 rpm astern.

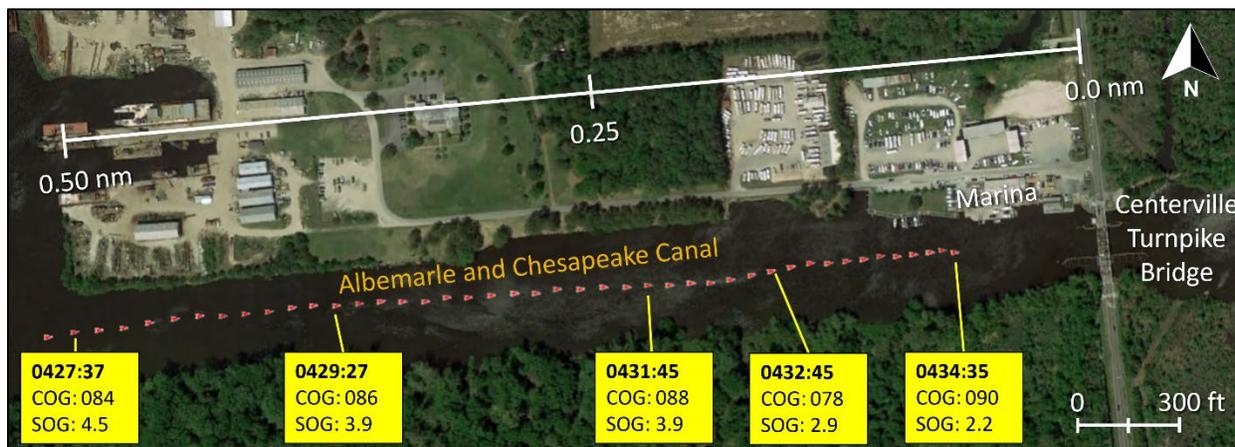


Figure 4. AIS track of *Island Lookout*, as represented by red arrow points. The AIS antenna was located on the towing vessel 315 feet aft of the bow of barge *BH 2903*. (Background source: Google Earth)

By the time the bow of the barge was about 175 feet from the bridge, the tow's speed had reduced to 2.8 knots, but while it continued to slow, its momentum carried it toward the bridge. At 0434:39, the forward starboard corner of the barge struck the end of the swing span as it was 6° from being fully open, with the bridge overhanging the fendering system by 7 feet. Based on the vessel's electronic charting system data, its heading as it struck the bridge was 090° and its speed was 2.0 knots.

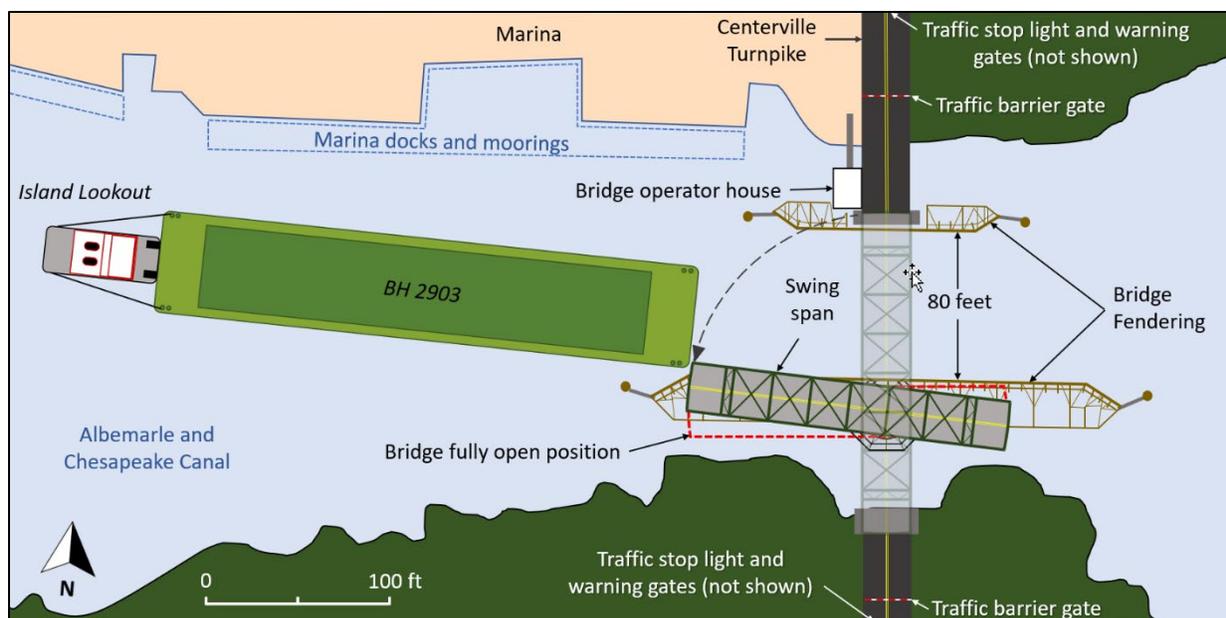


Figure 5. Illustration of the Centerville Turnpike Bridge at the time of the accident.

1.2 Additional Information

1.2.1 Vessel Information

The *Island Lookout* was built in 1998 by C & G Boat Works Inc. in Mobile, Alabama. It had two propellers, each driven by 675-hp Volvo Penta diesel engines, and two main rudders that were controlled via either one of two joysticks mounted on the helmsman's chair armrest and on the wheelhouse control console. The vessel was also equipped with four flanking rudders controlled by tiller handles on the control console. The open hopper barge *BH 2903* was constructed of steel in 2019 at the Corn Island Shipyard in Grandview, Indiana.

The mate stated that the *Island Lookout* handled well when pushing a barge ahead and moving forward "at a real nice momentum." He noted that in shallow water, however, a tow would occasionally veer to port or starboard, requiring corrective steering to regain course. Both the captain and mate stated that control was more difficult when maneuvering astern in shallow water, with the mate stating that the tow tended to "veer off a lot quicker and faster."

1.2.2 Bridge Information

The Centerville Turnpike Bridge was constructed of steel in 1955. It was owned, operated, and maintained by the City of Chesapeake. The bridge had been overhauled in 2019-2020. In addition to lights illuminating the roadway, three lights were installed at

each end and at the center of the swing span, with the center light sitting atop a small tower. The lights had glass lenses divided in 90° segments that alternated in color between red and green. When viewed from the side of the bridge, the lights displayed red, and when viewed from the end of the bridge, the lights displayed green. Thus, when the bridge was closed, a vessel operator would see red lights, and when the bridge was open, the vessel operator would see green lights. When the bridge was opening or closing, a vessel operator could see red, green, or both colors, depending on the position of the bridge. The *Island Lookout* captain stated that when he had been at the helm while transiting the bridge opening at night, he knew when the bridge was fully open when the green lights were lined up vertically, similar to range lights. Investigators asked the mate if he had ever had trouble seeing the bridge; he answered, "No, the bridge has got plenty of lights. We can see the bridge."

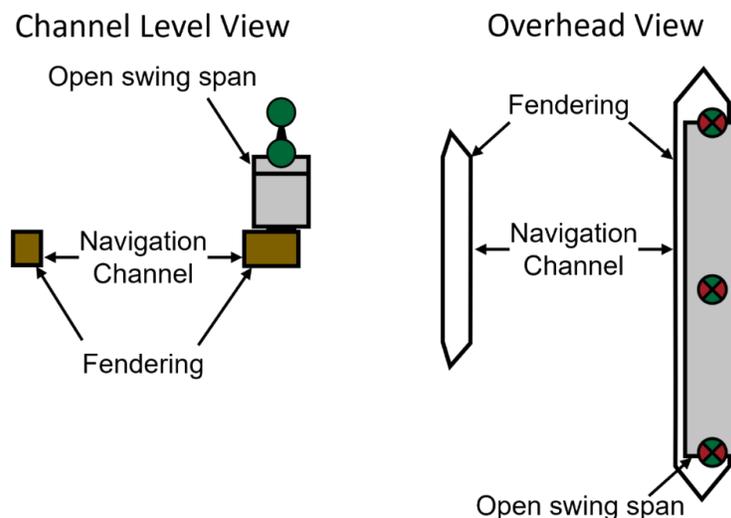


Figure 6. Simple representation of swing span lighting.

According to the operations manual, the bridge was fully open when the swing span had rotated approximately 89° from the closed position, and for the last 6° of rotation, the swing rate slowed to "creep speed." (Video footage of the bridge appears to show the swing rate slow down just before being struck by the barge.) The bridge engineer for the City of Chesapeake stated that the swing rate was not known or tracked, but the total time for the bridge to move from closed to fully open was about 2 minutes 30 seconds. According to the bridge engineer, the time required to complete all pre-opening functions (turn on control power, activate stoplights, lower warning and barrier gates, disengage bridge wedges) ranged from about 1 to 2 minutes, depending on the abilities of the operator. Thus, the total time required to open the bridge from the first operator action to fully opened span was between 3 minutes 30 seconds and 4 minutes 30 seconds.

The bridge operator told investigators that he normally radioed vessels to “bring it on through” only after the bridge was fully open. During a postaccident interview, the *Island Lookout* captain told investigators that it was common practice for operators of the Centerville Turnpike Bridge to instruct vessel operators to “bring it on” before the bridge was fully opened, explaining that the operators did not like vessels to slow as they approached the bridge because they wanted to minimize the time that the bridge was open. Both the *Island Lookout* mate and the bridge operator stated that after the initial request and acknowledgement for opening the bridge, there was no other communication between them until after the accident. (The deckhand on watch was inside the vessel, on the second deck, at the time of the bridge strike and did not witness the accident.)

Bridge operators worked 8-hour shifts: 0800–1600, 1600–2400, and 2400–0800. The operators’ only duties were listening to the VHF radio for vessel requests and performing the opening and closing procedures. When not operating the bridge, they were permitted to watch television, use cell phones, read, or any other activity that did not interfere with their primary duties. They were not allowed to sleep. The bridge operator on the day of the accident stated that he was using his phone at the time the *Island Lookout* requested the opening of the bridge, and the opening was the first during his watch.

The bridge operator had about one year of experience as a bridge operator, working each of the city’s three drawbridges. He had been trained to operate the Centerville Turnpike Bridge in February 2020 by the contractor overseeing the 2019–2020 overhaul.

1.2.3 Drawbridge Regulations

In accordance with Title 33 *Code of Federal Regulations* part 117, drawbridges must be opened “promptly and fully” when a request or signal is given by a vessel. For the Centerville Turnpike Bridge, the regulations permitted exceptions during established periods of heavy vehicle traffic, but these exceptions did not apply when the accident occurred at 0435 in the morning.

The regulations indicate that requests for opening may be made by sound signals, visual signals, or VHF radio communications. Bridge operators are required to acknowledge when a request is received; signals or communications are not required to notify a vessel when a bridge is fully opened. The regulations do not specify what vessel and bridge operators are required to state during radio communications, nor does it require responses be repeated back to ensure understanding between the operators.

1.2.4 Damage

Barge *BH 2903* sustained indentation of its hull plating on the starboard bow, with paint scraped away near the indentation. There was no damage to the *Island Lookout*.

Steel I-beams and other structural members of the Centerville Turnpike Bridge swing span were bent and deformed by the barge strike, and the machinery for swinging the bridge was deformed and fractured, rendering it inoperative. Other damage included broken bolts, paint scrapes and indentations, and shattered wood fendering. The bridge was closed to vehicle traffic for over 6 months after the accident for repairs.

2. Analysis

Visibility was not restricted, so the Centerville Turnpike Bridge's red and green range lights would have been visible to the mate, and the roadway over the bridge was well lit. The mate stated that he could clearly see the bridge at night. Furthermore, he stated that he had trained his spotlights on the bridge fenders, further illuminating the structure. Thus, visibility was not a factor in the accident.

The accounts of the *Island Lookout* mate and the bridge operator differed regarding the use of the bridge horn as a signal acknowledging the request for opening. However, the regulations allow for requests and acknowledgments to be conducted by sound signal, visual signal, or VHF communications; both the mate and bridge operator reported that a verbal exchange was conducted. The use or unuse of the bridge's horn was therefore not a factor in this accident.

2.1.1 Bridge Operator's Actions

The mate stated that he first radioed the bridge operator to request an opening when the *Island Lookout* was 0.5 miles from the bridge, which would have been about 0428. Had the vessel and tow maintained the 4.5-knot speed that it was making at that time, it would have taken 6 minutes to transit the distance to the bridge, accounting for the length of the barge ahead of the towing vessel. Absent road traffic, the maximum time required to open the bridge, including all pre-opening actions, was 4 minutes 30 seconds. Thus, there should have been sufficient time for the bridge to fully open and the *Island Lookout* tow to pass through without incident, if the mate made his first call to the operator at the time he stated and the bridge operator responded promptly to the call.

The mate said that he called the Centerville Turnpike Bridge operator four times before the operator acknowledged his request to open the bridge, and he slowed the

tow with each unanswered response. The mate stated that the lack of the initial response prompted him to slow the tow; AIS data showed the speed of the *Island Lookout* slowed from 4.5 to 3.9 knots between 0428:07 and 0429:27. The first indication in video footage of the pre-bridge sequence was not until 0431:46, with the lowering of the warning gates. The bridge operator did not report any vehicle traffic, and video footage showed no vehicles on the bridge or approaching roadways in the 2 minutes before its opening. Therefore, vehicle traffic does not appear to have been a factor. Thus, although VHF channel 13 communications were not recorded, the evidence is consistent with the *Island Lookout* mate's account, and the bridge operator likely did not respond to his request for opening until about 3 minutes 30 seconds after the first radio call.

2.1.2 Mate's Actions

The *Island Lookout* was pushing ahead a barge fully laden with about 3,200 tons of scrap steel. According to the mate, the vessel and tow had a tendency to sheer to port or starboard, particularly in a shallow channel or when going astern. The project depth for the Albemarle and Chesapeake Canal was 12 feet, leaving 2.5 feet of clearance below the bottom of the barge. The opening at the Centerville Turnpike Bridge was 80 feet wide, giving just 13 feet of clearance on either side of the 54-foot-wide barge, if centered in the channel. The marina with moored boats immediately adjacent to the bridge further constrained operations in the channel. All these factors warranted additional caution and should have factored into the mate's decisions when planning and executing the transit of the bridge opening.

After determining that the bridge would not open in time for the tow to pass, the mate attempted to avoid contact with the bridge by putting both engines full astern. However, the barge turned to port as the tow slowed, risking a collision with boats moored at the marina, some of which may have been occupied. The mate responded to the port turn by moving the port engine throttle to the ahead position and the rudders to starboard, which arrested the turn but reduced the tow's rate of deceleration, allowing the tow's momentum to carry it into the bridge. (The *Island Lookout*'s heading at the time of the accident [090°] compared to the channel heading through the bridge [084°] suggests that the mate may have overcorrected in his response to the port turn, but given the 360-foot-long tow's maneuverability at slow speeds, it would have been difficult to exactly meet the intended heading through the bridge.) Thus, by the time the mate determined that the tow could not safely pass through the bridge opening and then took action, an accident—either by colliding with marina vessels or striking the bridge—was inevitable. Earlier action was required to avoid the accident.

Regulations governing bridges over navigable waters state that bridges must open promptly and fully for the passage of vessels. However, bridges can be delayed in opening for a variety of reasons, so vessel operators must be prepared to slow or stop in

time to prevent an accident. Using the red/green range lights on the bridge, the mate on the *Island Lookout* would have been able to determine the position of the swing span throughout its opening sequence and therefore should have had a clear understanding of the status of the bridge as he made his approach. He had 10 years' experience operating the *Island Lookout* with a barge in the Albemarle and Chesapeake Canal and thus understood the maneuvering limitations of the tow and the restrictions of the waterway. The evidence suggests, however, that the mate misjudged his speed of approach relative to the position of the bridge as it opened and did not sufficiently slow the vessel in time to safely pass.

3. Conclusions

3.1 Probable Cause

The National Transportation Safety Board determines that the probable cause of the contact of the *Island Lookout* tow with the Centerville Turnpike Bridge was the mate's misjudgment of the tow's speed of approach relative to the status of the swing bridge opening, which resulted in insufficient time to slow the tow and avoid striking the bridge before it was fully open and safe to navigate.

Vessel	<i>Island Lookout</i>	<i>BH 2903</i>
Type	Towing vessel	Hopper barge
Flag	United States	United States
Port of registry	Charleston, South Carolina	Edenton, North Carolina
Year built	1998	2019
Official number (US)	1069715	1299240
IMO number	N/A	N/A
Classification society	N/A	N/A
Length (overall)	65 ft (19.8 m)	295 ft (89.9 m)
Beam	26 ft (7.9 m)	54 ft (16.5 m)
Draft (accident)	7 ft (2.1 m)	9.6 ft (2.9 m)
Tonnage	127 GRT	1,605 GRT
Engine power; manufacturer	2 x 675 hp (503 kW); Volvo Penta D16 MH diesel engines	Not propelled

NTSB investigators worked closely with our counterparts from **Coast Guard Sector Virginia** throughout this investigation.

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The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, "accident/incident 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 investigating accidents and incidents 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)).

For more detailed background information on this report, visit the NTSB investigations website and search for NTSB accident ID **DCA21FM005**. Recent publications are available in their entirety on the NTSB website. Other information about available publications also may be obtained from the website or by contacting—

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