



National Transportation Safety Board

Marine Accident Brief

Collision and Subsequent Sinking of Towing Vessel *Specialist*

Accident no.	DCA16FM033
Vessel name	<i>Specialist</i>
Accident type	Collision; sinking
Location	Hudson River at Tappan Zee Bridge, pier 31, Tarrytown, New York
Date	March 12, 2016
Time	0500 eastern standard time (coordinated universal time – 5 hours)
Injuries	3 fatalities
Property damage	Constructive total loss of vessel
Environmental damage	Oil sheen observed
Weather	Clear, 5-knot winds from the west, air temperature 34°F
Waterway information	Hudson River, Tarrytown, New York. At the time of the accident, the current was ebbing from the north at about 1.2 knots, and the water temperature was 39°F.

About 0500 on Saturday, March 12, 2016, the uninspected towing vessel *Specialist*, transiting southbound on the Hudson River while towing a tower crane barge with two other tugboats, struck a construction barge that was spudded down alongside a concrete pier at the new Tappan Zee Bridge construction site.¹ The *Specialist* subsequently sank, resulting in three crew fatalities. The *Specialist* was raised to the surface on March 24, 2016, and declared a constructive total loss.



The *Specialist* being recovered after the accident. (Photo by US Coast Guard)

* All miles in this report are statute miles.

¹ During marine construction work, deck barges are held in position by vertical steel shafts known as spuds, which are driven into the bottom of the waterway.

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The *Specialist* was a 1,700-horsepower tugboat, owned and operated by New York Marine Towing, and was based in Staten Island, New York. At 2345 on March 8, the *Specialist* with four crewmembers departed its homeport and transited to Jersey City, New Jersey, to pick up the tower crane barge *Weeks 533*. The *Specialist* was assigned, via a phone call and email, to tow the crane barge to Albany, New York, via the Hudson River. The tugboat and barge departed Jersey City at 0045 on March 9 and arrived at the Albany Terminal the following morning, March 10, at 0740.

The crew of the *Specialist* was made up of a captain, a mate, and two deckhands. The captain was credentialed as master of towing vessels upon oceans and master of vessels less than 3,000 gross tons (GT). This license was valid for service on uninspected towing vessels. He also held credentials as radar observer (unlimited) and first class pilot in areas of Maine, Massachusetts, and Alaska. The mate held credentials as master of towing vessels upon near coastal waters, and master of steam or motor vessels of not more than 200 gross registered tons (GRT) (domestic tonnage), 500 GT (ITC tonnage) upon near coastal waters. His credentials also included radar observer (unlimited). The accident voyage was the mate's first trip on the *Specialist*; he had one previous trip on another company vessel. One of the deckhands held credentials as master of self-propelled vessels of less than 100 GRT upon near coastal waters, as well as mate of vessels of less than 200 GRT upon near coastal waters. The other deckhand held credentials as able seafarer – deck; rating forming part of a navigational watch.

Weeks 533 was a 297-foot-long, 90-foot-wide barge, owned by Weeks Marine, Inc. The barge's draft on the day of the accident was recorded in the *Specialist*'s logbook as 7 feet port forward and 7 feet 5 inches starboard forward. It had a steel hull with flush deck, raked (angled) bow, and square stern. At the time of the accident, *Weeks 533* was the largest floating revolving heavy lift crane barge on the US east coast. The Clyde Iron Works model 52-DE crane installed aboard the barge was rated for 500 tons and had a 210-foot boom length. The weight of the crane was about 600 tons.



Weeks 533 with two tugboats after the accident. (Photo by Coast Guard)

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On March 10, at 1325, the *Specialist* got under way towing the crane barge, bound for Staten Island. During the transit throughout the evening, weather conditions deteriorated. The vessel turned around three times due to fog and held position from 2150 until 0430 the next morning when the fog lifted. The tow then continued the transit toward Staten Island.

At 0730 on March 11, an entry was made in the logbook of the *Specialist*: “winds 15–20, gusts to 35 @ buoy 139, barge passed us and stern struck riprap along railroad tracks.”²

At this time, the *Realist*, an 1,800-horsepower tugboat operated by the same company, was docked in Staten Island with a captain, a deckhand, and a female passenger aboard. The captain was credentialed as master of steam or motor vessels of not more than 100 GRT (domestic tonnage) upon near coastal waters. The deckhand did not have any credentials. According to a statement from the *Realist* deckhand, the operating company was concerned about the progress of the *Specialist*. A representative from the company called the captain of the *Realist* and asked him to drive his car to meet up with the *Specialist* and relieve its captain, but the captain of the *Realist* convinced the company to take the *Realist* up the Hudson River to assist. Accordingly, at 0900 on March 11, the *Realist* departed Staten Island.

Earlier that same morning, an 0810 entry in the *Specialist*'s logbook stated: “The barge passed us and spun us around – pulled to west to keep off RR [railroad] track – barge took us downriver @ full throttle – stemming wind and current @ buoys 119 & 120.”³

At 1130 on March 11, another *Specialist* logbook entry stated: “Remain stemming wind & tide @ buoys 119 & 120, await arrival of *Realist* for assist.”

At noon on March 11, the *Specialist* was downbound once again, and at 1400, it turned around to “jog to windward off Lehigh Cement.”⁴ The *Realist* arrived at 1720. The *Specialist* changed position and tied up to the starboard quarter of the barge at 1800. The *Realist* was positioned at the stern of the barge.

About 2000, Weeks Marine's 1,500-horsepower tugboat *Trevor* arrived with four crewmembers and was positioned on the port quarter of the barge. *Trevor* had departed Weeks Marine's Greenville Yard in Jersey City, New Jersey, about 0830 on March 11, stopped to take on fuel, and departed the fuel dock about 1035. The three tugboats and crane barge began transiting southbound at about 5 knots' speed with an ebb current. According to the accident report from the *Trevor*, the *Realist* was designated as the lead tugboat.

² Buoy 139 is located about 30 miles south of Albany, by the city of Hudson, New York.

³ Buoys 119 and 120 are located about 40 miles south of Albany, by the town of Catskill, New York.

⁴ *Jog* refers to holding position without making forward progress. Lehigh Cement is located on the west side of the Hudson River by buoy 104 in Catskill.

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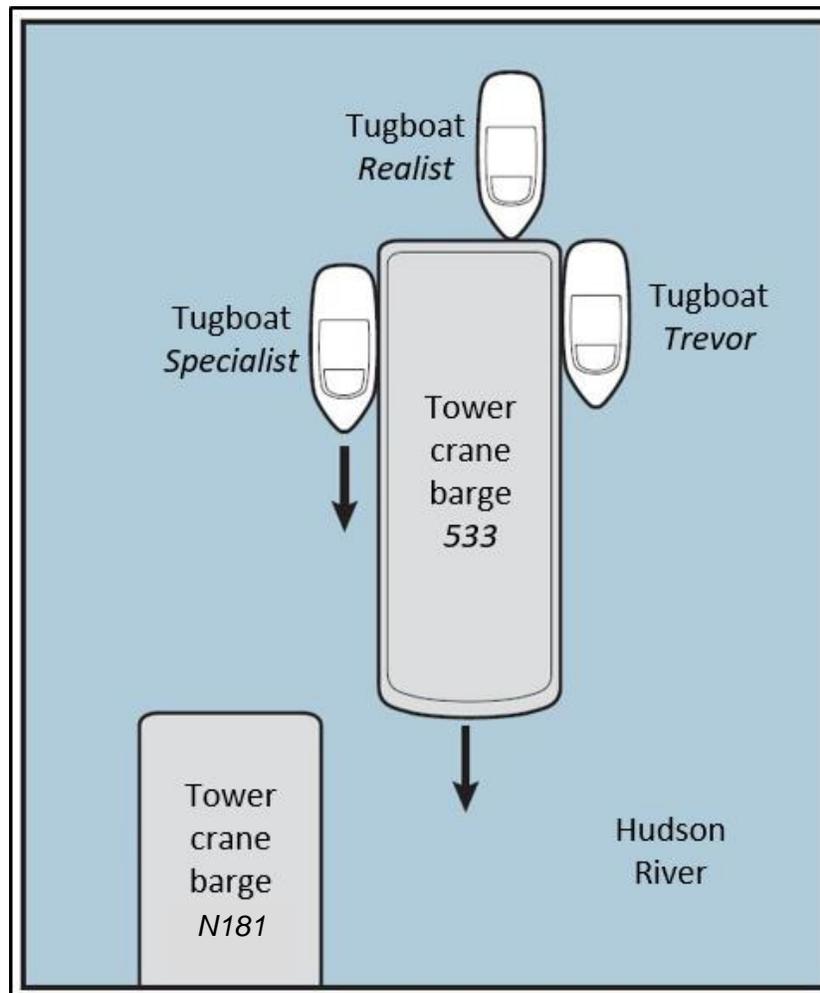


Diagram of the towing arrangement. (Image based on Coast Guard graphic)

At some time between 0030 and 0100 on March 12, the captain of the *Specialist* left his vessel for unknown reasons, crossed the deck of the barge, and assumed the helm of the *Realist* in the upper wheelhouse. The *Specialist* mate was left to navigate the vessel. The crews of the *Realist* and the *Specialist* communicated with one another throughout the evening on VHF radio.

The weather was clear and calm with approximately 5-knot winds from the west and an air temperature of about 34 degrees F. The current was ebbing at about 2 feet per second from the north with a river velocity of about 1.2 knots. This velocity was measured by the US Geological Survey south of Poughkeepsie, New York. The accident report from the construction barge company estimated the current at the accident site to be 3.5 knots; the accident report from New York Marine Towing estimated the current at the site to be 2 knots.

At mile 27.7 in the Hudson River between Tarrytown, New York, and Nyack, New Jersey, a new 3.1-mile, twin-span bridge was being built adjacent to the north side of the existing Tappan Zee Bridge, which was built in 1955. Construction on the new bridge began in late 2013. The Local Notice to Mariners, dated March 9, 2016, for week 10 of 2016, provided guidance about the construction site. The notice stated:

Construction of the new Tappan Zee Bridge across the Hudson River, mile 27.7 is in progress. Work will continue constructing access trestles and cofferdams that extend +/- 1,100 ft. west from the Westchester shoreline and +/- 1,200 ft. east of

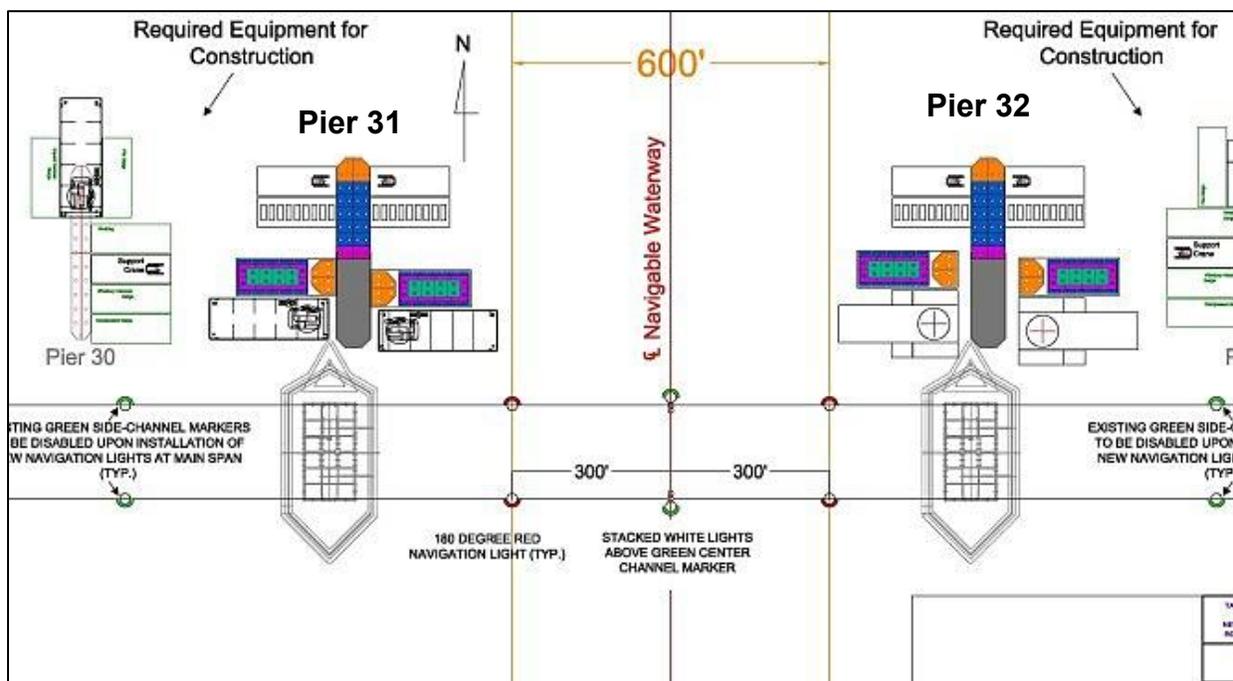
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the Rockland shoreline of the Hudson River north of the Tappan Zee Bridge. These structures will remain in place through 2017 . . . Work constructing the permanent bridge foundations has begun and will continue through 2017. The work will involve over a hundred pieces of floating equipment and support vessels that will be moored/anchored or transiting from the Westchester shoreline to the Rockland shoreline including the side channels and portions of the main navigation channel. Mariners are advised that the side channels to the east and west of the main channel are closed to vessel traffic and are advised to use only the center 600' of the main channel to navigate in a north-south direction through the area. Additionally, mariners are strongly advised to stay clear of all construction equipment and support vessels by 1000 feet or more when transiting the area . . . Mariners are advised to transit the main channel, reduce wake and use extreme caution while transiting the area in the vicinity of the Tappan Zee Bridge especially during inclement weather and darkness, and pay particular attention to vessel movements.

There was additional information provided regarding the temporary lighting:

Temporary navigational lights . . . relocated as per the diagram below at the existing Tappan Zee Bridge across the Hudson River at mile 27.0. The new temporary navigational lighting plan includes marking the 600-foot wide main channel by affixing four-180° steady, red navigation lights to the underside of the main span, 2 each on the upstream and downstream sides of the structure, 300 feet either side of the centerline of the bridge. Each green center of channel light will have 3 white lights stacked vertically above it. The center 600-feet of the Main Navigation Channel will be free for the passage of marine traffic and clear of all obstructions at all times.

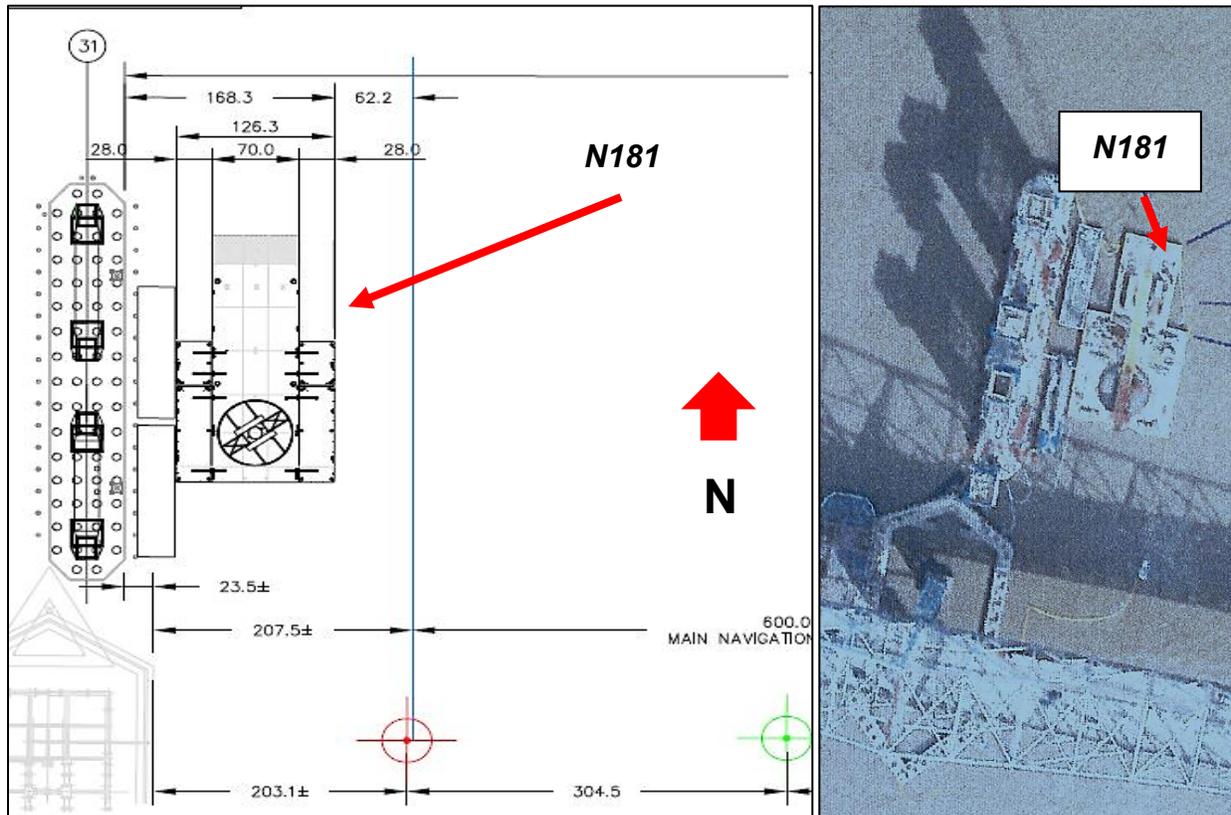
The night of the accident, the US Coast Guard inspected the navigation lights at the construction site and found them to be working properly.



Navigation lighting diagram included in Coast Guard Local Notice to Mariners.

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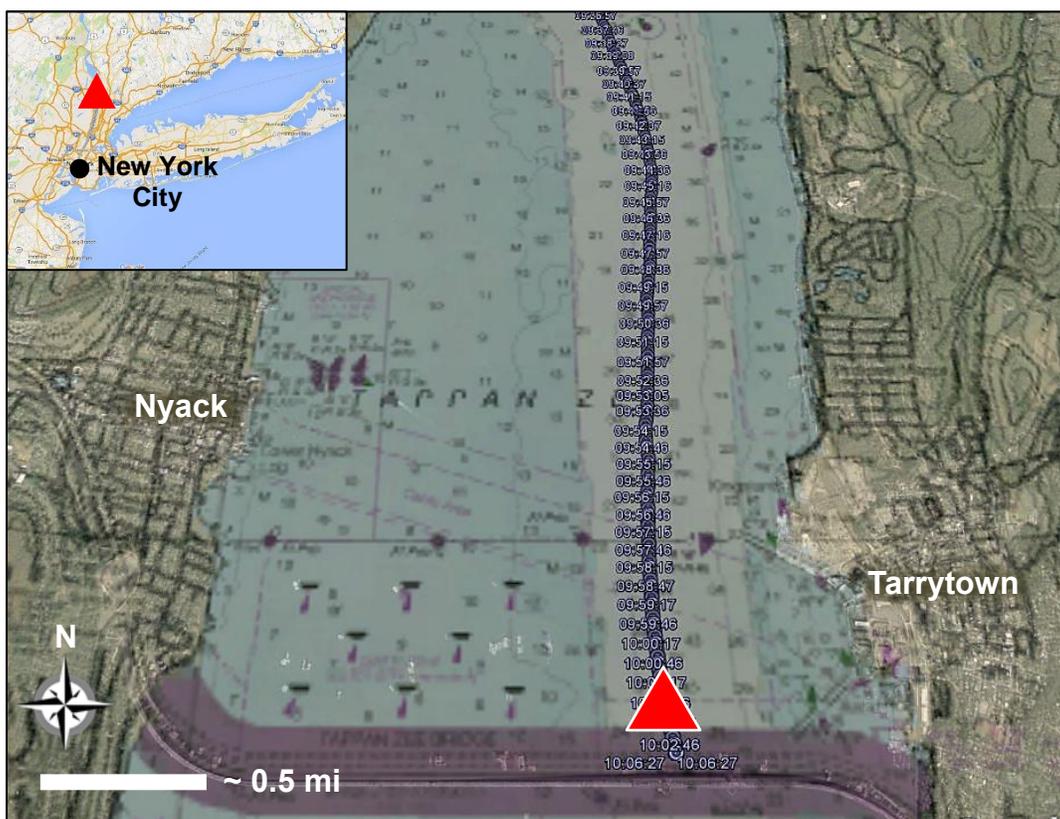
As part of the construction project, tower crane barge *Hank Hummel*—referred to as *N181*—was set up as a work platform and was located outboard of two other smaller deck barges to the east of pier 31 of the new bridge. The 70-foot-wide barge was constructed with 28-foot-wide sponsons on each side, with an overall width at the aft section of 126 feet, and was spudded to the bottom of the waterway. The aft section of the construction barge was 62 feet outside the navigable channel. The forward, starboard corner was 90 feet outside the channel. This arrangement differed from the arrangement identified in the Local Notice to Mariners, but the barges were outside the navigable channel. On the morning of March 12, about 21 workers were on or around the *Hank Hummel*.



Left, diagram of *N181*'s location at pier 31, as if seen from above. (Diagram by TZBC) Right, aerial photo of the area near pier 31. (Photo by WCPD)

As the *Weeks 533* flotilla transited southbound on the Hudson River, it averaged speeds of about 7 knots. About 0400, the speed of the tow began increasing from 6.5 knots, reaching 8 knots at 0500. As the vessels approached the bridge construction area, after first giving a favorable report that there was adequate room, the mate of the *Specialist* radioed that there was not enough clearance between the tow and the spudded *N181* at pier 31. He said to the other tugboat operators, “it’s looking tight, go left” [east], and then, “go hard left.” Automatic identification system (AIS) data showed the flotilla approaching the Tappan Zee Bridge to the west side of the center of the channel and turning toward the center of the channel. Witnesses indicated that the flotilla approached the construction barge at an angled heading. The speed of the *Trevor* was recorded by AIS as 8 knots at 0500.

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AIS data of the *Specialist's* track with an overlaid red triangle marking the approximate site of the accident. (Data from the Coast Guard Navigation Center) Insert shows a larger view of the area, with the accident site marked by a red triangle. (Google Maps)

Before the flotilla could maneuver away from the spudded barge, the starboard side of the *Specialist* struck the forward starboard corner of *N181* at about 7.8 knots, causing significant damage to the *Specialist* above the waterline. The mate, who had been at the helm, jumped off the *Specialist* and onto the construction barge after the collision. The ebbing current pushed the *Specialist* into the raked bow of the construction barge and began pushing the tugboat under water. According to statements from the workers on *N181*, the mate returned to the tugboat to attempt to help a deckhand who was trapped inside and calling for help. The *Specialist* took on water through open doors and rapidly sank with the mate and two deckhands aboard. After the vessel sank, several workers from the construction barge saw the mate in the water, being swept away by the current. They threw life rings toward him but he was unresponsive. A nearby rescue boat recovered the mate about 100 yards from the accident site moments later and rushed him to shore; attempts to revive him were unsuccessful.

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***Specialist*, moments after colliding with barge N181. (Photo by witness)**

After the accident, no crewmembers from the *Specialist* or the *Realist* answered investigators' questions due to possible pending charges stemming from an ongoing criminal investigation. In an effort to determine the suitability of the *Specialist* for towing the *Weeks 533* barge, investigators requested the bollard pull specifications of the *Specialist*, but none were provided. The owner of the company left the country after the accident and claimed to no longer be a resident of the United States. There was no written tow plan, nor was one submitted to the Coast Guard.

The most recent Coast Guard examination of the *Specialist*, which took place about 2 years before the accident (April 2, 2014; Uninspected Towing Vessel Examination), noted 18 deficiencies, including:

- Vessel's master must have a towing license with endorsement for appropriate tonnage,
- Vessel must have navigation publications aboard,
- Vessel must have VTS [Coast Guard vessel traffic service] Rules aboard,
- Stern light, mast headlight, and push light were not working (this was corrected during the examination),
- Type 1 PFDs [personal flotation devices] with light were not available for each person,
- General alarm light in the engine room did not work,
- Vessel was required to have an approved fire detection system certified by professional engineer, and
- Liferaft must be serviced, properly stowed, and have a valid hydrostatic release.

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Further, the Coast Guard noted:

- The EPIRB [emergency position-indicating radio beacon] did not have valid hydrostatic release, a valid battery, and NOAA [National Oceanic and Atmospheric Administration] registration,
- Alcohol test kits were expired,
- Vessel did not have a required FCC [Federal Communications Commission] station log,
- The bilge overboard discharge valve was not secured,
- Vessel did not have required logs of pre-departure and arrival tests and inspections,
- Vessel did not have a required record of initial testing/retesting tow wire,
- Firefighting training had not been recorded,
- Safety orientations had not been conducted and recorded,
- Vessel's security officer must be familiar with the security plan and keep records, and
- Searchlights must be operable.

As a result of the deficiencies, the Coast Guard did not issue a decal for the *Specialist*. The vessel had not yet been reinspected when the accident occurred.

Investigators reviewed the operation manual for New York Marine Towing. It stated that captains of company vessels must have a Coast Guard credential as master or operator [of] uninspected towing vessels endorsed for inland waters. The manual also stated that when orders are received to commence a voyage, the captain or pilot on watch “shall determine the vessel’s position, destination, tow configuration, vertical clearance, cargo, river stages along the route, and handling characteristics of the vessel and tow” and “frequently review weather forecast, current and river conditions . . . ensure all bridge transits will be in accordance with the New York Marine Towing’s Bridge transit procedure . . . [and] ensure sufficient crew is available to operate the vessel as per New York Marine Towing Policy.” The company had a bridge transit procedure that required the watch officer of the vessel to be licensed as master or mate of towing vessels, or hold an equivalent license. When transiting under bridges, the officer responsible for the transit was required to determine (before making an approach to the bridge) the state of the tide, direction and strength of the current, and that the beam of the tug/tow combination and any assist tugboats would adequately transit the bridge spans, as well as adjust the speed of the vessel and tow to ensure a safe transit.

In favorable weather during the northbound transit to Albany, the *Specialist* was able to successfully complete the trip. On the return trip when conditions deteriorated, however, the *Specialist* was unable to maintain headway and steerage, as noted in the logbook entries. Based on the issues included in the logbook—grounding, the barge passing the tugboat, the tugboat being turned around and pulled downriver despite being at full throttle—it is likely that the *Specialist* was underpowered for weather conditions such as those that the vessel experienced on the night of the accident. Further, there was no evidence that a coordination meeting between the tugboat crews was held once the joint effort of towing the tower crane barge began.

Investigators reviewed text messages sent from the *Specialist* deckhand to his girlfriend throughout the voyage. Before starting the northbound transit with the tower crane barge, he stated that he was concerned about moving this “big piece of equipment working with people that don’t know the boat,” and that he was “tired as [expletive].”

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At 2315 on Tuesday, March 8, the *Specialist* deckhand had texted that he was going to close his eyes before starting up. At 2340, he texted again, saying they were starting up as the *Specialist* was heading to pick up the *Weeks 533* barge. Three nights before the accident, on Wednesday, March 9, he texted at 1945 that he was in bed and had to get up at midnight for watch. He stated that he had been awake for 24 hours the day before. On March 10 just after midnight, he texted that the “crane wasn’t towing right” and that they were behind schedule. Later that evening, at 1930, he texted that they were just floating in the middle of the river. At 0217 on March 11, he texted that he had slept for “maybe two hours then got woken up” and that he was “up being lookout watching the disaster unfold.” Later that morning, at 0850, he texted that the fog was clearing but that the wind and the current were making it impossible to steer.

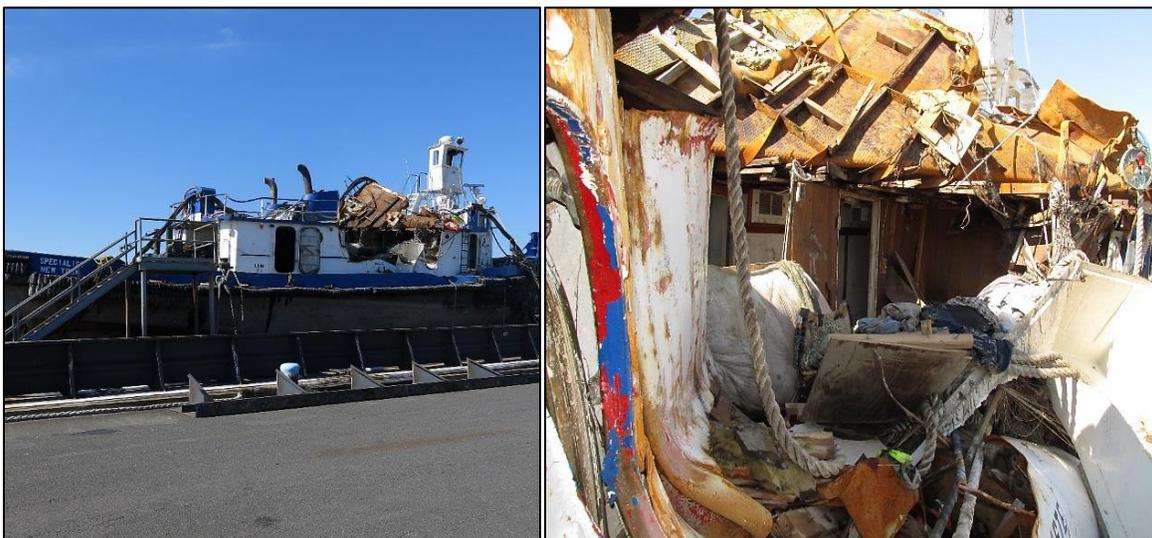
Once the *Realist* came to assist, the *Specialist* deckhand texted, “The *Realist* captain is alone on the *Realist* so I have a feeling I’m gonna have to go over and steer . . . let alone pushing something that you can barely see around.” Based on pictures taken of the tower crane barge after the accident, with the configuration of tugboats alongside the barge, the crane presented obstructed visibility for operators even in the upper wheelhouse.

A written statement from the deckhand serving aboard the *Realist* at the time of the accident stated that while the *Specialist* captain was at the helm of the *Realist*, he saw the *Realist* captain about 0440 in the engine room, and the captain indicated that he planned to take the helm back so the *Realist* deckhand could go to sleep. The deckhand reported that, at that point, he had been awake for approximately 24 hours. The deckhand was in the engine room when the *Specialist* struck *N181*.

A deckhand from the *Trevor* reported that there was northbound traffic south of the bridge and that they were going to meet south of the bridge, and he recalled that there was about 150–200 feet of clearance on his port side at the accident location.

Investigators interviewed the daughter of the *Specialist*’s mate, who herself held credentials as unlimited third mate and master of towing vessels, and was experienced working on the same waterway. She said that while her father was aboard leading up to the accident, he indicated that there were times when three of the four crewmembers were sleeping at once, leaving the captain alone in the wheelhouse, and that the entire crew had been awake the night before the accident due to weather conditions. The New York Marine Towing operations manual stated that the watch schedule was normally broken into two 6-hour watches. The captain normally stood the 0600–1200 and 1800–2400 watches. The daily work schedule for the deckhands was divided into two 6-hour watches. The manual stated, “The master must set the watchstanding schedule for his crew, ensuring that no licensed wheelman works more than 12 hours in any 24-hour period.”

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Left, damage to starboard side of the *Specialist's* superstructure after the accident. Right, damage to interior starboard sections of the *Specialist*.

According to statements and evidence, crewmembers aboard the *Specialist* and the *Realist* had likely not received more than 4–5 hours of uninterrupted sleep in at least 3 days leading up to the accident. In addition to extended wakefulness or chronic sleep restriction, the crew was dealing with adverse weather conditions, strong waterway currents, and restricted visibility, which increased their overall workload and the demands on their attention, thus compounding the effects of fatigue. Research indicates that performance consistently declines beyond 2 hours of continued monitoring or vigilance, and that it is difficult to perform at a safe level after 4–5 hours of continuous vigilance.⁵ Attention starts to wane when fatigue sets in.

During the hour before the accident, the *Specialist* was increasing speed as the vessel approached the Tappan Zee Bridge, at a time when caution should have been of utmost importance given the ongoing construction near the bridge. In addition to the increase in speed, initially, the mate had indicated to the other tugboats that the *Specialist* tow had enough clearance to get around the construction barge, when in actuality it did not. It is unclear how the mate judged the distance, whether by sight or by radar, but with increased fatigue, accuracy and timing degrade, as does the ability to integrate information. These may have been factors in the mate's judgment of distance and speed. If the mate was unaware that the tow had increased speed, he might have thought there was still time to maneuver around the barge.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the collision and sinking of the *Specialist* was inadequate manning, resulting in fatigued crewmembers navigating three tugboats with obstructed visibility due to the size of the crane on the barge they were towing and the location of the tugboats alongside the barge.

⁵ Richter, S., et al., "Task-Dependent Differences in Subjective Fatigue Scores," *Journal of Sleep Research*, 2005. 14(4): p. 393–400.

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Vessel Particulars

Vessel	<i>Specialist</i>	<i>Weeks 533</i>
Owner/operator	Specialist, LLC. / New York Marine Transportation Inc.	Weeks Marine
Port of registry	Montauk, New York	New York, New York
Flag	United States	United States
Type	Towing vessel	Crane barge
Year built	1956	1965
Official number (US)	271418	563470
IMO number	N/A	N/A
Construction	Steel	Steel
Length	84 ft (25.6 m)	296.7 ft (90.4 m)
Draft	9.2 ft (2.8 m)	22 ft (6.7 m)
Beam/width	26 ft (7.9 m)	90 ft (27.4 m)
Gross and/or ITC tonnage	131 gross tons	5,304 gross tons
Engine power; manufacturer	1,700 hp (1,268 kW) Cummins diesel	N/A
Persons on board	4	0

For more details about this accident, visit www.nts.gov and search for NTSB accident ID DCA16FM033.

Issued: May 11, 2017

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

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).