July 22, 2026 Marine Investigation Report MIR-26-24

Collision Between Bulk Carrier *Yangze 7* and Towing Vessel *Miss Peggy*

Houston Ship Channel
Lynchburg, Texas
July 19, 2024

Abstract: This report discusses the July 19, 2024, collision between the bulk carrier *Yangze 7* and towing vessel *Miss Peggy* on the Houston Ship Channel near Lynchburg, Texas. Safety issues identified in this report include failure to maintain a proper lookout and distraction by nonoperational use of personal electronic devices. As part of its investigation, the National Transportation Safety Board makes two new safety recommendations to the US Coast Guard and the American Pilots' Association.

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Acronyms and Abbreviations

Acronym/Abbreviation	Name
72 COLREGS	*Convention on the International Regulations for Preventing Collisions at Sea*
AIS	automatic identification system
APA	American Pilots' Association
ARPA	automatic radar plotting aid
BRM	bridge resource management
CFR	*Code of Federal Regulations*
ClassNK	Nippon Kaiji Kyokai
CM	channel marker
COI	certificate of inspection
DH	deckhand
DOT	US Department of Transportation
ECDIS	electronic chart display and information system
ECS	electronic chart system
ENC	electronic navigation chart
GNSS	global navigation satellite system
GPS	global positioning system
hp	horsepower
IMO	International Maritime Organization
ISM Code	International Safety Management Code
LDH	lead deckhand

MRO	medical review officer
NOAA	National Oceanic and Atmospheric Administration
NTSB	National Transportation Safety Board
OOW	officer of the watch
PAWSS	Ports and Waterways Safety System
PBIRC	Board of Pilot Commissioners for Harris County Ports Harris County (Texas) Ports Pilot Board Investigation and Recommendation Committee
PED	personal electronic device
PPU	portable pilot unit
SMS	safety management system
SOP	standard operating procedures
TPO	third-party organization
TSMS	towing safety management system
VDR	voyage data recorder
VHF	very high frequency
VMRS	Vessel Movement Reporting System
VTS	vessel traffic service

Executive Summary

What Happened

On July 19, 2024, at 1404 central daylight time, the bulk carrier *Yangze 7* and the towing vessel *Miss Peggy* were inbound in the Houston Ship Channel, near Lynchburg, Texas, when they collided. The *Miss Peggy* capsized and sank with five crewmembers on board. Four were recovered by a good Samaritan vessel, and the fifth crewmember was later found deceased in the wreckage. One *Miss Peggy* crewmember sustained serious injuries, and another sustained minor injuries. An undetermined amount of oil was released into the Houston Ship Channel from the sunken vessel. Total damages, including salvage of the *Miss Peggy* and pollution mitigation, were estimated to be $3.7 million. The *Yangze 7* sustained no damage.

What We Found

We found that the Houston pilot who was directing the movement of the bulk carrier *Yangze 7* during its inbound transit through the Houston Ship Channel failed to maintain a proper lookout because he was distracted by extended nonoperational cell phone use. This distraction resulted in him not detecting the presence of the *Miss Peggy*. We found that the captain of the inbound towing vessel *Miss Peggy* failed to maintain a proper lookout while navigating the Houston Ship Channel, resulting in him not detecting the *Yangze 7* as it approached from astern. Similarly, the *Yangze 7* bridge team failed to maintain a proper lookout, so they did not detect the *Miss Peggy* until the towboat was less than a ship's length ahead.

The *Yangze 7* bridge team could hear the pilot on his cell phone, and at least one bridge team member was aware that the pilot's calls were nonoperational in nature. However, none of the crewmembers raised concerns about his cell phone use. We found that, had they done so, the pilot may have been prompted to end the phone call, allowing him to focus his attention to operational tasks. The *Yangze 7* bridge team's failure to raise concerns about the pilot's cell phone use reflected ineffective bridge resource management.

At the time of the collision, the Houston Pilots did not have a policy prohibiting the use of personal electronic devices, like cell phones, for nonoperational purposes. We found that, because the Houston Pilots did not prohibit its pilots from using personal electronic devices for nonoperational purposes while navigating, the use of personal electronic devices while actively directing the movement of a vessel likely became normalized over time, jeopardizing the safety of vessels and vessels' crews.

We determined that the probable cause of the collision between the bulk carrier *Yangze 7* and towing vessel *Miss Peggy* was the loss of situation awareness of the Houston pilot, the *Yangze 7* bridge team, and the captain of the *Miss Peggy* due to a failure to maintain a proper lookout. Contributing to the pilot's inadequate lookout was distraction caused by extended nonoperational cell phone use. Contributing to the pilot's nonoperational cell phone use was the lack of prohibition by the Houston Pilots against the use of personal electronic devices by its pilots actively directing the movement of a vessel.

What We Recommended

We issued two recommendations to address the nonoperational use of personal electronic devices by pilots or others directing the movement of a vessel. We recommended the US Coast Guard prohibit nonoperational use of personal electronic devices. We also recommended the American Pilots' Association develop and implement a similar prohibition and encourage its member associations to adopt the guidance.

1 Factual Information

1.1 Accident Narrative

1.1.1 Synopsis

On July 19, 2024, at 1404 local time, the bulk carrier *Yangze 7* and the towing vessel *Miss Peggy* were inbound in the Houston Ship Channel, near Lynchburg, Texas, when they collided (see figure 1 and figure 2).[1] The *Miss Peggy* capsized and sank with five crewmembers on board. Four were recovered by a good Samaritan vessel, and the fifth crewmember was later found deceased in the wreckage. One *Miss Peggy* crewmember sustained serious injuries, and another sustained minor injuries. An undetermined amount of oil was released into the Houston Ship Channel from the sunken vessel. Total damages, including salvage of the *Miss Peggy* and pollution mitigation, were estimated to be $3.7 million. The *Yangze 7* sustained no damage.

Figure 1. The *Yangze 7* underway in 2017. (Source: Aart van Bezoojien, marinetraffic.com)

[1] (a) In this report, all times are central daylight time, and all miles are nautical miles (1.15 statute miles) unless otherwise specified. (b) Visit ntsb.gov to find additional information in the public docket for this NTSB accident investigation (case number DCA24FM051). Use the CAROL Query to search safety recommendations and investigations.

Figure 2. The *Miss Peggy* underway in 2013. (Source: Duncan Williams, marinetraffic.com)

1.1.2 Event Sequence

On July 19, 2024, about 0956, the 656-foot-long *Yangze 7*, with 22 crewmembers on board, got underway in ballast condition from the Galveston Fairway Anchorage, located about 11 miles offshore of Galveston, Texas, in the Gulf of America.[2] The vessel was en route to the Kinder Morgan Houston Bulk Terminal in Houston, Texas, to load a cargo of coal. At 1027, a pilot from the Houston Pilots boarded the vessel at the Galveston Bay Entrance Channel for the vessel's inbound transit through the Houston Ship Channel to the terminal (see figure 3).[3]

[2] A vessel that is *in ballast* is a vessel with empty cargo tanks or holds that have taken on ballast water (in order to increase draft).

[3] (a) A *pilot* is retained by the ship to provide local knowledge of the waterway, familiarity with tides and currents in the area, understanding of local procedures, and a thorough knowledge of the topography of the waterway. Under state and federal regulations, pilots are generally compulsory for vessels that are engaged in international trade and transiting the navigable waters of the United States. Pilots usually direct the navigation of a vessel (such as heading, rudder angle, and speed orders) under the supervision of the master or the officer in charge of the navigation watch, or both. (b) The Houston Pilots is an unincorporated association of ship pilots licensed by the state of Texas and the US Coast Guard to serve on vessels transiting the Houston Ship Channel on a compulsory basis. The Board of Pilot Commissioners for Harris County Ports oversees the Houston Pilots.

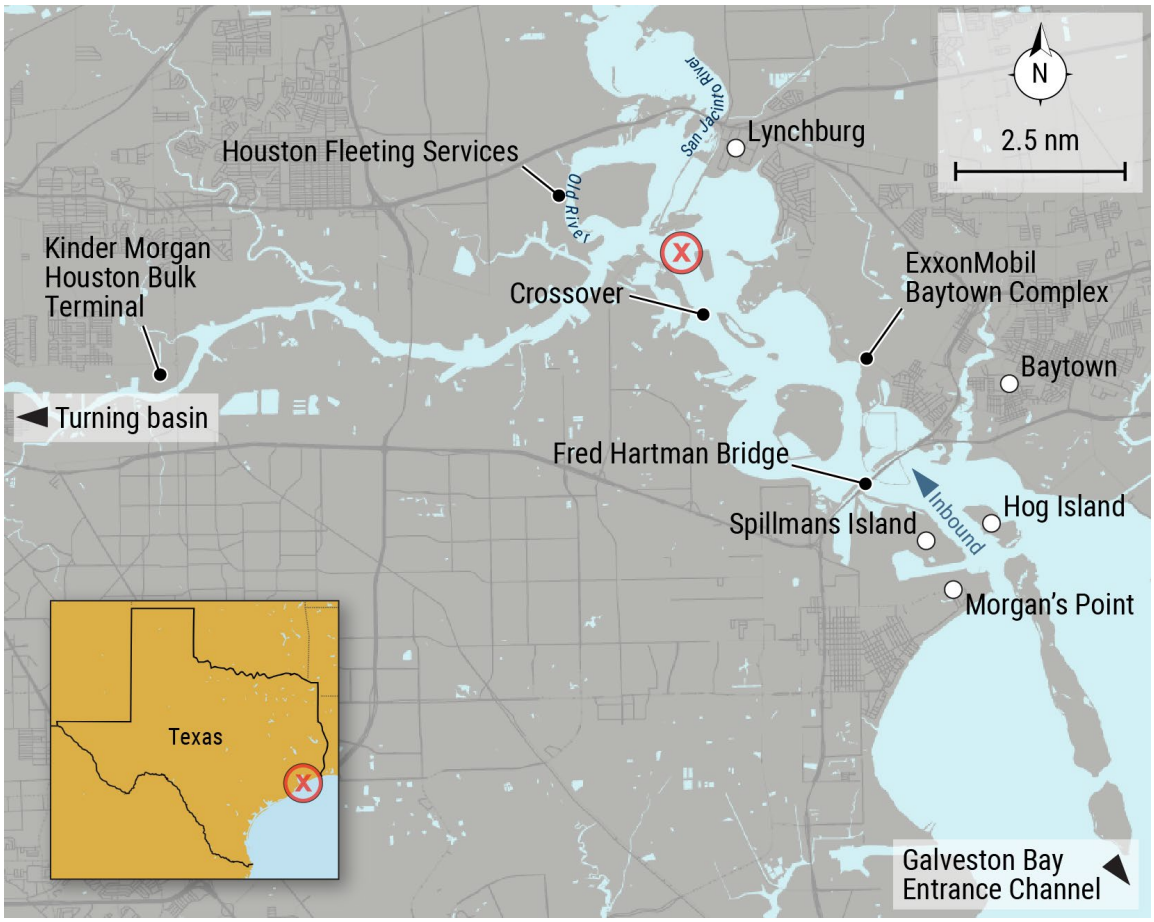

Figure 3. Area where the *Yangze 7* and the *Miss Peggy* collided, as indicated by an *X*. (Background source: Google Maps)

The Houston Ship Channel is about 55 miles in length from the turning basin at the Port of Houston to the sea buoy offshore from Galveston. As viewed from an inbound vessel, the navigational buoys and beacons marking the right side of the channel are red, and those marking the left side are green.

The lower channel transits through Galveston Bay from the Galveston Bay Entrance Channel at Bolivar Roads near Galveston, Texas, to Morgan's Point. The lower section is comprised of longer, straight segments, with a 530-foot-wide main channel dredged to a project depth of 45 feet.

The upper channel, where the collision occurred, runs from the entrance to Galveston Bay at Morgan's Point to the turning basin and varies in width from as little as 250 feet to over 750 feet. The area of the Houston Ship Channel near the collision site was 600 feet wide, with a project depth of 45 feet (see figure 4).[4] Although the

[4] The US Army Corps of Engineers surveyed depth was 50 feet.

area did not have dedicated barge lanes for towing vessels along the main deep-draft vessel channel, there were 35-foot-wide transition slopes on either side of the main channel, measuring 45 feet deep at their innermost point and 14 feet deep at their outermost point.[5]

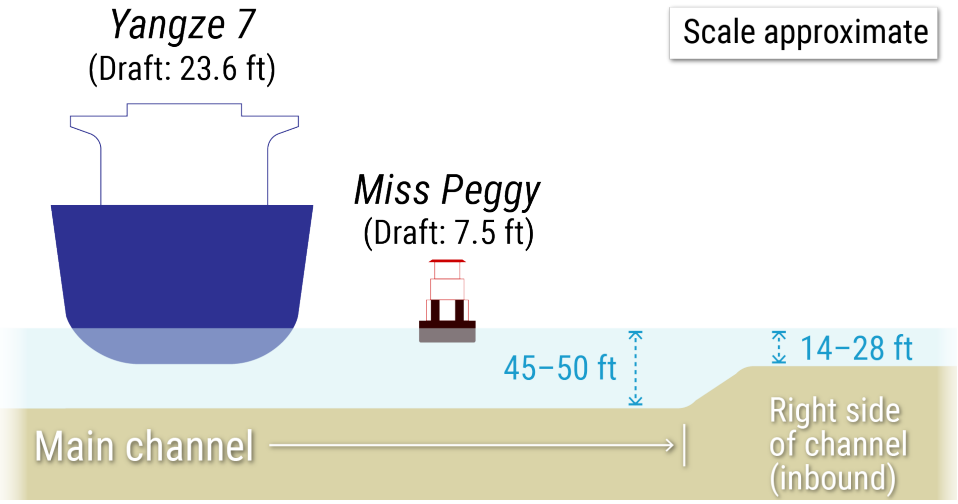

Figure 4. Approximate channel and bank depths (inbound, right side of the Houston Ship Channel) near the casualty site.

According to audio from the *Yangze 7* voyage data recorder (VDR), the pilot entered the bridge at 1030 and, 10 seconds later, began issuing helm orders and directing the movement of the vessel. The master and pilot carried out a master/pilot exchange.[6] The master reported to the pilot that there were no deficiencies with the *Yangze 7*, and the vessel's deepest draft was 23.6 feet (7.2 meters) aft (the ship's forward draft was 14.4 feet [4.4 meters]). The master and pilot discussed the time it would take to get to the dock (about 5 hours), tug use for the docking maneuver, the mooring arrangement, and the ship's propulsion particulars. The pilot requested both anchors be ready in case of an emergency and "one man standing by forward."

[5] The lower Houston Ship Channel, from the Gulf Intracoastal Waterway and Morgan's Point, has designated barge lanes for towing vessels. These lanes were established during the Corps of Engineers' widening of the channel in 2005.

[6] A *master/pilot exchange* (also known as a master/pilot information exchange) is required at the start of pilot transits and includes discussion of the vessel's navigational equipment, any limitations of maneuverability, available engine speeds, berthing maneuvers, intended course and speed through the waterway, anticipated hazards along the route, weather conditions, composition of the bridge team and deck crew (both forward and aft, including bow lookout), and so on.

The pilot set up his portable pilot unit (PPU) and sat between the bridge navigation consoles and the forward bridge windows.[7] He was seated to port of the ship's centerline and within reach of one of the very high frequency (VHF) radio handsets (see figure 5).

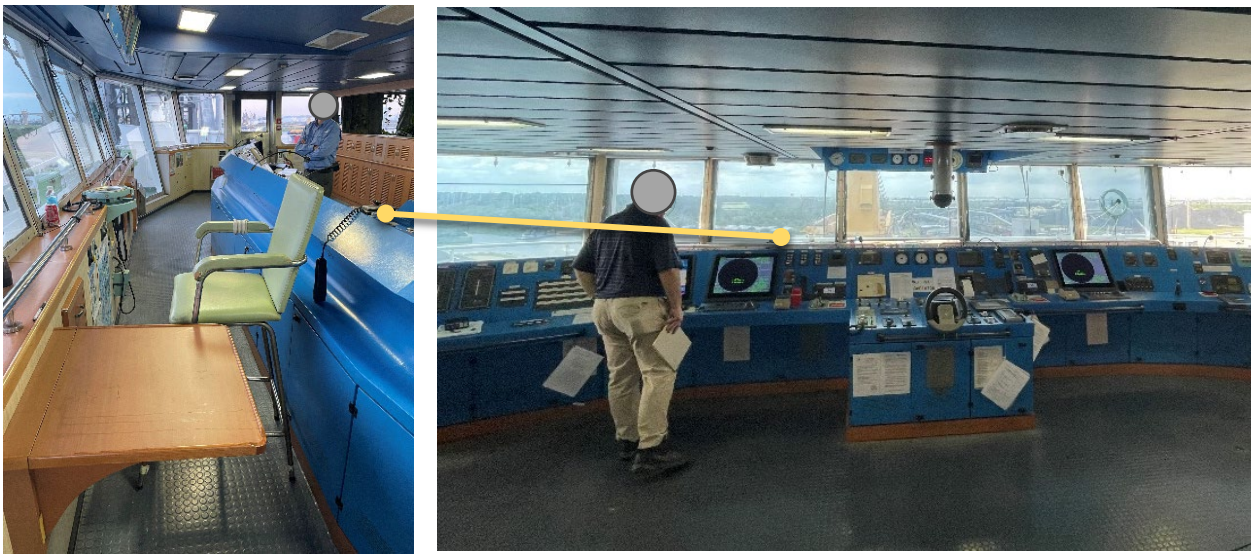

Figure 5. *Left to right*: Postcasualty reconstruction of the placement of the pilot's chair on the bridge of the *Yangze 7*, and the layout of the vessel's bridge. The location of the pilot's chair relative to the bridge layout is indicated by the yellow line.

On the bridge of the *Yangze 7* with the Houston pilot were the ship's master; an officer of the watch (OOW), who was responsible for executing propulsion orders; and a helmsman (who rotated the position with another helmsman for breaks). In accordance with the pilot's request, the master positioned the bosun on the bow to ready and standby the anchors.

The inbound transit was unremarkable and occurred during daylight conditions, with partly cloudy skies and good visibility. The bosun reported that, after his lunch (sometime between 1200 and 1300), he relieved a deck crewmember to continue standing by forward on the bow. About noon, the second officer relieved the third officer as OOW, as scheduled.

[7] A *personal pilot unit* (*PPU*) is a compact laptop computer or tablet with electronic navigation and charting software that pilots use as an aid for navigation, in addition to the vessel's own navigation equipment. PPUs are normally equipped with an independent global positioning system (GPS) antenna, as well as a plug that allows the unit to access information from the ship's installed systems, such as GPS and its automatic identification system. For more information about the pilot's PPU, see section 1.10.1.

At some point after the second officer took over as OOW, he observed the Houston pilot watching a video not related to operations on his cell phone. At 1322:39 (according to phone records and the *Yangze 7* VDR bridge audio recording), the pilot answered his personal cell phone and began a phone conversation with another Houston pilot, who was actively conning the loaded, Panama-flagged tanker *Petrel* outbound on the Houston Ship Channel.[8] The *Yangze 7* had passed the *Petrel* at 1255, about 27 minutes before the call started, and the two vessels were now 11.7 miles away from one another. (See section 1.8.2 for more information about the number, lengths, and content of the cell phone calls conducted by the pilot on the *Yangze 7*.) At this time, the *Yangze 7* was transiting the Houston Ship Channel at 10 knots inbound, between Spillmans Island and Hog Island.

About 1330, the 50-foot-long towing vessel *Miss Peggy,* with five crewmembers on board*,* got underway from Pier 5 at the ExxonMobil Baytown Complex in Baytown, Texas, for its home fleet at Houston Fleeting Services on the Old River in Channelview, Texas. The *Miss Peggy*'s draft was reported by the captain to be about 7.0–7.5 feet (2.1–2.3 meters). Two minutes after getting underway, the *Miss Peggy* entered the lower Houston Ship Channel, where it was to turn into the channel, follow it inbound (in a northerly direction) and then turn west into the San Jacinto River, toward its home fleet. The captain of the *Miss Peggy*, who was navigating the vessel in the pilothouse, stayed at the helm for the remainder of the transit. Also aboard the vessel were two lead deckhands (LDH1 and LDH2) and two deckhands (DH1 and DH2).

At 1332, the *Yangze 7* was about 1.4 miles south of the *Miss Peggy* and had just passed under the Fred Hartman Bridge, inbound at 9.7 knots. The pilot continued the phone call that began at 1322. According to members of the *Yangze 7* bridge team, he was using an earpiece connected to his phone via Bluetooth during the conversation. As the *Yangze 7* continued inbound through the Houston Ship Channel, the pilot would momentarily pause his conversation to issue rudder and propulsion orders, which the crew executed. Around 1335, the pilot's phone conversation became more intelligible in the VDR audio recording, and the subject was not related to operations.

At 1342, the *Yangze 7* passed the ExxonMobil Baytown Refinery Complex at 7.6 knots. The *Miss Peggy*, which was approaching red channel marker (CM) 114B,

[8] (a) See the NTSB Voyage Data Recorder (Audio) Factual Report in the public docket for this casualty investigation (case number DCA24FM051). (b) At the time of this casualty, the Houston Pilots did not have rules or regulations prohibiting pilots from using of personal electronic devices (PED) while navigating. See section 2.3.3 for more information.

was 1.1 miles ahead of the *Yangze 7* and was moving at 6.6 knots near the right side of the channel.

The pilot continued his phone conversation while issuing various rudder and heading orders as the *Yangze 7* progressed up the Houston Ship Channel. At 1349:57, he paused the phone conversation to issue a slow ahead propulsion order. At 1352:26, he paused his phone conversation to order half ahead, and about 30 seconds later, to full ahead. The second officer executed both propulsion orders. Figure 6 shows the *Miss Peggy*'s and the *Yangze 7*'s positions shortly after these orders.

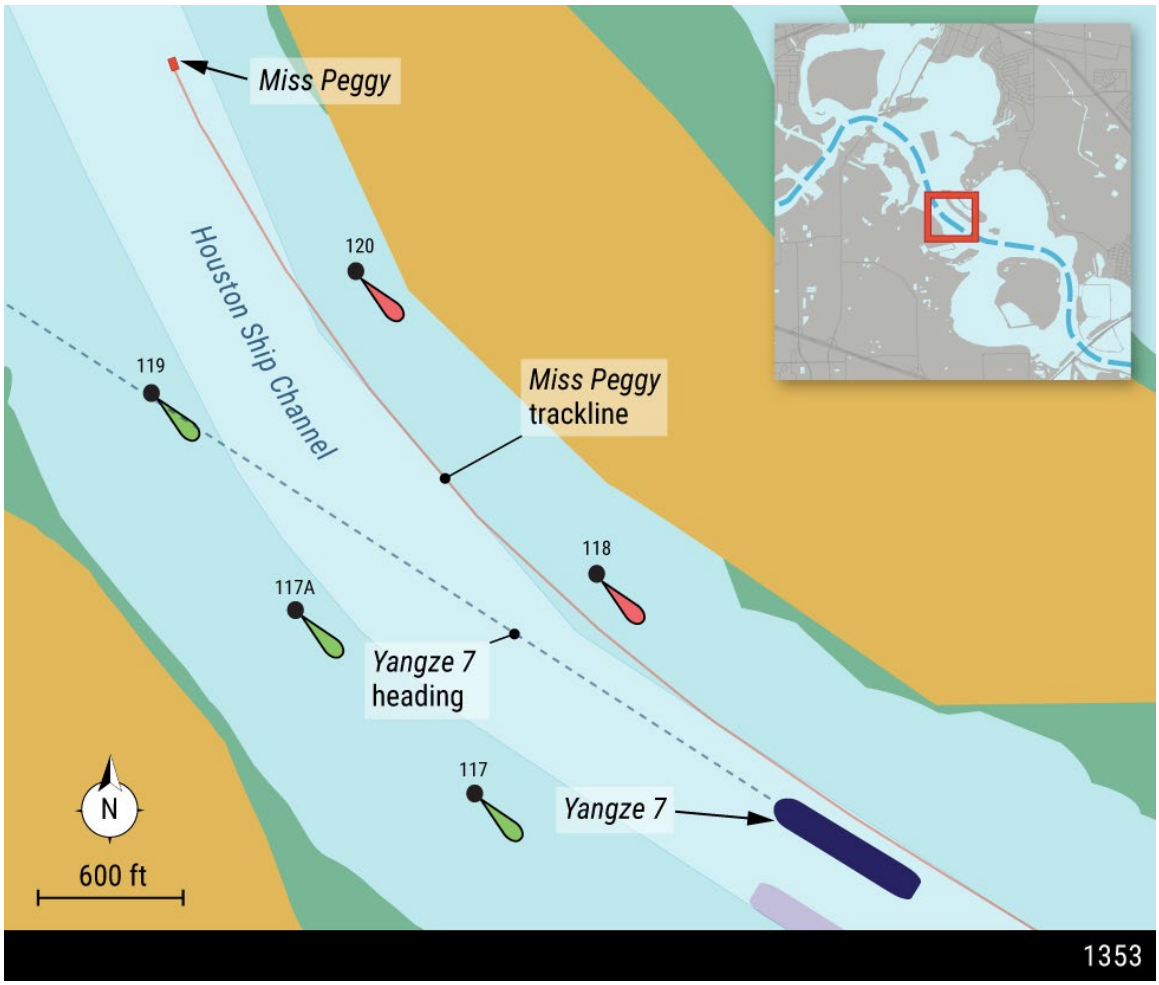

Figure 6. Locations of the *Yangze 7* and the *Miss Peggy* (about 0.6 miles ahead of the bulk carrier) at 1353. The area depicted in the graphic is indicated by the rectangle on the inset map. (Channel markers not to scale.) (Background sources: National Oceanic and Atmospheric Administration [NOAA] Electronic Navigation Chart [ENC] US5HOUEF and Google Maps)

The second officer told investigators that he was "very afraid" because the pilot was "chatting" using an earpiece while issuing steering orders. He noted that the pilot's phone conversation was "not about the vessel, not about safety, not about navigation" and that he was afraid that the pilot would issue the wrong order.

At 1354, the *Yangze 7* was passing red CM 118, and the *Miss Peggy* was passing red CM 122. The pilot aboard the *Yangze 7* paused his phone conversation to call the pilot of the Singapore-flagged loaded liquefied natural gas tanker *Silvio*, which was outbound about 2.8 miles away from the *Yangze 7*. The *Yangze 7* pilot called the *Silvio* pilot by name via VHF radio, requesting a port-to-port passing. The call went unanswered, and the *Yangze 7* pilot continued his phone conversation, pausing to issue heading orders when needed.

At 1356, the pilot of the *Yangze 7* checked in with Vessel Traffic Service (VTS) Houston-Galveston to report that he was inbound at Crossover.[9] During this time, the *Miss Peggy* was between red CMs 122A and 122. Certain vessels transiting the waterway are required to check in with VTS before entering the VTS area and at designated reporting points in the waterway. Crossover, a mandatory VTS reporting point located between green CM 121 and red CM 122, was such an area. See figure 3 for the location of Crossover in relation to the rest of the Houston Ship Channel and section 1.6 for more information about VTS Houston-Galveston vessel check-in requirements.

The VTS operator responded, acknowledging the vessel's position and reading out the reported traffic in the area that the pilot was entering; the names of the vessels the VTS operator was referring to are provided in brackets in the operator's response below.

> Two ships, two light tows outbound between you and *Cargill*. That first ship is deep and wide [*Silvio*], second ship is wide body [*Eagle Hamilton*].[10] No other reported outbound traffic. *Grange Point* to come out of Old River Line, *Safety First* turning inbound.

The pilot acknowledged the traffic with a "thanks."

[9] A *vessel traffic service* (*VTS*) provides active monitoring and navigational advice for vessels in particularly confined and busy waterways. VTS Houston-Galveston traffic managers use a wide range of techniques and capabilities aimed at preventing vessel collisions and groundings in the harbor, harbor approach, and inland waterway phase of navigation. They also expedite ship movements, increase transportation system efficiency, and improve all-weather operating capability. (See Vessel Traffic Services. See section 1.6 for more information about VTS Galveston-Houston and VTS traffic managers.)

[10] Per the *Houston Pilots Navigation Safety Guidelines for the Houston Ship Channel* (May 15, 2024), a widebody vessel is a vessel of any type with a beam of 120 feet or greater.

At 1357, the pilot of the *Yangze 7* again called the *Silvio*, and the vessel's pilot answered and agreed to a port-to-port passing. The harbor tug *George M* (not involved in escort operations) was aft of the *Silvio* and outbound in the Houston Ship Channel. Aft of the *George M* and also outbound was the tanker *Eagle Hamilton*.

At 1358, the pilot of the *Yangze 7*, which was passing green CM 121 and red CM 122, made an announcement on VHF channel 13, the bridge-to-bridge VHF radio frequency: "Inbound ship at Crossover, be up to Lynchburg shortly." He then immediately returned to his phone conversation (see figure 7). The *Miss Peggy* was approaching red CM 122A at a speed of 6.4 knots and, was about 3.5 ship lengths (2,240.0 feet [682.8 meters]) ahead of the *Yangze 7*, which was transiting at 9.9 knots.[11] At 1400, the pilot paused the phone conversation and ordered the helmsman to steer 336° from the previous course of 338°, and the helmsman executed the order.

[11] In this report, "ship lengths" refer to the length of the *Yangze 7* (655.8 ft [199.9 m]) and is measured from the bow of the *Yangze 7* to the stern of the *Miss Peggy*.

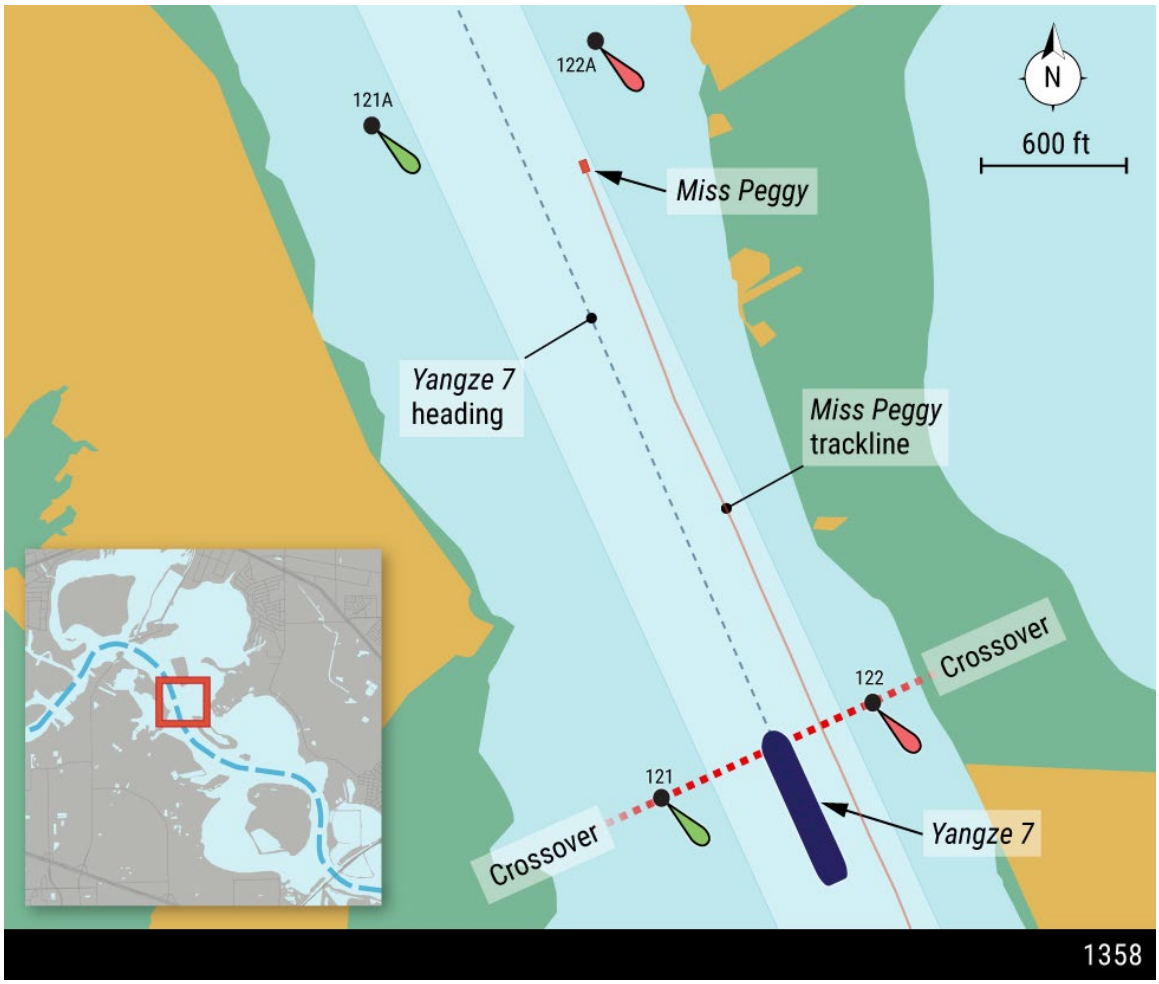

Figure 7. Locations of the *Yangze 7* and the *Miss Peggy* at 1358. The area depicted in the graphic is indicated by the rectangle on the inset map. CMs 121 and 122 mark Crossover, the mandatory VTS reporting point. (Channel markers not to scale.) (Background sources: NOAA ENC US5HOUEF and Google Maps)

At 1401, the *Miss Peggy* was about 1.8 ship lengths (1,151.0 feet [350.8 meters]) ahead of the *Yangze 7* (see figure 8). The *Yangze 7* was passing red CM 122A, and the *Miss Peggy* was between red CMs 124A and 124. At this time, the *Yangze 7* bridge VDR captured the pilot ordering port 10° on the rudder, the helmsman reading the order back, and the pilot saying, "I'm going to hang up with you." The pilot's cell phone records indicated that the phone call ended at 14:01:44. The pilot then continued issuing midship and port 10° rudder orders as the ship approached the bend at Lynchburg.[12] At 1402:00, the *Yangze 7* was still at full ahead and about 1.2 ship lengths (781.0 feet [238.0 meters]) astern of the *Miss Peggy* (see figure 8 and figure 9).

[12] This area near Lynchburg was within the boundary of the Lynchburg precautionary area. See section 1.5 for more information about the Lynchburg precautionary area.

Figure 8. Timelapse sequence of camera footage (*left*) and the vessels' locations as recorded in Rose Point electronic charting system (ECS) (*right*) from 1401:00 to 1402:00, showing the *Miss Peggy* (*circled*) ahead and starboard of the *Yangze 7* as the *Silvio* prepared to pass the *Yangze 7* port to port. (Background sources: US Coast Guard and Rose Point ECS)

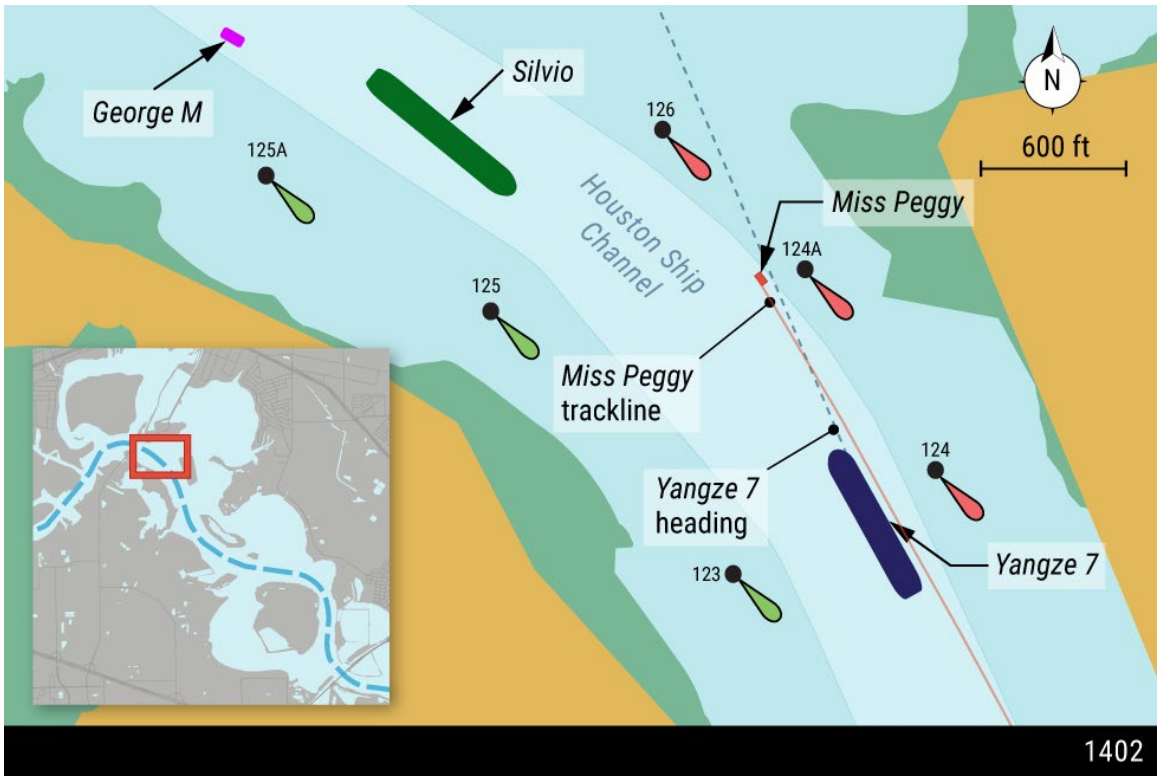

Figure 9. Locations of the *Yangze 7*, the *Miss Peggy*, the *Silvio*, and the *George M* at 1402. The area depicted in the graphic is indicated by the rectangle on the inset map. (Channel markers not to scale.) (Background sources: NOAA ENC US5HOUEF and Google Maps)

Before rounding the bend at Lynchburg, inbound ships must make a 120° course alteration to port (see figure 9 inset map). When approaching the bend at Lynchburg, the second officer said that he was focused on the vessel coming down on the port side (*Silvio*) since the pilot was issuing steering orders and chatting.

About 1402, on board the *Miss Peggy*, DH1, who was scheduled to work the 1500–0300 watch, had gone to the upper deck outside, to make a video call. DH1 told investigators that, while walking down the port side, he saw the *Yangze 7* approaching from astern. He did not hear sound signals from either the *Miss Peggy* or the *Yangze 7*. He realized the bulk carrier was going to collide with the towboat and terminated the call.

During this time, at 1402:42, the *Yangze 7* bosun, who was posted on the bow and had been paying attention to the *Silvio*'s passing, saw "one tugboat very near" and reported to the bridge that the vessel was "about 20–30 meters" (about

66–98 feet) away. According to the automatic identification system (AIS), the two vessels were actually 538.0 feet (164.0 meters) apart.[13]

At 1403, as the *Yangze 7* and *Silvio* began to pass each other port to port, the *Yangze 7* pilot ordered the rudder to starboard 20° and then back to midship (see figure 10 and figure 11). VDR bridge audio captured the pilot asking the bridge team, "We're half ahead right?" The second officer responded, "Yes," but then corrected himself, stating, "It's full ahead, sir." The pilot then ordered the propulsion to half ahead, and the second officer executed the order.

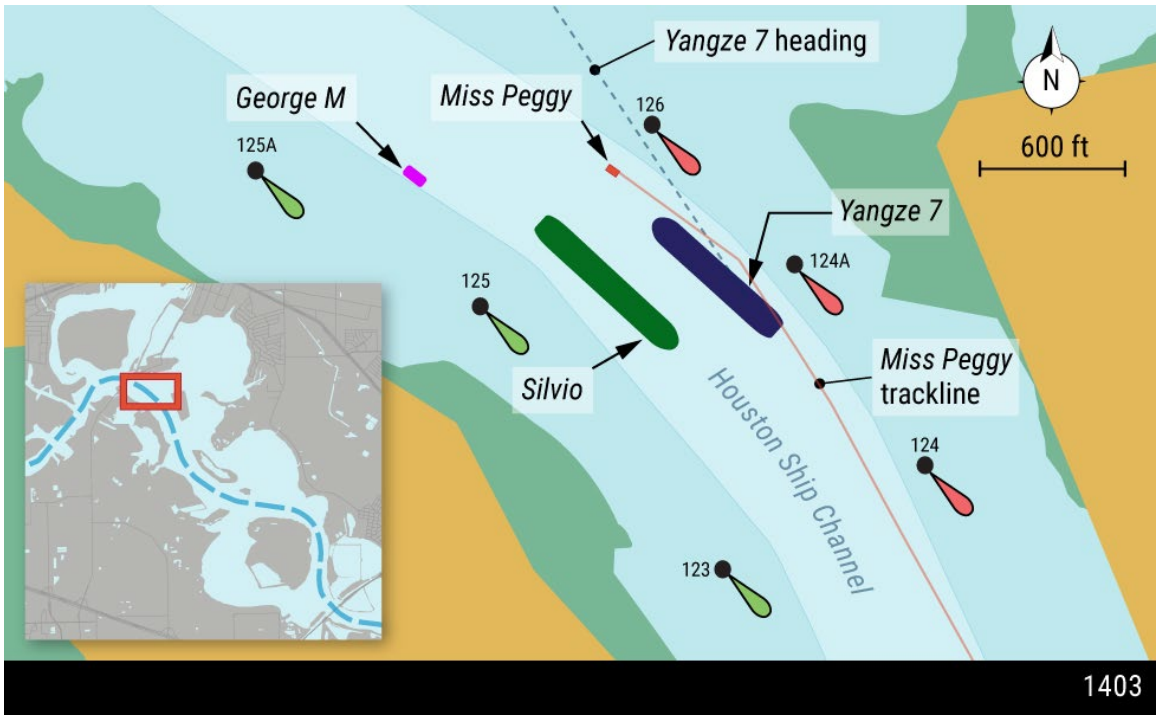

Figure 10. Locations of the *Yangze 7*, the *Miss Peggy*, the *Silvio*, and the *George M* at 1403. The area depicted in the graphic is indicated by the rectangle on the inset map. (Channel markers not to scale.) (Background sources: NOAA ENC US5HOUEF and Google Maps)

[13] (a) *Automatic identification system* (*AIS*) is a maritime navigation safety communications system. At 2- to 12-second intervals on a moving vessel, the AIS automatically transmits vessel information, including the vessel's name, type, position, course, speed, navigational status, and other safety-related information, to appropriately equipped shore stations, other vessels, and aircraft. The rate at which the AIS information is updated depends on vessel speed and whether the vessel is changing course. AIS also automatically receives information from similarly equipped vessels.
(b) Measurement reflects distance from the bow of the *Yangze 7* to the stern of the *Miss Peggy*.

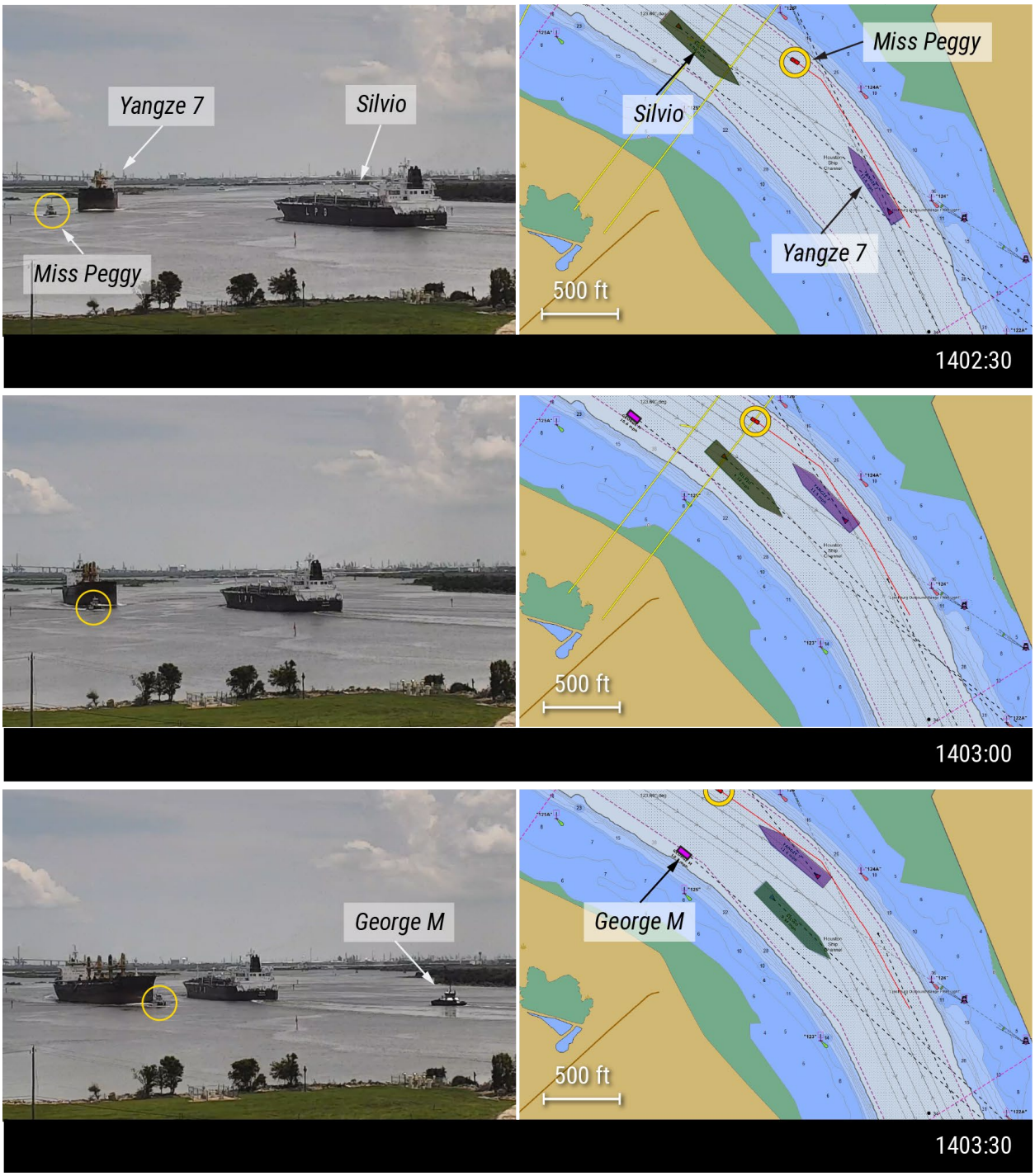

Figure 11. Timelapse sequence of camera footage (*left*) and the vessels' locations as recorded in Rose Point ECS (*right*) from 1402:30 to 1403:30, showing the *Miss Peggy* ahead and starboard of the *Yangze 7* as the *Silvio* passes the *Yangze 7* port to port and as the *George M* nears the vessels. (Background source: Coast Guard)

The mate on watch and mate-in-training aboard the tug *George M*, which was outbound in the channel, aft of the *Silvio*, saw the *Yangze 7* closing on the

Miss Peggy. At 1403:28, a call came over the bridge-to-bridge radio frequency from the mate of the *George M*: "Calling the *Yangze 7*, watch out for that tow right in front of you, captain." About 10 seconds later, the pilot on the *Yangze 7* ordered the rudder to starboard 10° and starboard 15°; the helmsman read both orders back and executed them.

At 1403:35, the bulbous bow of the *Yangze 7* collided with the stern of the *Miss Peggy*, and the *Miss Peggy* surged forward and rolled over rapidly to starboard (see figure 12).

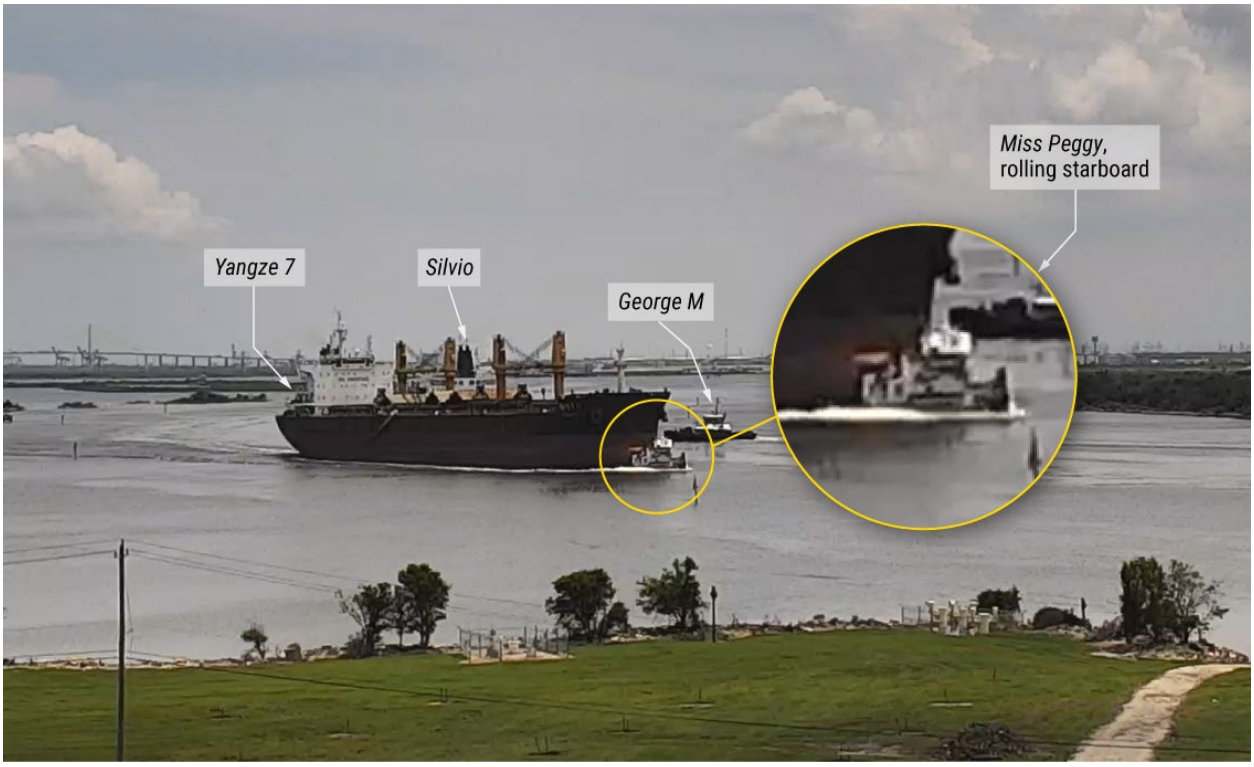

Figure 12. The *Miss Peggy*, rolling to starboard during collision with the *Yangze 7*, with the *Silvio* and the *George M* nearby. (Background source: Coast Guard)

At 1403:55, the *Yangze 7* received a bridge-to-bridge radio: "Calling the *Yangze 7*. [The pilot replied, "*Yangze 7*."] Captain you just hit a tow and it overturned in front of you."[14] During this point, the pilot ordered midship, which the helmsman read back and executed.[15]

[14] The call was captured by the *Yangze 7* bridge VDR and VTS Houston-Galveston.

[15] *Midship* refers to a rudder angle input on the helm (or steering system in use) to the position indicating zero degrees, which should position the rudder in line with the vessel's centerline.

Audio recorded by VTS Houston-Galveston captured a caller on VHF channel 13 stating, "That boat just flipped over in front of you, boss," with the *Yangze 7* pilot replying with an expletive. According to the second officer, the pilot then stood up and went to the port side of the bridge.

The mate on watch and mate-in-training aboard the *George M* saw the *Miss Peggy* pitch forward and roll to its starboard side. The mate on watch sounded the *George M*'s general alarm for the crew to proceed to their emergency stations in preparation for a likely man overboard emergency.

On the *Miss Peggy*, the captain had been at the helm when the boat surged to starboard. He stood up from his chair, looked over the bow of the boat, and saw a "massive bit of water" coming over the forward bulwarks.[16] He pulled back on the throttles in an attempt to lift the bow of the *Miss Peggy*, but the boat continued to roll to starboard.

While bracing himself on the starboard wall, the captain reached to activate the general alarm button but was unable to before he had to begin swimming in water that had entered the pilothouse. The windows of the pilothouse shattered around him, and he described the situation as like being in a "washing machine."

The captain exited the pilothouse through a window and surfaced just outside of the vessel. While on the surface of the water, he reached back into the pilothouse to grab his lifejacket but was unable to retrieve it. He also grabbed the radio and made one distress "mayday" call before the boat sank. He saw DH1 in the water near him as the *Yangze 7* passed by. The captain told investigators that this was the first time he noticed the *Yangze 7*.

The on-watch lead deckhand (LDH1) and the on-watch deckhand (DH2) were in the main deck galley, seated at the table, when the vessels collided. LDH1 recalled the boat starting to lean to starboard, so he went to the forward portside door, which opened out to the main deck, to see what had happened. He told investigators that he was able to release the door's two dogs and open the door about 8 inches before the boat was on its starboard side.[17] He hung onto the door handle and was "completely vertical" as he saw DH2 fall to the starboard side below.

[16] *Bulwarks* are the vertical plating that forms an extension of a vessel's side above its weather decks (exposed decks).

[17] A *dog* is a lever used on marine vessels to tighten down and secure a weathertight or watertight door or hatch against its frame.

Water initially entered the galley through a bow-facing opening, where a window air conditioning unit was installed. At this point, the lighting went out and the emergency lights activated. LDH1 let go of the door handle and fell into the rising water below. He saw the door to the engine room (located aft of the space) blow open and water begin to more quickly fill the space.

LDH1 and DH2, who were both standing at that point, were soon submerged. LDH1 was unable to open the port door to the main deck because it was above them. LDH1 momentarily lost consciousness and floated through the door, before surfacing outside of the vessel. His last sighting of DH2 was in the galley as the water rose over their heads.

The lead deckhand scheduled to work the 1500–0300 watch (LDH2) was in his bunkroom (located on the port side), getting ready for his watch, when he felt the boat lean to starboard. He opened his bunkroom door to look out and saw down the passageway, through a window, that the boat was rolling toward the water. He went back into his room to try to get his lifejacket, but the boat rolled onto its starboard side.

LDH2 fell onto the starboard bulkhead of the bunkroom. He was able to exit the bunkroom into the hallway, where water was rapidly entering, and struggled to get out of the boat through the closed portside door. By the time he was able to open the portside door, the water had risen to such a level that he floated out with the water through the doorway. Once at the surface, LDH2 grabbed hold of a suitcase that had floated out of the boat and was able to use it to stay afloat.

At 1408, the master of the *Yangze 7* asked the pilot whether they had collided with the towing vessel, and the pilot confirmed that they had. About 2 minutes later, the pilot commented in a radio communication to VTS, "like I said, I didn't see the light boat." At 1411, VTS closed the channel to all traffic at Crossover, which was about 10.2 miles south of the casualty site.

According to a statement by the master, the pilot of the *Yangze 7* told him that the collision had been reported to the US Coast Guard and that he did not need to do anything because a rescue operation had been arranged. The pilot remained at the conn for the rest of the *Yangze 7*'s inbound transit, making or receiving a total of 22 phone calls, with a total duration of about 12 minutes. (The ship was logged as secured at the terminal at 1550.)

LDH1 said that both he and DH2 had been wearing their work vests at the time of the rollover of the boat.[18] Aboard the *George M*, the mate-in-training had gone down to the main deck to prepare the vessel's man overboard equipment (a Dacon-brand rescue frame/cradle) after the general alarm was sounded (see figure 13). When the captain arrived in the pilothouse, the mate on watch went to the deck to assist with rescue operations. The captain maneuvered the *George M* close to where they could throw liferings and lines to the four people visible in the water (see figure 14).

Figure 13. A Dacon rescue frame, similar to that aboard the *George M*, being used to climb aboard a vessel during a product demonstration. (Source: Dacon Group)

[18] According to 46 *CFR* 26.30-5, "… work vests are considered to be items of safety apparel and may be carried aboard vessels to be worn by crew members when working near or over the water under favorable working conditions." 46 *CFR* 140.430 requires that, aboard towing vessels, "personnel dispatched from the vessel or that are working in an area on the exterior of the vessel without rails and guards must wear" a work vest, a lifejacket, or an immersion suit meeting certain requirements. See 46 *CFR* Part 160 Subpart 160.053 for more information on work vest requirements.

Figure 14. View from the *George M* of the *Miss Peggy* sinking and three of its crewmembers in the water at 1405. (Background source: G&H Towing)

The *George M* crew deployed the rescue frame over the port side of the boat, and four of the *Miss Peggy* crewmembers (the captain, LDH1, LDH2, and DH1) were able to climb aboard the *George M* using the frame as a ladder. DH2 remained unaccounted for.

The *George M* remained on scene while multiple other good Samaritan boats and a Coast Guard helicopter arrived to aid in the search for DH2. At 1430, the captain of the *George M* saw that LDH1 needed immediate medical attention. The *George M* departed the casualty site for a nearby dock, where emergency medical services were waiting.

The *Miss Peggy* was later found at the bottom of the Houston Ship Channel near the collision site, lying on its starboard side at a depth of 52.0 feet (15.2 meters). Based on the last global positioning system (GPS) position transmitted from the *Miss Peggy* at 1403:55, the boat was about 135.0 feet (41.1 meters) (centerline of the boat) from the red side channel limit and about 165.0 feet (50.3 meters) from the centerline of the channel (see figure 15).

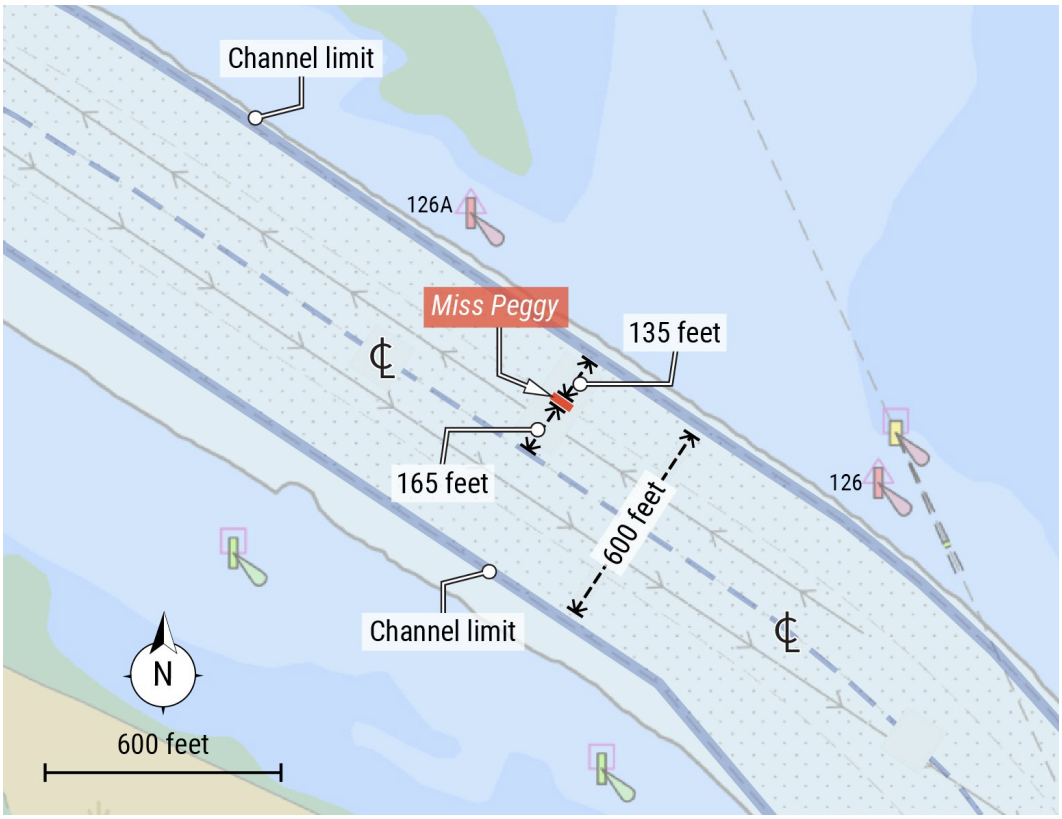

Figure 15. Last position at 1403:55 of the *Miss Peggy* in the Houston Ship Channel, indicating the distance that the towboat was inside the channel. (Channel markers not to scale.) (Background source: NOAA ENC US5HOUEF)

On July 20, divers located the body of DH2 inside the galley of the *Miss Peggy*. A coroner's report determined the cause of death was drowning.

The *Miss Peggy* was recovered by a salvage company on July 23, 2024, and brought to a company facility for examination by investigators, surveyors, and parties to the investigation.

1.2 Injuries

DH1 and LDH1 were transported to the hospital. DH1, who suffered minor injuries, was released the same day. LDH1 remained in intensive care for about a week. The captain and LDH2 were assessed by medical personnel but declined advanced care. None of the crew of the *Yangze 7* or the pilot on board were injured. Table 1 shows the injuries sustained in the casualty.

Table 1. Injuries sustained in the *Yangze 7*/*Miss Peggy* casualty.

Type of Injury[a]	*Yangze 7*	*Miss Peggy*	Total
Fatal	0	1	1
Serious	0	1	1
Minor	0	1	1
None	22	2	24

a. The NTSB uses the International Civil Aviation Organization injury criteria in all of its accident reports, regardless of transportation mode. Under this criteria, injuries are classified as fatal, serious, minor, or none. A serious injury is a non-fatal injury that requires hospitalization for more than 48 hours, commencing within 7 days from the date the injury was received; results in a fracture of any bone; causes severe hemorrhages, nerve, muscle, or tendon damage; involves any internal organ; or involves second- or third-degree burns, or any burn affecting more than 5 percent of the body surface. (49 *Code of Federal Regulations* [*CFR*] 830.2) A minor injury is any injury that does not meet the conditions for classification as a serious injury.

1.3 Damage

As a result of the collision, the *Yangze 7* sustained minor, superficial scratches on its port bow. Results of an underwater survey found no damage to the vessel's hull, propeller, or rudder. The vessel did not require any repairs.

The *Miss Peggy* had substantial water damage to all areas, including its machinery. At the time of this report's publication, the vessel remains in long-term layup status awaiting a decision to repair or scrap it. The *Miss Peggy* was valued at $1.4 million. Total damages, which included salvage and pollution mitigation, were estimated to be $3.7 million.

1.4 Vessel Information

There were no reports or documented discrepancies with any of the navigation, communication, propulsion, and steering control systems on either the *Yangze 7* or the *Miss Peggy* in the time leading up to the collision.

1.4.1 *Yangze 7*

Built in 2014, the 656-foot-long, *Yangze 7* was a Liberia-flagged bulk carrier constructed of welded steel. The *Yangze 7*'s main propulsion system was comprised of a single, slow-speed, turbocharged diesel engine directly connected to a fixed pitch, five-bladed, right-hand-turning propeller. The engine's maximum continuous output was rated at 10,795 hp (8,050 kilowatts). The vessel was owned by Ladon

Shipping Pte Ltd, operated by Shanghai Run Yuan Shipping Management Co Ltd, and classified by Nippon Kaiji Kyokai (ClassNK).[19]

The *Yangze 7* had four deck-mounted cargo cranes positioned on the centerline of the main deck. The cranes were in the stowed position at the time of the transit inbound the Houston Ship Channel (see figure 16 and figure 17).

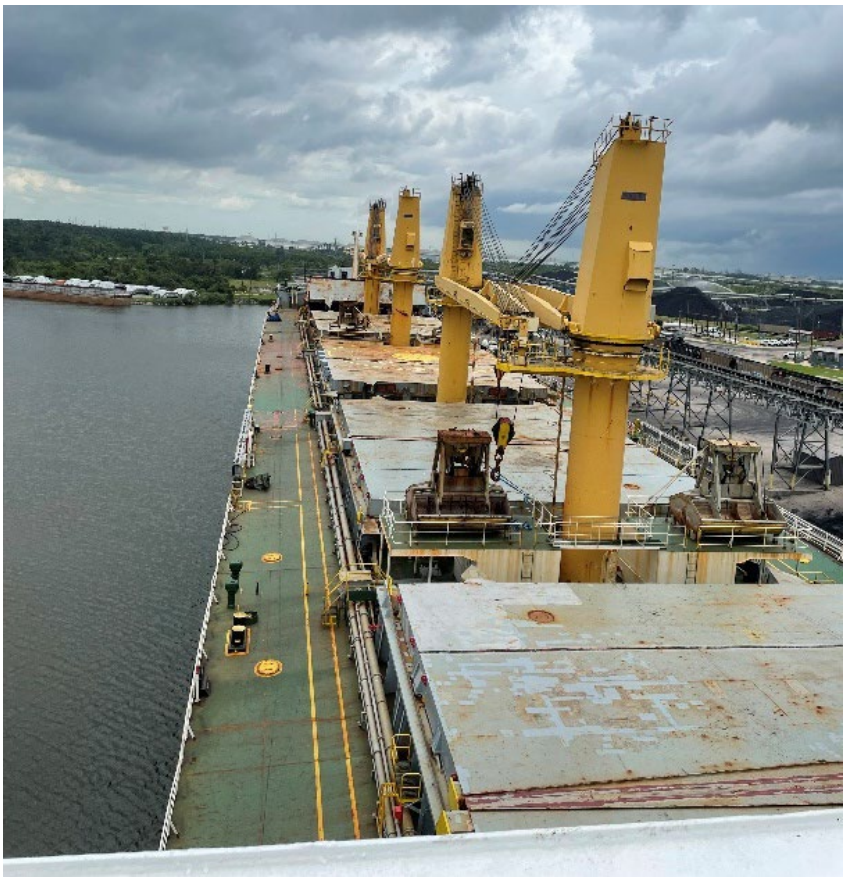

Figure 16. The *Yangze 7*'s cranes stowed, as seen from the port side of the bridge, after the casualty.

[19] *Classification societies* (such as ClassNK) are nongovernmental organizations that establish and maintain standards for shipbuilding and operations. They may also be delegated by a flag state to perform certain flag-state vessel inspection and certification functions.

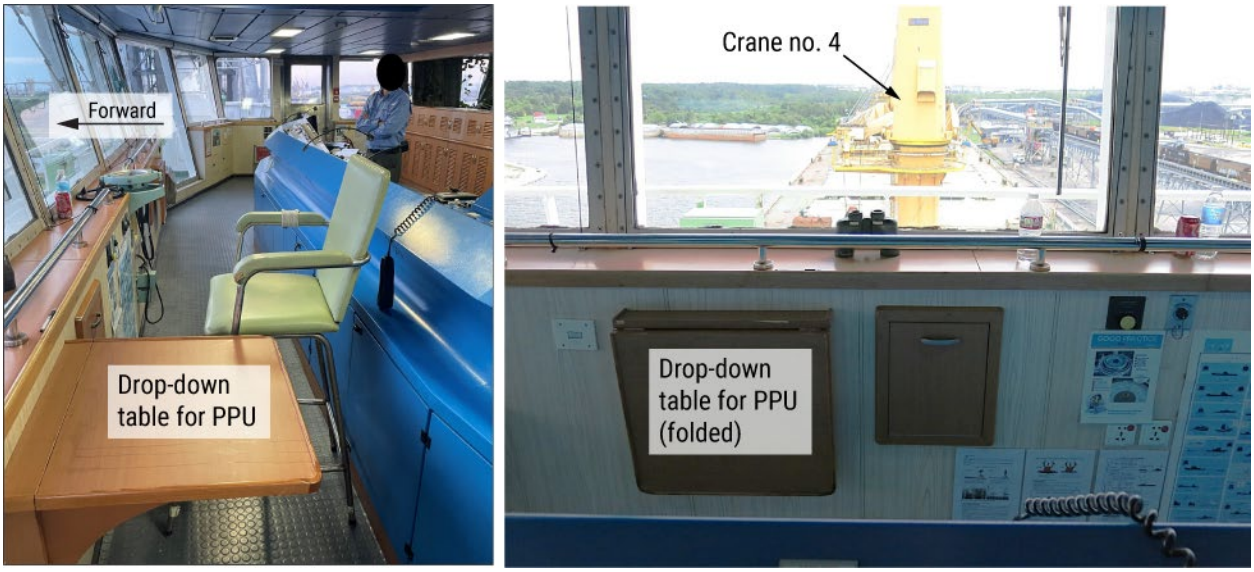

Figure 17. *Left to right*: The seat where the pilot was positioned while conning the *Yangze 7*, and the view from the pilot's seat, looking forward toward the bow.

Bulk carriers of similar construction and layout to the *Yangze 7* commonly transited the Houston Ship Channel. Pilots were familiar with the visual obstructions presented by such deck-mounted cargo cranes, which required bridge personnel to move about the bridge to see various areas past the bow.

Per the bridge visibility plan, the stowed cranes of the *Yangze 7* presented a 5° arc blind sector in the horizontal field of view from the centerline conning position. This 5° horizontal blind sector was compliant with International Maritime Organization (IMO) navigation bridge visibility standards, which stated,

> Blind sectors caused by cargo, cargo gear, or other obstructions outside of the wheelhouse forward of the beam obstructing the view of the sea surface as seen from the conning position, should not exceed 10° each. The total arc of the blind sectors should not exceed 20° (IMO 1991).[20]

[20] The *International Maritime Organization* (*IMO*) is the global standard-setting authority for the safety, security, and environmental performance of international shipping. Its main role is to create a regulatory framework for the shipping industry that is universally adopted and implemented. IMO measures cover all aspects of international shipping, including ship design, construction, equipment, manning, operation, and disposal.

In addition to the cranes, the trim of a vessel can also affect the vertical, or forward visibility to the water's surface off the bow from the centerline conning position.[21] For forward visibility, the IMO required that–

> The view of the sea surface from the conning position not be obstructed by more than two ship lengths, or 500 meters, whichever is less, forward of the bow to 10° on either side irrespective of the ship's draught, trim or deck cargo (IMO 1991).

Like the IMO bridge visibility requirements, the *Houston Pilots Navigation Safety Guidelines for the Houston Ship Channel* also required a 20° arc of visibility dead ahead not obstructed by more than 5° (Houston Pilots 2024).[22]

The *Yangze 7*'s bridge visibility plan showed that, for the vessel's trim (about 9.2 feet [2.8 meters] by the stern), the visibility to the sea surface from the conning position was less than two ship lengths, within IMO bridge visibility requirements.

Further, the guidelines required that if the vessel's trim inhibited a pilot's satisfactory visibility, then, at the discretion of the pilot or the Houston Pilots Rules and Safety Committee, two pilots and/or daylight restrictions may be imposed.[23] The pilot of the *Yangze 7* voiced no concern to the vessel's master regarding the trim of the vessel for visibility of the ranges over the forecastle (the raised portion of the bow) from the center of the navigation bridge, nor did he notify the pilot association of any related concerns.

1.4.2 *Miss Peggy*

The 1,600-hp, 50-foot-long, 20-foot-wide *Miss Peggy* was a United States-flagged towing vessel constructed of welded steel and built in 1976. The vessel was owned and operated by Houston Fleeting Services, a subsidiary of

[21] *Trim* is the difference between a ship's forward and aft drafts. If the vessel's aft draft is greater than its forward draft, it is said to be "trim by the stern," and if its forward draft is greater than its aft draft, it is "trim by the head" or "trim by the bow." If the forward and aft drafts are equal, then the vessel is "on an even keel."

[22] *Houston Pilots Navigation Safety Guidelines for the Houston Ship Channel* (May 15, 2024) outlines its notification requirements related to obstructed visibility which were in accordance with 33 *CFR* 164.15. The May 15, 2024, edition was the edition in effect at the time of the casualty.

[23] According to *Houston Pilots Navigation Safety Guidelines for the Houston Ship Channel (May 15, 2024)*, the *Houston Pilots Rules and Safety Committee* is "a committee comprised of a number of Pilots that evaluates issues involving safe navigation on the Houston Ship Channel" (Houston Pilots 2024).

Ingram Marine Group, Ltd. At the time of the casualty, the vessel had a valid Coast Guard certificate of inspection (COI) documenting compliance with 46 *CFR* Chapter I Subchapter M and was operated under its company's towing safety management system (TSMS).[24] The TSMS was issued by the American Bureau of Shipping, the designated third-party organization (TPO), in January 2023.[25] (See section 1.7.2 for more information about operating procedures for the *Miss Peggy*.)

The main deck interior spaces of the boat consisted of the galley and machinery space. They were accessed by two steel doors on the port and starboard sides of the vessel. The deck above had two crew accommodation spaces and a bathroom. Access to the crew accommodation from the outer deck was through steel doors on the port and starboard sides. According to the captain of the *Miss Peggy*, there were no open voids or hatches at the time of the collision. Doors to outer decks were all kept closed in accordance with company policy.

The top structure was the pilothouse. The *Miss Peggy* was not subject to any regulatory pilothouse visibility requirements. Aft of the conning position, three windows provided visibility. The upper window of the center portion was obscured by a window air conditioning unit (see figure 18).

[24] (a) A *TSMS* establishes "policies, procedures, and required documentation to ensure the owner or managing operator meets its established goals while ensuring continuous compliance with all regulatory requirements. The TSMS must contain a method to ensure all levels of the organization are working within the framework." (See 46 *CFR* 138.205) (b) Towing vessels operating within the United States are required to comply with 46 *CFR* Chapter I Subchapter M, which became effective on July 20, 2018. There are two options for a towing vessel operator to document compliance with the requirements in Subchapter M and obtain a *COI*: (1) Coast Guard inspection of the vessel or (2) adopt a TSMS that complies with the requirements in Subchapter M Part 138. A towing vessel operator that chooses Coast Guard inspection is not required to adopt a TSMS.

[25] A *third-party organization* (*TPO*) conducts vessel audits and surveys to determine whether a vessel meets applicable Coast Guard regulations. See 46 *CFR* Part 139 and TSMS and TPOs for more information.

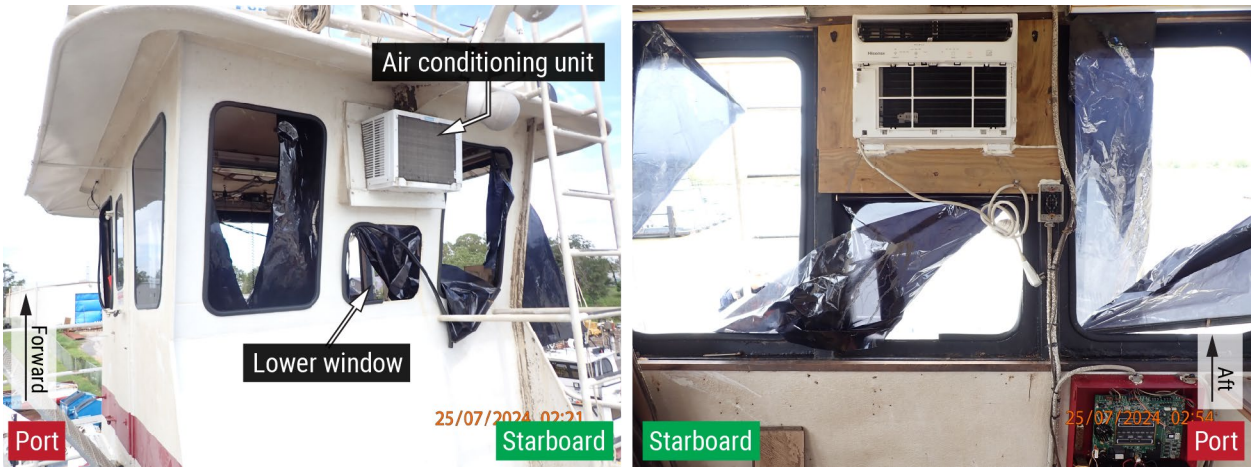

Figure 18. *Left to right*: The exterior of the *Miss Peggy* pilothouse after salvage, showing the location of the aft window air conditioning unit, and the window air conditioning unit as viewed from the helm conning position, when looking directly aft. (Background source: Coast Guard)

1.4.3 Navigational and Collision Avoidance Equipment

Both the *Yangze 7* and the *Miss Peggy* were required to have, and maintain in effective operating condition, an AIS on board to transmit the vessel's name, position, course and speed to shore stations (such as VTS) and other ships.[26] Investigators were able to confirm that both were transmitting this information, and the second officer of the *Silvio* reported that he had seen both the *Yangze 7* and the *Miss Peggy* on the vessel's electronic chart display and information system (ECDIS).

1.4.3.1 *Miss Peggy*

The captain of the *Miss Peggy* told investigators that he used both the vessel's electronic chart system (ECS) and radar while underway in the Houston Ship Channel. He said that both systems were configured for an offset (not centered) to optimize the look ahead visibility.[27] The radar unit did not have internal memory, so investigators

[26] See 33 *CFR* 164.46.

[27] (a) When an ECS or radar is configured with an offset, the plan position indicator (the circular display that shows echo signals) is set back to see more ahead than astern. Instead of the ECS displaying equidistant readings both ahead and astern of the ship, the display can be offset to show, for example, 2 nautical miles astern of the vessel and 8 nautical miles ahead. This display configuration is commonly used throughout the industry, and the option for an offset display mode is available on most radar and ECSs. (b) *Look ahead visibility* compares depth information in the electronic navigation chart (ENC) (vector maps of geospatial data that can also provide real-time ship positioning) for the vessel's projected path with user-defined safety parameters in order to detect hazards and provide advance warning of navigational dangers.

were unable to confirm what radar settings or range were in use at the time of the casualty.

The *Miss Peggy* ECS was salvaged and sent to the National Transportation Safety Board (NTSB) Vehicle Recorder Laboratory. The ECS data log files (containing the vessel's AIS and GPS information and satellite compass sensor input) were recovered. In addition to the *Miss Peggy*'s AIS information, the ECS had recorded AIS transmissions for other vessels at the time of the casualty. Investigators confirmed the transmissions from the *Yangze 7*, the *George M*, the *Silvio*, and the *Eagle Hamilton* had been received and displayed.

1.4.3.2 *Yangze 7*

The *Yangze 7* had two radar sets with automatic radar plotting aid (ARPA) functionality on board: S-band (10-centimeter wavelength) and X-band (3-centimeter wavelength).[28]

Both radar systems had the capability to display AIS targets, and the second officer confirmed that this feature was always enabled on the *Yangze 7*. Additionally, the ECDIS on the *Yangze 7* displayed AIS targets. The second officer told investigators the X-band radar had been set to 1.5 miles.

1.4.4 Vessels' Particulars

Table 2 shows the vessel particulars for the *Yangze 7* and *Miss Peggy*.

[28] An *automatic radar plotting aid* (*ARPA*) is a means of collision avoidance that uses radar to create tracks, and calculate speed, another vessel's closest point of approach (when two vessels will be closest to one another) and the time to closest point of approach.

Table 2. Vessel particulars.

Vessel	*Yangze 7*	*Miss Peggy*
NTSB Vessel Group	Cargo, Dry Bulk (Bulk carrier)	Towing/Barge (Towing vessel)
Owner/Operator	Ladon Shipping Pte/Shanghai Run Yuan Shipping Management Co Ltd (Commercial)	Houston Fleeting Services, LLC (Commercial)
Flag	Liberia	United States
Port of registry	Monrovia, Liberia	St. Louis, Missouri
Year built	2014	1978
Official number	N/A	570798 (US)
IMO number	9718911	N/A
Classification society	Nippon Kaiji Kyokai (ClassNK)	American Bureau of Shipping (TPO)[a]
Length (overall)	655.8 ft (199.9 m)	50.3 ft (15.3 m)
Breadth (max.)	105.8 ft (32.2 m)	20.4 ft (6.2 m)
Draft (casualty)	23.6 ft (7.2 m)	7.5 ft (2.3 m)
Tonnage	36,426 GT ITC	74 GRT
Engine power; manufacturer	1 × 10,795 hp (8,050 kW); Wärtsilä 5RT-FLEX58T-D-TII diesel engine	2 × 800 hp (597 kW); Detroit Diesel Series 60 diesel engines

a. The American Bureau of Shipping only served as the designated TPO for the *Miss Peggy* and did not class the vessel.

1.5 Waterway Conditions

The casualty occurred near the boundary of the Lynchburg precautionary area. The Coast Guard designated Lynchburg as a precautionary area "due to frequent congestion of meeting, crossing, and overtaking of dissimilar traffic including ships, tows with/without barges, ferries, and industrial vessels."[29] Figure 19 shows the radius of the precautionary area.

[29] According to 33 *CFR* 161.2, a *precautionary area* is a routing measure comprising an area within defined limits where vessels must navigate with particular caution and within which the direction of traffic may be recommended.

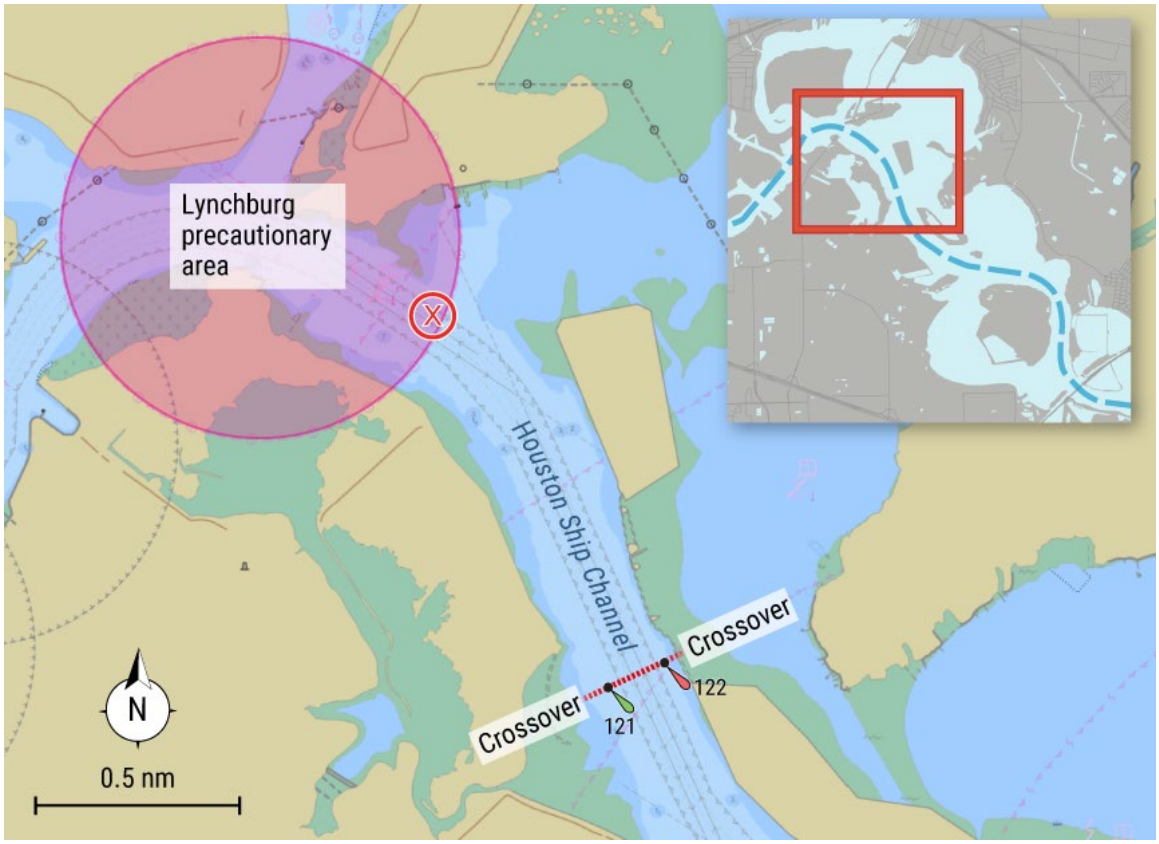

Figure 19. The area where the collision occurred, relative to the Lynchburg precautionary area and the Crossover mandatory reporting area. The area depicted in the graphic is indicated by the rectangle on the inset map. (Channel markers not to scale.) (Background sources: NOAA ENC US5HOUEF and Google Maps)

The casualty occurred during daylight hours. On the day of the casualty, sunrise occurred at 0632, sunset was at 2021, and civil twilight ended at 2047. There was no precipitation, and the conditions on the ship channel were calm. The captain of the *Miss Peggy* said there was a minimal ebb tide at the time of the collision. The nearest National Oceanic and Atmospheric Administration (NOAA) tidal prediction station indicated low water at 0102 (July 19) and high water at 1159.[30] There was negligible current at the time of the casualty.

Winds recorded at the NOAA weather station were north-northeast at 9 knots. The air temperature was 86°F, and the water temperature was 87°F. At Houston's William P. Hobby Airport (about 12.5 miles west-southwest of the casualty site),

[30] The nearest NOAA prediction station (station identification no. 8770613) was located at Morgans Point, Barbours Cut, Texas (about 6.5 miles southeast of the casualty site).

visibility was reported at 10 miles or more, with scattered clouds at 3,000 and 16,000 feet above ground level.

1.6 Vessel Traffic Service Houston-Galveston

1.6.1 Vessel Traffic Service Area Traffic Management

The Houston Ship Channel is part of the VTS Houston-Galveston service area, which is comprised of three numbered sectors (Sector 1, Sector 2, and Sector 3) (see figure 20).

Figure 20. VTS Houston-Galveston's three sectors. (Background source: Google Maps)

VTS Houston-Galveston provides mariners with information about the VTS area, including position, identity, and intentions of vessels operating in the VTS area.

VTS offers:

- Meteorological information,
- Status of aids to navigation,
- Information about traffic congestion information,
- Information about waterway restrictions,
- Navigational assistance, at the request of a vessel operator, by providing information about the operator's own vessel (such as course and speed) position in the waterway relative to the channel axis, and landmarks.
- The *VTS Houston-Galveston User's Manual*, which it produces and publishes to provide mariners with a description of the services offered and rules in force for that VTS.[31]

VTS traffic managers are the primary interface between VTS and vessel operators in the VTS area.[32] Traffic managers monitor vessels operating in the VTS area using AIS tracking, radar, VHF radio, and, in some cases, cameras. The traffic manager maintains a larger awareness of traffic in an assigned sector through the Ports and Waterways Safety System (PAWSS), which monitors and tracks vessels using the vessels' transmitted AIS and radar data.[33]

At the time of the collision, the traffic manager for Sector 3 (where the casualty occurred) would have seen the *Yangze 7* in PAWSS, but not the *Miss Peggy* or the *George M*.[34] According to VTS Houston-Galveston, its traffic managers only display active Vessel Movement Reporting System (VMRS) users in PAWSS; the locations of moored vessels or vessels not meeting VMRS user requirements (such as the *Miss Peggy* and the *George M*) are available but are disabled in the system's normal

[31] The VTS manual also includes chartlets showing the area and zone boundaries, general navigational information about the area, and procedures, radio frequencies, reporting provisions, and other information that may assist the mariner while in the VTS area.

[32] "Traffic manager" was a term adopted by VTS Houston-Galveston to refer to both civilians and Coast Guard members who serve in the role. The formal position title for civilians is "vessel traffic management specialist," and Coast Guard members in that role are "VTS watch operators."

[33] *PAWSS* is a "national transportation system that collects, processes, and disseminates information on the marine operating environment and maritime vessel traffic in major U.S. ports and waterways." See Ports and Waterways Safety System (PAWSS) | Navigation Center.

[34] The *Miss Peggy* and the *George M* were broadcasting *AIS* data. See 33 *CFR* 164.46(b) for *AIS* carriage requirements.

display mode.[35] (See section 1.6.2 for more information about VMRS user requirements.) Showing all vessels (rather than only active VMRS users) would have resulted in a significant number of targets being displayed, and VTS Houston-Galveston explained that "saturation" for a traffic manager is about 25 vessels in one VTS zone. If needed, the traffic manager could show all traffic in the area with the selection of a filter.

PAWSS has collision-alerting and alarm capabilities, but this feature was not enabled by VTS Houston-Galveston traffic managers. According to the VTS director, the current version of PAWSS is unable to differentiate between instances where vessels come within 100.0 feet (30.5 meters) of each other (a common occurrence in the Houston Ship Channel due to its narrow width) and a collision. If the collision-alerting and alarm capabilities are enabled, the system "would be in a constant state of alarm."

VTS provides mariners with information that enhances safe routing and is authorized to issue outcome-based directions (such as directing a vessel to hold in a certain location). However, VTS does not issue rudder, heading, or propulsion commands for collision avoidance. According to VTS Houston-Galveston, it is the vessel operator's responsibility to safely navigate, operate, and maneuver the vessel in the VTS area.

VTS traffic managers also have access to a series of cameras located throughout the Houston Ship Channel. In the area where the collision occurred, there were two cameras covering both directions of the channel. Around the time of the collision between the *Yangze 7* and the *Miss Peggy*, the Sector 3 traffic manager was using the outbound-facing camera to look for a tow (the *Safety First*) exiting the Old River. The tow was intending to enter the Houston Ship Channel, and the traffic manager was ensuring that the tow did not collide with the *Eagle Hamilton* and the *Silvio*.

[35] The *Vessel Movement Reporting System* (*VMRS*) is a mandatory reporting system used to monitor and track vessel movements. This is accomplished by a vessel providing information under established procedures as set forth in the areas defined in 33 *CFR* 161.12.

1.6.2 Vessel Movement Reporting System User and Vessel Traffic Service User Requirements

1.6.2.1 Vessel Movement Reporting System Users

Per the *VTS Houston/Galveston User's Manual* in use at the time of the casualty, vessels meeting the following specifications were known as VMRS users (US Coast Guard 2017).[36]

- A power-driven vessel of 40 meters (about 131 feet) or more in length, while navigating,
- A commercial vessel of 8 meters (about 26 feet) or more in length engaged in towing, while navigating, or
- A vessel certificated to carry 50 or more passengers for hire, when engaged in trade.

VMRS users had to:

- Fully participate in the VMRS,
- Monitor the VTS VHF radio frequency designated in the *VTS Houston/Galveston User's Manual*,
- Make reports to VTS, and
- Comply with general VTS operating rules.[37]

1.6.2.2 Vessel Traffic Service Users

Vessels meeting the following specifications were known as VTS users.

- A power-driven vessel of 20 meters (about 66 feet) or more in length,

[36] The 2017 edition of the user manual was applicable at the time of the casualty. The user manual was revised in March 2025.

[37] *VMRS* users in the Houston Ship Channel must make the following reports to VTS Houston-Galveston during the vessel's transit through the area unless otherwise exempt.

1. A sailing plan report (vessel name, type, position, destination and estimated time of arrival, intended route, time and point of entry, and whether dangerous cargo is on board or in its tow) at least 15 minutes before navigating the VTS area;
2. Position reports at designated reporting points in the channel (at entry to a VMRS area, when passing any of the 20 reporting points in 33 *CFR* 161.35(c) applicable to their transit or vessel, or when directed by the VTS Houston-Galveston); and
3. A final report on arrival at its destination (if the destination is within the VTS) or when leaving the VTS area.

- A vessel of 100 gross tons or more carrying 1 or more passengers for hire,
- A towing vessel (lightboat [not pushing any barges]) of 26 feet or more in length while navigating, or
- A dredge or floating plant.

VTS users had to:

- Monitor the designated VTS VHF radio frequency for the area in which they are operating,
- respond if hailed, and
- comply with VTS operating rules.

VTS users were deemed to be "passive" participants of the VTS. Passive participation was meant to increase VTS users' situation awareness of VMRS users transiting in the area.

In addition to the VTS requirements for the Houston Ship Channel, an informal practice used in the waterway served as another means of gaining situation awareness. According to the captain of the *Miss Peggy*, when a pilot aboard a ship intended or expected to overtake a towboat closely in the channel, the pilot would often radio the towboat. This practice, which was a courtesy rather than a regulation, helped to ensure towboat crews were aware of larger vessels approaching from astern and the pilots' intentions during the approaches.

1.6.3 Vessel Traffic Service Area Participation by *Yangze 7* and *Miss Peggy*

The *Yangze 7* was a VMRS user, while the *Miss Peggy* was a VTS user due to its length and it being lightboat (not pushing barges). The designated radio frequency for the area where the casualty occurred (Sector 3) was VHF channel 21A.[38]

The *Yangze 7* (a VMRS user) reported its position to VTS as it transited the Houston Ship Channel. In addition, the VTS Sector 3 traffic manager read out traffic in the area over this channel whenever a vessel checked in with the VTS sector. (See section 1.1.2 for times of and locations where these calls took place.)

The *Miss Peggy* (as a VTS user) was required to monitor channel 21A as it transited Sector 3. The captain of the *Miss Peggy* told investigators that the vessel's radios were playing at a volume that he could hear, and that the radios were tuned to

[38] The VHF radio frequency for VTS Sector 2 was Channel 11.

channel 13 (bridge-to-bridge communications) and either channel 19 or channel 81.[39] He also reported that he was aware of "a total of three outbound units" and "an inbound unit" transiting nearby.

1.7 Operations

1.7.1 *Yangze 7*

Shanghai Run, the vessel's operating company, provided guidance, policy, and procedures to its vessel crews via a safety management system (SMS).[40] To supplement the SMS, the *Yangze 7* master had written instructions compiled in his "Master's Standing Orders for Watchkeeping Officers," which all OOWs were required to follow.[41] The deck officers' understanding of, agreement to, and compliance with, these orders were verified through signature; the chief officer, the second officer, and the third officer all signed the posted orders in May 2024.

The company's SMS specified manning requirements for maintaining a proper lookout. The SMS required the master, an OOW, a helmsman, and a pilot (where required) to be on watch on the bridge, as well as a full-time lookout while a vessel entered or left a port. According to the *Yangze 7*'s master's standing orders, "A proper lookout must be maintained at all times." The company's SMS specified manning requirements, which would augment proper lookout practices.

The master told investigators that the bosun, positioned on the bow, was responsible for lookout duties as well as standing by to release the anchor, if ordered to do so.

The SMS stated that an effective bridge team (which, according to the SMS, included the pilot) should "promote good coordination and teamwork among its

[39] Channel 19 was the VHF radio frequency for commercial operations communications, and Channel 81 was the frequency that the *Miss Peggy* crew used for certain shipboard communications.

[40] A *safety management system* (SMS) is a systematic approach to managing safety, including the necessary organizational structures, accountabilities, policies, and procedures. The *IMO*'s International Safety Management Code (ISM Code) establishes the standard for SMSs in the marine industry. Companies that own or operate vessels subject to the *International Convention for the Safety of Life at Sea* (*SOLAS*)—must develop, implement, and maintain an SMS in compliance with the ISM Code. The ISM Code is incorporated into US law through Title 46 *United States Code* Chapter 32, which requires the secretary of the department in which the Coast Guard is operating (Department of Homeland Security) to implement SMS regulations that conform with the ISM Code.

[41] *Master's standing orders* are written instructions for bridge watchstanders that establish the master's requirements related to safe navigation and operation of a ship.

members." Likewise, the master's standing orders encouraged such coordination, stating, "If a situation develops whereby you as OOW are in any doubt that I have correctly appraised the tactical situation … you will please inform me your concern [*sic*] without fear of reprisal."

The section of the master's standing orders titled, "Responsibility with a Pilot on Board," stated:

> Despite the duties and obligations of a pilot, his presence on board does not relieve the OOW from his duties and obligations for the safety of the ship. OOW should cooperate closely with the pilot and maintain an accurate check on the vessel's position and movement. If in doubt as to the action or intentions of the pilot, OOW should seek clarification from the pilot and notify me immediately in case he remains dissatisfied.

The master of the *Yangze 7* told investigators that the use of cell phones by on-duty personnel was forbidden. He included this prohibition in his standing orders, which stated, "use of mobile phones or other personal electronic equipment is prohibited on the bridge." Likewise, signage warning against distractions due to nonoperational use of personal electronic devices (PED) was displayed on the bridge (see figure 21).

Figure 21. "DON'T BE DISTRACTED" poster aboard the *Yangze 7*, located below the forward wheelhouse windows to port of centerline, near where the pilot was conning the ship.

1.7.2 *Miss Peggy*

Ingram Marine Group was the parent company of Houston Fleeting Services, the *Miss Peggy*'s owner and operator. Houston Fleeting Services vessel operators were required to follow Ingram Marine Group's navigational safety policies.

Ingram Marine Group's "Navigation Standard Operating Procedures [SOP]," in the section about lookout duties, cited the Coast Guard's Inland Navigation Rules.[42] The Ingram SOP required "strict compliance" with the Inland Rules regarding lookout, which stated:

> Every vessel shall at all times maintain a proper look-out by sight and hearing as well as by all available means appropriate in the prevailing circumstances and conditions so as to make a full appraisal of the situation and of the risk of collision (US Coast Guard n.d.).

Under the SOP, the officer in charge of the navigational watch (in this case, the captain) could serve as the lookout on watch if conditions permitted and the officer was able to safely, and on their own—

- Maintain a state of vigilance with regard to any significant change in the operational environment,
- Assess the situation and risk of collision/allision,
- Anticipate standing or other dangers to navigation, and
- Detect any other potential hazards to safe navigation.

Ingram's TSMS prohibited personnel in charge of the navigational watch from using PEDs. Specifically, it prohibited the use of PEDs in critical areas, such as lock approaches and exits, bridges, in and around areas with a high-volume of pleasure craft, known difficult stretches/bends in the river systems, and safety zones.

[42] The Coast Guard's Inland Navigation Rules are collision-avoidance regulations that mariners must abide by while transiting navigable inland waters in the United States, including the Houston Ship Channel (see 33 *CFR* Part 80).

1.8 Use of Personal Electronic Devices While Navigating

1.8.1 Rules, Regulations, and Advisories

1.8.1.1 Houston Pilots and Board of Pilot Commissioners for Harris County

Many ship pilots use PEDs for operational purposes (such as coordinating with pilot dispatch offices, dispatching tugs, communicating with the pilot boat, coordinating line handlers, and so on). The Houston Pilots, which the *Yangze 7* pilot was a member of, did not have any policies or rules regarding the nonoperational or personal use of PEDs in its Navigation Safety Guidelines.

As one Houston pilot told investigators, personal phone use is a "common-sense policy," adding, "When we're navigating ships and we're in high traffic areas, you stay off it."

The Board of Pilot Commissioners for Harris County (commonly referred to as the Houston Pilot Board) oversees rules and regulations governing, and issues orders related to, Houston pilots and pilotage on the Houston Ship Channel. At the time of the casualty, the Houston Pilot Board did not have any rules or guidelines explicitly related to a pilot's use of PEDs while directing the movement of a vessel.

1.8.1.2 American Pilots' Association

The American Pilots' Association (APA) is a non-governmental national association that most pilot associations in the United States, including the Houston Pilots, are members of.

The APA is not a regulatory body and does not establish industry criteria. However, it has provided resolutions, guidelines, and best practices for its member associations. The APA has routinely forwarded to its membership Coast Guard advisories, NTSB reports and publications, and other notices on the dangers of distracted operations.

The APA informed the NTSB that state pilot oversight authorities and individual pilot groups around the country have established guidance on distracted operations or the use of PEDs while piloting. The APA did not maintain records of which pilot associations had these rules or guidelines, nor is it required to do so.

1.8.1.3 Coast Guard

There are no federal regulations prohibiting the use of PEDs for ship pilots or any person involved in directing the movement of a vessel on a navigable waterway.

Regardless, the Coast Guard has advised against distracted vessel operations for several years, issuing Safety Advisory 01-10, "Distracted Operations: Don't Let It Be You!" on October 29, 2010.[43] The advisory stated:

> The bridge team management approach to safe navigation is an essential element of risk management and safe vessel operations. The team approach to safe navigation requires the clear, frequent and accurate exchange of information between all crewmembers relative to the safe operation of the vessel. In other evolutions, such as discharging cargo, loading fuels, etc., full attention is required by all involved in order to prevent casualties or pollution incidents. Additionally, when mariners are navigating or working alone, the use of cellular or other devices unrelated to the operation at hand could impede the exchange of vital operational information, delay reaction time, or cause attention lapses of those involved which could result in unwanted circumstances having very serious consequences causing injuries and fatalities, material damage, and environmental impact (US Coast Guard 2010).

At the end of the advisory, the Coast Guard "strongly" recommended that vessel owners and operators develop and implement operational policies outlining when the use of cellular phones and other devices is appropriate or prohibited. Marine pilots, their associations, or governing bodies were not mentioned specifically in this advisory.

As a result of the 1,096-foot-long Hong Kong-flagged containership *Ever Forward* grounding outside the Craighill Channel near Baltimore, Maryland, on March 13, 2022, the Coast Guard published Findings of Concern 18-22, which served as an update to Safety Advisory 01-10.[44] The Coast Guard's investigation found that the pilot aboard the *Ever Forward* "relied solely on their Portable Pilot Unit (PPU) for navigation and was watching playback of a previous transit at the time of the incident" (US Coast Guard 2022b). The Finding emphasized the dangers associated with "fixation on electronic devices as well as over reliance on a singular piece of

[43] Per the Coast Guard, safety advisories issued by the Office of Investigations and Analysis, Commandant, "provide brief, concise, and timely information regarding safety issues and topics affecting people within the maritime transportation system." See Safety Alerts for more information.

[44] The Coast Guard issues findings of concern to "to disseminate information related to unsafe conditions that were identified as causal factors in a casualty and could contribute to future incidents. Findings of concern are intended to educate the public, state, or local agencies about the conditions discovered so they may address the findings with an appropriate voluntary action or highlight existing applicable company policies or state/local regulations" (US Coast Guard 2022b).

equipment while navigating or performing safety sensitive functions" (US Coast Guard 2022a).

The Finding recommended implementation of three measures on vessels in similar service as the *Ever Forward*:

1. That "effective operational policies outlining when the use of cellular telephones and other devices is appropriate or prohibited" be developed and implemented,

2. PPU users receive "comprehensive training on devices and software functionality," and

3. PPU users receive training on "how to properly integrate PPU devices into a complete bridge resource management philosophy" (US Coast Guard 2022b).[45]

For more information about the Coast Guard's investigation of the *Ever Forward* casualty, see Appendix C.

1.8.2 Personal Electronic Device Use Preceding Casualty

The captain of the *Miss Peggy* said he was not using a PED in the time leading up to the casualty, and his device was lost in the sinking of the *Miss Peggy*. Phone records indicated the last phone activity on the captain's device was at 1340, about 24 minutes before the collision, for a 76-second nonoperational call to a recipient in the Houston area.

At 1322:39, the pilot of the *Yangze 7* received a phone call from another Houston pilot, who was actively conning an outbound loaded tanker (the *Petrel*) through the Houston Ship Channel; this phone call lasted 39 minutes and 5 seconds, ending 2 minutes and 16 seconds before the collision (see table 3).

[45] *Bridge resource management* (BRM) is the effective use of all available resources—information, equipment, and personnel—by a vessel's bridge team (masters, pilots, officers, and crew) to safely operate the vessel.

Table 3. PED calls of the pilot conning the *Yangze 7* in the time leading up to the collision with the *Miss Peggy*.

Time Initiated	Call Routing	Other Party	Call Duration (mm:ss)	Time Ended
1110:28	Outgoing	Houston pilot dispatch office number	01:08	11:11:36
1126:42	Outgoing	Houston pilot conning the tanker *Petrel*	00:02	11:26:44
1129:25	Incoming	Houston pilot conning the tanker *Petrel*	10:02	11:39:27
1141:16	Incoming	Houston pilot dispatch office number	00:28	11:41:44
1322:39	Incoming	Houston pilot conning the tanker *Petrel*	39:05	14:01:44

Audio from the VDR of the *Yangze 7* indicated that the pilot's discussion included golfing in the Houston area, installation and financing of a home generator, and travel plans to France, as well as pilot scheduling assignments, operations, and office logistics unrelated to current operations.

The *Yangze 7*'s second officer, who had expressed concern about the pilot's cell phone use, also noted that he recognized that the phone conversation was "not about the vessel, not about safety, not about navigation." The second officer explained that, because the master was on the bridge, he did not voice his concerns to the master. Additionally, he thought the master understood that the phone use was not related to current operations, and that the master would take any action if it were necessary.

The master, who was not a native English speaker, told investigators that he did not challenge the pilot about his use of the cell phone, because he thought the pilot was on a "working" call. The master noted that he could not understand what the pilot was saying during the phone call because the pilot was speaking so quickly.

1.9 Personnel Information

1.9.1 Houston Pilot Aboard *Yangze 7*

The pilot held a Coast Guard-issued credential as a first-class pilot of vessels of any gross tonnage upon the Houston Ship Channel from the Galveston Bay sea buoy to the Houston turning basin, and a valid commission from the State of Texas as a branch pilot for the Houston Ship Channel and Galveston Bar. He also held Coast Guard-issued credentials as a master of self-propelled vessels, not including auxiliary sail, of less than 1,600 gross registered tons upon inland waters and a master of towing vessels upon Great Lakes, inland waters, and Western Rivers. He was certificated as a deputy branch pilot in March 2020, and received his full commission as a Houston Ship Channel and Galveston Bar pilot in March 2023.

According to the Houston Pilot Board, the pilot had worked in the towing industry before being accepted into the Houston pilots as a deputy pilot. He had about 6 years' non-navigational experience in the positions of ordinary seaman, deckhand, and tankerman, and about 6.5 years' navigational experience operating towing vessels as a steersman or pilot under the capacity of his Coast Guard-issued credential. He completed 817 transits as a deputy pilot and 443 transits as a commissioned branch pilot before the collision. He completed a bridge resource management course for pilots in July 2020. (For more information about bridge resource management, see section 2.3.2.)

During the investigation, the pilot of the *Yangze 7* (through his legal representation) declined requests of NTSB investigators to be interviewed; therefore, his work/rest history was unavailable.

1.9.2 *Miss Peggy*

At the time of the casualty, there were five crewmembers on board the *Miss Peggy*: the captain, two lead deckhands, and two deckhands. According to the vessel's COI, the *Miss Peggy* was required to be manned by a master and one deckhand (because its voyage was shorter than 12 hours).

The captain of the *Miss Peggy* had held a master of towing vessels upon the Great Lakes, inland waters, and Western Rivers since 2012. He had worked in the towing industry for 17 years and had operated as a captain on the *Miss Peggy* for about 11 months before the casualty. Before joining the *Miss Peggy*, he was employed with another towing company for 16 years, where he operated larger towboats.

He said he was familiar with the area where he was operating the *Miss Peggy* on the day of the casualty.

The captain was at the helm and acting a sole lookout at the time of the collision, and he told investigators that he had not left the helm since departing Baytown. He told investigators that he went to sleep at 1900 on the evening of July 18, and he woke up at 0130 on July 19. His driving time to meet the vessel was about 25 minutes, and he relieved the other captain of the *Miss Peggy* around 0230 on July 19. This was his first day back on board the vessel after 11 days off. When asked if he felt rested at the time of the casualty, the captain said "absolutely."

1.9.3 *Yangze 7* Master

The master of the *Yangze 7* held a valid Certificate of Competency as Master of a Foreign-going Ship issued by the People's Republic of China, with a valid endorsement from the Republic of Liberia. He said he had worked in his capacity as master for 4 years.

1.9.4 Toxicological Testing

Coast Guard regulations require that each individual on board a commercial vessel involved in a major marine casualty and who is directly involved in this type of incident be tested for alcohol and drugs.[46] These regulations incorporate US Department of Transportation (DOT) regulations for drug testing, but not for alcohol testing.

The pilot of the *Yangze 7* underwent Coast Guard/DOT urine drug testing on the casualty date. This testing was verified by the medical review officer (MRO) as being negative for tested-for substances.[47] The master, second officer, chief officer, bosun, and able seaman of the *Yangze 7* underwent non-DOT urine drug testing in the morning after the casualty, with no tested-for substances detected.[48]

The pilot and crew of the *Yangze 7* also underwent alcohol breath testing after the casualty, with no alcohol detected. Due to incident response, rescue operations, and investigation activities, alcohol testing for the *Yangze 7* crew and the pilot was

[46] See 46 *CFR* 4.03-2.

[47] (a) Tested-for substances on Coast Guard/DOT urine drug testing are marijuana metabolites, cocaine metabolites, amphetamines, opioids, and phencyclidine (PCP), in accordance with 46 *CFR* 16.113(b) and 49 *CFR* 40.82, as detailed at 49 *CFR* 40.85. (b) According to 49 *CFR* 40.3, a *medical review officer* (*MRO*) is "a person who is a licensed physician and who is responsible for receiving and reviewing laboratory results generated by an employer's drug testing program and evaluating medical explanations for certain drug test results." In general, laboratories report DOT drug test results to MROs, who verify the results and prepare MRO reports for employers. Under limited circumstances, if an employee has a legitimate medical explanation for a positive drug test result, an MRO must verify the result as negative on the MRO report.

[48] (a) Tested-for substances were listed as: amphetamines (amphetamine, methamphetamine, MDMA, MDA, MDEA), barbiturates, benzodiazepines, cocaine metabolite, opiates, 6-acetylmorphine, phencyclidine (PCP), marijuana (THC) metabolite, methadone, methaqualone, and propoxyphene. (b) As non-DOT testing, the drug testing of the *Yangze 7* crew other than the pilot did not meet Coast Guard requirements for drug testing following a major marine casualty as outlined in under 46 *CFR* Part 4 Subpart 4.06 and 46 *CFR* 16.113.

completed more than 2 hours after the casualty; the pilot was tested at 1720, and the crew more than 10 hours after the casualty.[49]

The captain of the *Miss Peggy* underwent Coast Guard/DOT urine drug testing on the casualty date. This testing was verified by the MRO as being negative for tested-for substances. The captain of the *Miss Peggy* was not tested for alcohol following the casualty. According to Ingram, alcohol testing was not conducted due to the duration of rescue operations and because "testing equipment was not available once the crew members were on land."

1.10 Electronic Data

1.10.1 Portable Pilot Unit

The pilot of the *Yangze 7* used a PPU for the transit. A PPU is a compact laptop computer or tablet, with electronic navigation and charting software, that pilots use as an aid for navigation, in addition to the vessel's own navigation equipment. The pilot's PPU used information from the ship's AIS port, so AIS information the *Yangze 7* received was available on the unit.

Per the presiding officer of the Houston Pilots, pilots use their PPUs as an additional aid to navigation and for traffic management, particularly for towing traffic. Pilots will normally have AIS towing traffic displayed on their PPUs. The PPU software used by the Houston Pilots also allows the ability to determine meeting/overtaking positions and times of those events.

The pilot's PPU also used an independent global navigational satellite system (GNSS) unit—separate from the ship's systems—to obtain position.[50] It was common practice for Houston pilots (who all use PPUs) to place the GNSS unit on the port bridge wing of the ship they were conning. Position, heading, and rate of turn information would be communicated via Bluetooth from the GNSS unit on the bridge

[49] According to 46 *CFR* 4.06-3(a)(1), "Alcohol testing must be conducted on each individual engaged or employed on board the vessel who is directly involved in the [incident]. (i) The alcohol testing of each individual must be conducted within 2 hours of when the [incident] occurred, unless precluded by safety concerns directly related to the incident. (ii) If safety concerns directly related to the [incident] prevent the alcohol testing from being conducted within 2 hours of the occurrence of the incident, then alcohol testing must be completed as soon as the safety concerns are addressed. (iii) Alcohol testing is not required to be conducted more than 8 hours after the occurrence of the [incident]."

[50] GNSS enables worldwide navigation positioning and includes GPS (United States) as well as the BeiDou (China), Galileo (Europe), and GLONASS (Russia) systems.

wing to the PPU. The GNSS unit was equipped with a modem that used a secure cellular network, so pilots could broadcast their vessel position and information to other pilots conning nearby ships.

Investigators reviewed recorded log data from the *Yangze 7* pilot's PPU. A software support employee for the PPU's manufacturer extracted the log files from the unit and found no anomalies with the hardware or any of the log files recorded. The log files showed AIS information from vessels transmitting an AIS signal and from pilots on other ships (via the cellular communication network). Additionally, the log files recorded parameters such as speed, heading, course over the ground, speed over the ground, cross track error, rate of turn, and time to next waypoint information. In the log files, the *Miss Peggy* and the *George M* were recorded as transmitting AIS data.

The PPU software was customizable; pilots could enable or disable modes and scales, and hide features and certain types of AIS targets. Likewise, the cellular network had a feature that allowed pilots to hide all vessels except those with pilots on board. In this view, a vessel would be denoted with the pilot's unit number and shortened name or initials.

Although investigators were able to view the log file data recordings and verify that the PPU had received the *Miss Peggy*'s AIS transmission, they could not confirm what settings the pilot had enabled. Because the PPU's software does not record a pilot's customized preferences, investigators could not confirm whether the *Miss Peggy* was visible to the pilot as a target on the PPU.

The pilot viewed the *Yangze 7*'s S-band radar when he boarded the vessel, but neither the second officer nor the master saw the pilot using or referencing the ship's radars or ECDIS after that. From his seated position on the bridge during the transit, the pilot would not have been able to see these systems' displays.

1.10.2 *Yangze 7* Voyage Data Recorder

As a cargo ship constructed after June 2014, the *Yangze 7* was required to have a VDR compliant with IMO Resolution *MSC.333(90)*, the latest published

international VDR performance standard for voyage data recorders.[51] According to *MSC.333(90)*–

> The electronic signals of the main displays of the radar installations and ECDIS are required by SOLAS [*International Convention for the Safety of Life at Sea*] regulations. The recording method should be such that, on playback, it is possible to present a faithful replica of the entire display that was on view at the time of recording, albeit within the limitations of any bandwidth compression techniques that are essential to the working of the VDR.

The *Yangze 7* was equipped with a Highlander-brand HLD-VDR600 VDR. The VDR recorded and stored audio from the bridge's five microphone channels and captured and stored parametric data.[52] The last annual performance test carried out was on January 22, 2024, and the attending representative from the VDR manufacturer documented that both the radar and ECDIS display images were being recorded.

VDR audio and parametric data were recovered from the *Yangze 7* and sent to the NTSB Vehicle Recorder Laboratory in Washington, DC, for analysis. Neither the radar, nor ECDIS image data, were found using the manufacturer's software.[53]

1.11 Postcasualty Actions

On September 10, 2024, the Board of Pilot Commissioners for Harris County Ports Pilot Board Investigation and Recommendation Committee's (PBIRC) Advisory

[51] (a) Per ClassNK, the *Yangze 7* build date was November 28, 2014. (b) Vessels are subject to any requirements imposed by their flag administration; in this case, the Liberian Maritime Authority. The Liberian Maritime Authority defers to the IMO resolution as its VDR guidance for flagged vessels. (c) *MSC.333(90)* was amended in 2021 but did not bring significant performance changes. (d) Only passenger ships and ships other than passenger ships of 3,000 gross tonnage and upwards constructed on or after July 1, 2002, must carry VDRs. The *Yangze 7* is a cargo ship with a VDR installed after July 1, 2014, and was required to be fitted with a VDR meeting the requirements of IMO resolution *MSC.333(90)*.

[52] In the context of a VDR, *parametric data* refers to numerical or digital data automatically collected from shipboard sensors and systems, such as GPS position, speed, heading, engine and rudder orders, wind speed and direction, depth, and other navigation and control parameters that describe the vessel's operational state and movements over time.

[53] Determination of the causes leading to the lack of radar and ECDIS VDR data fell outside of the scope of this investigation. See the NTSB Voyage Data Recorder (Audio) Factual Report in the public docket for this casualty investigation (case number DCA24FM051).

Subcommittee determined that the collision of the *Yangze 7* with the *Miss Peggy* warranted a full PBIRC hearing (PBIRC 2024). Per the September 10 meeting minutes,

> The Subcommittee reviewed this matter and determined that it warranted a full PBIRC hearing. However, the Subcommittee determined for their [*sic*] to be insufficient evidence and requested the full PBIRC hearing be held once sufficient evidence becomes available through the joint investigation with United States Coast Guard (USCG) Sector Houston-Galveston and the National Transportation Safety Board (NTSB).

According to the Houston Pilots, the PBIRC hearing related to this casualty will occur after the public release of this investigation report.

On February 8, 2026, the Houston Pilots added the following policy on personal electronic devices to their working rules:

> OVERVIEW: Personal electronic devices, including Portable Pilot Units, cell phones, tablets, etc. ("PEDs") are tools that can add to the safety of pilotage when used responsibly. The primary duty of a pilot is to ensure a safe and efficient transit of the vessel he or she is aboard and when appropriate, the safety of other vessels in the area.
>
> PROCEDURE: A Houston Pilot interacting with a PED while providing pilotage services should:
>
> (1) Limit the usage to vessel safety, essential communications with other pilots, pilot transfers, Coast Guard, national security, law enforcement, or other professional purposes;
>
> (2) Keep usage to a minimum; and
>
> (3) To prevent distraction and loss of situational awareness, avoid usage for personal reasons.

2 Analysis

2.1 Introduction

On July 19, 2024, at 1404 local time, the bulk carrier *Yangze 7* was transiting inbound in the Houston Ship Channel, near Lynchburg, Texas, when it collided with the inbound towing vessel *Miss Peggy*. The *Miss Peggy* capsized and sank with five crewmembers on board. Four were recovered by a good Samaritan vessel, and the fifth crewmember was later found deceased in the wreckage. One *Miss Peggy* crewmember sustained serious injuries, and one sustained minor injuries. An undetermined amount of oil was released into the Houston Ship Channel from the sunken vessel. Total damages, including salvage of the *Miss Peggy* and pollution mitigation, were estimated to be $3.7 million. The *Yangze 7* sustained no damage.

This analysis evaluates the following safety issues:

- Failure to maintain a proper lookout (section 2.2)
- Distraction by nonoperational use of personal electronic devices (section 2.3)

Having completed a comprehensive review of the circumstances that led to the casualty, the investigation excluded the following as causal factors.

- *Vessels' crew complements and mariner credentialing*. The Houston Pilot, the bridge team of the *Yangze 7*, and the captain of the *Miss Peggy* were appropriately credentialed. The *Yangze 7* crew complement met the requirements of the vessel's minimum safe manning document. The crew complement of the *Miss Peggy* met the manning requirements on the vessel's COI issued by the Coast Guard.
- *Fatigue (*Miss Peggy *captain)*. The captain reported getting 6.5 hours of sleep the night before the casualty. He had been off duty for the previous 11 days.[54]
- *Traffic density and VTS traffic management*. Although the Houston Ship Channel (and the Lynchburg precautionary area in particular) has a high traffic density compared to other waterways, the amount of traffic at the time of the casualty was typical for the channel. The traffic density would not have been unmanageable for the pilot of the *Yangze 7* or the captain of the *Miss Peggy* given their experience navigating the channel. In addition, the VTS Houston-Galveston Sector 3 traffic manager responded to the *Yangze 7*

[54] The Houston pilot's work/rest history was unavailable. See section 1.9.1.

pilot's report at Crossover in a timely fashion and provided accurate VMRS user vessel traffic for the area near the *Yangze 7* in response.[55]

Thus, the NTSB concludes that none of the following were factors in this casualty: (1) the vessels' crew complements and mariner credentialing; (2) fatigue (*Miss Peggy* captain); and (3) traffic density and VTS traffic management.

The investigation found no evidence that the captain of the *Miss Peggy* or the pilot or crew of the *Yangze 7* were impaired by effects of alcohol or other tested-for drugs; all reviewed results for tested-for substances were negative. However, evidence was limited by the following three factors.

1. The captain of the *Miss Peggy* was not tested for alcohol;
2. Alcohol testing the pilot and crew of the *Yangze 7* was conducted more than 2 hours after the casualty (3.25 hours for the pilot, and over 10 for the crew of the *Yangze 7*); and
3. Drug testing of the *Yangze 7* crew was not conducted in accordance with DOT procedures, so the NTSB was unable to verify that the quality of testing was equivalent to DOT testing.[56]

2.2 Maintaining a Proper Lookout and Situation Awareness

The pilot and bridge team aboard the *Yangze 7* and the captain of the *Miss Peggy* did not maintain an adequate level of situation awareness before the collision. Situation awareness is a mental picture of where you are and what is going on around you based on the perception and understanding of information gathered about the operating environment. This understanding allows operators to make informed decisions and project information forward to anticipate future events or required actions.

Regulations and long-standing prudent maritime practice require a proper lookout for safe navigation. Maintaining a proper lookout, by sight and sound, is a fundamental element of the regulations that aid mariners in safe navigation,

[55] The vessel traffic reported did not include the *Miss Peggy* because VTS Houston-Galveston reports do not include VTS users. At the time of the casualty, the *Miss Peggy* was considered a VTS user because it was not pushing barges (known as lightboat condition). See section 1.6 for more information about VTS Houston-Galveston, VMRS users, and VTS users.

[56] See 49 *CFR* Part 40 for DOT procedures for transportation workplace drug and alcohol testing.

regardless of their vessel's size or activity. Rule 5 of the *Convention on the International Regulations for Preventing Collisions at Sea* (*72 COLREGS*) states,

> Every vessel shall at all times maintain a proper look-out by sight and hearing as well as by all available means appropriate in the prevailing circumstances and conditions so as to make a full appraisal of the situation and of the risk of collision.[57]

A proper lookout by suitably trained crewmembers is essential in determining the risk of collision. The effective use of all available resources by a bridge team, including visual scanning, radars, ECSs, and an AIS, increases collective situation awareness and contributes to a safe navigation watch. Keeping a proper lookout provides crews the means for maintaining situation awareness.

2.2.1 *Miss Peggy*

The captain had four means available to detect the presence of the *Yangze 7* and other traffic:

- Visual lookout,
- VHF radio traffic communications,
- A radar display, and
- An ECS with vessel AIS.

At the time of the collision, the weather and waterway conditions were calm, with good visibility in daylight. The current was negligible and there were no waterway warnings or hazards reported for the area of the collision. The *Miss Peggy* was not pushing barges, and the captain of the *Miss Peggy* was operating the vessel in traffic conditions typical for the area, which he knew well.

These favorable conditions gave the captain ample visibility for identifying and monitoring other vessels around the *Miss Peggy*. (Although the air conditioning unit's placement in the pilothouse of the *Miss Peggy* partially obstructed the view aft, it was

[57] (a) The *72 COLREGS* are regulations published by *IMO* in 1972, and adopted by the United States in 1977. In inland US waterways, including the Houston Ship Channel, the Inland Navigation Rules become the governing regulations (see 33 *CFR* Part 80.845). Together, *72 COLREGS* and the Inland Navigation Rules are known as the "Rules of the Road." According to the Coast Guard, "Navigation Rules are regulations which aid mariners in safe navigation, just as driving laws aid vehicles in safe driving. Professional mariners must be proficient in the Rules of the Road but all mariners should know and understand the Rules. The Rules are legally binding and application of them makes the waterways safer for everyone." (b) The "Look-out" rules in *72 COLREGS* and the US Inland Navigation Rules (33 *CFR* 83.05) are identical.

easily overcome. Three other windows positioned aft of the operating console provided sufficient visibility aft of the *Miss Peggy*.) As such, the captain did not use a crewmember as a lookout, nor did Ingram's SOP require him to.

The captain of the *Miss Peggy* did not see the *Yangze 7* until after the collision. Keeping a visual lookout for traffic astern of a vessel is critical in an area where larger ships commonly operate at speeds faster than those made by one's own vessel. Had the captain moved around within the pilothouse to perform a visual check as part of maintaining a proper lookout, he could have seen the bulk carrier approaching from astern since at least 1358, when the vessels both were near Crossover (see figure 7). At that time, the *Yangze 7* was about 3.5 ship lengths (2,240.0 feet [682.8 meters]) aft of the *Miss Peggy*, and the captain of the *Miss Peggy* would have had an unobstructed line of sight of the bulk carrier.

The captain of the *Miss Peggy* reported that he had been monitoring his two radios at an audible volume, with one radio tuned to the bridge-to-bridge frequency for the area (VHF channel 13). The captain stated the other radio "would have either been on channel 81 or potentially on 19."

VHF channel 11 was the designated frequency for Sector 2 and channel 21a was designated for Sector 3. According to VTS area regulations, the captain was required to monitor the VTS traffic communications frequency for the area he was transiting. The purpose of this requirement was to provide non-VMRS VTS users (such as the *Miss Peggy*) with situation awareness of other vessels in the sector he or she was transiting.

The captain reported that he had been using the vessel's radar during the transit, and that the radar was working. According to the ECS hard drive recovered from the *Miss Peggy*, the *Yangze 7* had appeared as an AIS target for the entire transit. Furthermore, given the bulk carrier's size, it likely would have appeared as a prominent target on the vessel radar as it approached the *Miss Peggy* from astern.

As the vessel's sole lookout, the captain assumed the responsibility of navigating the *Miss Peggy* safely while also maintaining a proper lookout and situation awareness in accordance with Ingram's TSMS and SOP. Had the captain actively monitored the ECS and radar, and maintained a visual lookout, the captain would have been aware of the *Yangze 7* approaching from astern. Furthermore, had the captain been actively monitoring the VTS radio frequency, he would have heard the VTS traffic manager read out traffic in the area whenever a vessel checked in with the VTS sector.

Despite information about the *Yangze 7*'s location readily available through these means, the *Miss Peggy* captain remained unaware of the *Yangze 7*'s approach.

The captain explained to investigators that he expected that any vessel approaching astern of his vessel would have communicated that they would be overtaking the *Miss Peggy*. Because the captain believed any vessel intending to overtake the *Miss Peggy* would first call him on the radio, it is likely that he was less vigilant in monitoring available information about traffic approaching from astern of the *Miss Peggy*.

Confirmation bias and expectation bias are similar cognitive biases that describe the tendency for individuals to continue with a course of action based on internal beliefs about, expectations for, or hypotheses on how a specific situation will, should, or has normally occurred. These beliefs can bias, or influence, the way an individual seeks out and interprets information that may be contrary to these beliefs and expectations. Often, such conflicting information is either discounted, disregarded, or not sought out at all (FAA 2025).

As such, the captain's situation awareness of surrounding vessel traffic (specifically traffic approaching from astern) was reduced leading up to the collision with the *Yangze 7*.

Therefore, the NTSB concludes that because the *Miss Peggy* captain failed to maintain a proper lookout by all available means—including actively monitoring the ECS and radar, maintaining a visual lookout, and tuning to and monitoring the proper VTS radio frequency—his situation awareness while operating the towboat in the Houston Ship Channel was degraded, which resulted in him not detecting the *Yangze 7* approaching from astern.

2.2.2 *Yangze 7*

2.2.2.1 Bridge Team

According to VDR audio and data, the crew of the *Yangze 7* responded to and executed all of the pilot's orders in a timely and appropriate manner. The presence of, and guidance from, a pilot does not relieve a ship's crew of the task of maintaining a vigilant lookout. Maintenance of situation awareness while navigating a busy channel requires frequent appraisal of a vessel's position, identification of other nearby vessels, a thorough understanding of the onboard systems and their statuses, and anticipation of upcoming, required actions.

To supplement visual lookout capabilities and improve the crew's situation awareness, the *Yangze 7* was equipped with automatic radar plotting aid (ARPA) systems and ECDIS, which were reported to be working. The master's standing orders spoke to the critical importance of using these resources to avoid colliding with another vessel. While ARPA images were unavailable on the VDR, the ARPA had AIS targets overlaid on the display. It is likely that the *Miss Peggy* appeared as either a radar or AIS target on the ARPA displays.

About 7 seconds before the collision, a call came over the radio to the pilot of the *Yangze 7*, to watch out for the towing vessel in front of him. The pilot did not respond to the call, and there was no evidence that the pilot was taking any action to avoid the collision or further assess the situation as he continued to issue rudder orders.

While the radio call was directed to the pilot, the call would have been audible to the crew. The bosun and the second officer reported that, about this time, they were focused on the outbound tanker *Silvio*, which was larger than the *Yangze 7*, passing on the port side.[58] The bosun, who was stationed on the bow of the *Yangze 7* for anchor and watchkeeping duties, was also paying attention to the *Silvio*.

Despite all of these means of detecting the presence of the *Miss Peggy*, two professionally licensed crewmembers (the master and second officer) and a person stationed on the bow for watchkeeping duties remained unaware of the vessel's presence. Therefore, the NTSB concludes that because the *Yangze 7* bridge team failed to maintain a proper lookout, their situation awareness while operating the bulk carrier in the channel was degraded, resulting in them not detecting the *Miss Peggy* until it was less than a ship's length ahead.

2.2.2.2 Pilot

To acquire and track vessels while navigating, the *Yangze 7* pilot relied on visual lookout and his PPU.

While the deck cranes presented some challenges to forward visibility, these could be overcome by moving to different positions around the bridge. The *Yangze 7* met all bridge visibility requirements, and the pilot did not express any concerns with the forward visibility to the *Yangze 7* master in the time leading up to the collision. The pilot was familiar with piloting bulk carriers of similar configurations in the

[58] The *Silvio*'s length overall was about 723 feet (220 meters), and the *Yangze 7*'s length overall was about 656 feet (200 meters).

Houston Ship Channel and, as such, would have been familiar with potential obstructions to forward visibility and how to overcome such limitations.

The pilot was seated forward of the operating consoles on the bridge and closest to the forward window to port of the vessel's centerline (see figure 5). From his vantage point forward of the operating consoles, the pilot did not have visual access to the *Yangze 7* ARPA or ECDIS displays. Neither the *Yangze 7* master nor the second officer recalled seeing the pilot reference these displays. Therefore, the sole display used by the pilot for acquiring navigational information and tracking AIS vessel traffic in the area was his PPU.

Investigators determined that the PPU was functioning properly at the time of the casualty. The PPU received information in two ways:

1. from an independent GNSS unit—separate from the ship's systems—to obtain position; and

2. from the *Yangze 7*'s AIS port, so AIS information received by the *Yangze 7* was visible on the unit.

Investigators confirmed both sources of information to be operational, and no anomalies with the hardware or recorded log files were found.

Investigators confirmed on playback of the *Yangze 7*'s ECDIS that the *Miss Peggy* appeared as an AIS target. The *Miss Peggy* was found in the PPU log files as a target, but the PPU did not record the display configuration settings in use leading up to the collision. Because the display configuration was not saved and the pilot declined investigators' requests for interviews, the AIS targets the pilot had selected to appear on his PPU could not be determined. However, the Houston Pilots explained that pilots use their PPUs for the management of traffic—specifically the management of tow traffic. While it could not be definitively determined, it is likely the *Yangze 7* pilot had all AIS traffic visible on his PPU.

Despite all these means of detecting the presence of the *Miss Peggy*, the *Yangze 7*'s pilot remained unaware of the vessel's presence. Therefore, the NTSB concludes that because the pilot on the *Yangze 7* failed to maintain a proper lookout by all available means, his situation awareness while directing the movement of the bulk carrier in the Houston Ship Channel was degraded, resulting in him not detecting the *Miss Peggy* as the *Yangze 7* approached the towboat from astern.

2.3 Nonoperational Use of Cell Phones and Other Personal Electronic Devices While Conning Vessels

2.3.1 Pilot Distraction

The pilot on board the *Yangze 7* used his personal cell phone multiple times during the voyage, including a 39-minute call that ended a little over 2 minutes before the collision with the *Miss Peggy*. This was an incoming call from another Houston pilot who was also actively conning an outbound loaded tanker that the *Yangze 7* had passed earlier in the transit. The second mate of the *Yangze 7* and the vessel's VDR audio data confirmed that the call was personal in nature and unrelated to safe navigation of the vessel.

During the 39-minute phone call, the pilot was likely cognitively distracted. Regardless of the purpose or why a device is being used, the use of cell phones or other electronic devices always increases the likelihood that an individual will disengage from their primary task, redirect their attention elsewhere, and become distracted.

Distraction can be either manual (physically manipulating a device), visual (redirecting one's visual attention), or cognitive (redirecting one's mental attention). When distracted, operators can miss critical cues from the external environment, onboard systems, crew communications, or other sources, negatively impacting their situation awareness and slowing their reaction time.

Phone conversations, even when using a hands-free device, have been shown to be cognitively distracting because they redirect an individual's attention away from their immediate environment (Strayer and others 2003). As a result, cognitively distracted individuals often will not perceive stimuli available in their visual field because their cognitive attention is directed elsewhere—a phenomenon known as inattentional blindness.

Research on distracted driving and inattentional blindness has shown that, in simulated vehicular driving tasks, driver performance was significantly disrupted while conversing on the phone with a hands-free device when compared to completion of the same driving task while not using a phone. The research indicated reductions in operator reaction time, and a reduced ability of the driver to detect external stimuli and changes in the external environment (Strayer and others 2003).

The pilot on the *Yangze 7* ended the phone call just over 2 minutes before the collision, likely because he recognized the imminent passings with two outbound vessels, the *Silvio* and the *Eagle Hamilton* in or near a bend, which would require

increased attention. However, by the time the call ended, the pilot had missed the opportunity to visually detect the *Miss Peggy*. When the call ended at 14:01:44, the towboat was so close to the *Yangze 7* that it was hidden beneath the bulk carrier's bow.[59]

After the phone call ended, his attention remained focused on the two larger, outbound vessels and on navigating the *Yangze 7* through the bend. Therefore, the NTSB concludes that the *Yangze 7* pilot's failure to maintain a proper lookout was due to his extended nonoperational cell phone use, which distracted him from his primary task of directing the safe movement of the vessel.

2.3.2 *Yangze 7* Bridge Team Reaction to Pilot Cell Phone Use

The *Yangze 7* bridge team observed the pilot using his cell phone throughout the transit, including a 10-minute call earlier in the transit and a 39-minute call ending just over 2 minutes before the collision. In addition, earlier in the transit, the second officer observed the pilot watching a video on his phone.

Bridge resource management (BRM) was developed to help mariners recognize and correct operational human errors (such as distracted operations) before the errors lead to a casualty. BRM is the effective use of all available resources—information, equipment, and personnel—by members of a vessel's bridge team (officers and crew) and pilot to safely operate the vessel to ensure the safe completion of a vessel's voyage.

One of the principles of BRM is that every person on the bridge should understand his or her responsibilities and be able to freely and professionally communicate observations about the vessel's safe progress to others on the bridge, with the goal of maintaining a high level of shared situation awareness amongst all crewmembers. The need for effective BRM is most acute in pilotage waters because of smaller safety margins due to factors including navigational hazards, other vessel traffic, reduced depths, tides and currents, and cultural differences between the crew and pilot.

The second officer (the OOW at the time) told investigators that, because the master was on the bridge, he did not voice his concerns about the pilot's cell phone use and its potential effects on accurate navigation. The second officer explained to

[59] The *Yangze 7*'s bridge visibility plan showed that, for the vessel's *trim* (about 9.2 feet [2.8 meters] by the stern), the visibility to the sea surface from the conning position was less than two ship lengths, within IMO bridge visibility requirements. See section 1.4.1 for more information about the bulk carrier's *trim* requirements.

investigators that he thought the master understood that the phone use was not related to current operations, and that the master would take any action if it were necessary. However, the master told investigators that he had been unable to understand the pilot's conversation due to how quickly the pilot was speaking. The call had been conducted in English, which was not the master's native language, so he remained unaware of the nonoperational nature of the pilot's calls. He had assumed it was a work-related call, so he did not challenge the pilot.

Maintaining effective BRM is a team responsibility. An OOW's presence does not relieve a master or other members of the bridge team from performing any duties necessary to maintain a safe operational environment, nor does the presence of the master relieve the bridge team from their duties. All bridge team members should be empowered to raise any question or concern to any person directing the movement of the ship. This empowerment was reaffirmed in the master's standing orders, which stated that, if members of the bridge team had concerns—such as those the second officer had as the pilot continued his phone conversation—they could be raised with the master without fear of reprisal.

The pilot's cell phone call leading up to the collision lasted 39 minutes. The *Yangze 7* master was aware of the dangers of distracted operations; his standing orders prohibited the use of cell phones on the bridge. While the standing orders did not specifically address the actions of a pilot, the master was ultimately responsible for the safety of the ship, which obligated him to raise his concerns regarding the actions (or inactions) of the pilot.

Given the length of the phone call, the master should have recognized the risk of the pilot's ongoing distraction, regardless of the purpose of the phone call. In addition, a member of the bridge team should have brought this to the attention of the master or addressed the pilot's distraction with the pilot in accordance with good BRM practices. The NTSB concludes that, had the *Yangze 7* bridge team communicated their concerns about the pilot's cell phone use, the pilot may have been prompted to end the phone call, allowing him to focus his attention to operational tasks. The NTSB further concludes that the *Yangze 7* bridge team's failure to raise concerns to the pilot regarding his extended nonoperational cell phone use reflected ineffective BRM.

2.3.3 Regulations and Guidance—Pilots

The utility of PEDs for vessel pilots is recognized for immediate communication of operational needs to other pilots or shoreside personnel who may not be reachable by VHF radio. However, the risks of distracted operations, created by

nonoperational use of PEDs, are known within the maritime industry. At the time of the casualty, the Houston Pilots did not have guidance that described acceptable PED use nor a written policy prohibiting nonoperational PED use. Pilots relied on individual judgment, or "common sense," to determine when cell phone use was appropriate. Without an objective policy on this recognized safety issue, progressively inconsistent interpretation and application can occur, leading to a departure from safe operations and practices.

The *Yangze 7* pilot conducted a personal cell phone conversation with a fellow pilot (from the same pilot association), who was conning a loaded tanker elsewhere in the Houston Ship Channel. The *Yangze 7* pilot could be heard on the VDR, breaking from the phone conversation to issue rudder and propulsion orders to the bridge team. Because he was talking to another Houston pilot who was also navigating, it was obvious to each pilot that the other pilot was actively navigating a vessel.

Over time, departure from safe practices can lead to an unsafe environment being created, a phenomenon known as a normalization of deviance. Normalization of deviance occurs when individuals within an organization or a working environment become so desensitized to deviant practices (such as the nonoperational use of PEDs despite the known safety risks) that the practices no longer feels "wrong."

This desensitization typically occurs over time and does not become apparent until all the critical factors line up and casualties occur. The pathway to normalization of deviance often starts with marginal departures from best safety practices. People eventually begin to rationalize these small deviations, particularly when negative consequences or penalties do not appear to exist.

If there are no measures or attempts to verify rules and procedures are being followed appropriately, these rationalized deviations can be normalized (Gasaway n.d.). Often, these small deviations go unnoticed on a large scale, normalizing the behavior and ultimately jeopardizing safety.

This behavior is often related to the working environment and conditions surrounding the work and does not necessarily mean that the operator or person deviating from safety standards was doing so intentionally or out of gross negligence. Additionally, each minor deviation does not necessarily result in an immediate negative consequence; however, over time, each slight deviation has a cumulative negative effect on safety (Lebbon and Sigurdsson 2017). A person's or organization's deviation may become greater as they continue to push the limit over time because the potential negative consequence from the deviation has not materialized.

Given the length and personal nature of the phone call and because neither pilot moved to end the call for 39 minutes, the pilots were not concerned about the risk that distracted operations presented on board both vessels. It was also apparent that the pilot of the *Yangze 7* was used to speaking on the phone while issuing helm and propulsion orders and communicating with other vessels and traffic.

The pilot continued his cell phone call with the pilot aboard the *Petrel* while issuing orders and communicating with traffic. Even though the second officer and the helmsman read back the rudder and propulsion commands that the pilot issued, the pilot would return to his phone call and never acknowledged the readbacks. This instance of nonoperational cell phone use by the pilot of the *Yangze 7*—as well the other Houston Pilot aboard an outbound vessel—suggest that, at least, two Houston pilots had become desensitized to the risk of distracted operations.

The practice of using cell phones for nonoperational calls may have become normalized, diverging from safe operations and the "common sense" approach to cell phone use that was informally in place. The NTSB concludes that, because the Houston Pilots did not prohibit its pilots from using PEDs for nonoperational purposes while navigating, the use of PEDs while actively directing the movement of a vessel likely became normalized over time, jeopardizing the safety of vessels and the vessels' crews.

Since the casualty, the Houston Pilots have added a policy to their working rules outlining that, while providing pilotage services, its pilots should limit the usage of PEDs to communications related to "vessel safety, essential communications with other pilots, pilot transfers, Coast Guard, national security, law enforcement, or other professional purposes" and to avoid nonoperational usage (see section 1.11).

The Houston Pilots is a member association in the APA, a non-governmental, national association that most pilot associations in the United States are members of. The APA has provided resolutions, guidelines, and best practices for its member associations. However, it does not provide any positions, resolutions, best practices or guidelines to its members related to use of PEDs. Therefore, the NTSB recommends that the APA develop and implement guidance prohibiting nonoperational use of PEDs by pilots actively directing the movement of a vessel and encourage its member associations to adopt such guidance in their operational rules and policies.

2.3.4 Regulations and Guidance—US Coast Guard

Use of PEDs has been demonstrated to be visually, manually, and cognitively distracting. According to Coast Guard Safety Advisory 01-10, "Distracted Operations:

Don't Let It Be You!" published on October 29, 2010, in response to NTSB Safety Recommendation M-10-3,

> Use of personal electronic devices for nonoperational purposes can impede the exchange of vital operational information, delay reaction time, or cause attention lapses of those involved, potentially resulting in injuries and fatalities, material damage, or environmental impact (US Coast Guard 2010).[60]

The NTSB has investigated numerous other accidents in all modes of transportation that involved operator distraction, and several accidents involving distraction by PEDs, including cell phones. The NTSB determined that distraction by PEDs was either a contributing factor or the probable cause in at least 10 marine casualties between 2009 and 2024.[61] In total, these marine casualties led to the deaths of three people and 45 others being injured. Total estimated damages for the 10 casualties exceeded $85 million.[62]

As a result of these marine casualty investigations, the NTSB issued five recommendations to the Coast Guard aimed at preventing future distraction-based marine casualties. Four of these recommendations were classified either Closed—Acceptable Action or Closed—Alternate Acceptable Action.[63] However, one recommendation, M-11-3, was classified Closed—Unacceptable Action in 2017.[64] The recommendation stated:

> Regulate and enforce the restriction on nonoperational use of cell phones and other wireless electronic devices by on-duty crewmembers in safety-critical positions so that such use does not adversely affect vessel operational safety.

[60] (a) The Coast Guard published Findings of Concern 18-22 in 2022, which served as an update to Safety Advisory 01-10. See section 1.8.1.3 for more information about these findings. (b) The NTSB classified Safety Recommendation M-10-3 Closed—Acceptable Action in December 2010.

[61] See Appendix C for more information about these 10 marine casualty investigations.

[62] Adjusted for inflation, damage would exceed $111.5 million (using January 2026 Customer Price Index data from the US Bureau of Labor Statistics). Figures reflected damages to vessels, equipment, and structures, and did not account for subsequent economic damages that may have resulted from each casualty.

[63] These include Safety Recommendations M-10-2, closed in 2013; M-10-3, closed in 2010; M-11-2, closed in 2013; and M-11-4, closed in 2017.

[64] See NTSB Safety Recommendation M-11-3 for more information.

On October 18, 2016, in response to this recommendation, the Coast Guard indicated that it had suspended work to address the recommendation. In lieu of a congressional mandate for a regulation, the Coast Guard found "insufficient casualty data to justify the costs of rulemaking." The Coast Guard concluded that it was sufficient that mariners found to be distracted or in violation of a company policy are subject to civil penalties or administrative proceedings against their merchant mariner credentials, and, as a result, the Coast Guard intended to take no further action on the safety recommendation.

To date, the Coast Guard has not issued regulations prohibiting nonoperational use of PEDs for personnel occupying safety-sensitive positions. However, nonoperational use of PEDs by personnel in these positions remains a factor that can contribute to marine casualties. In this case, both the pilot of the *Yangze 7* and the captain of the *Miss Peggy* used their PEDs (cell phones) for nonoperational purposes during the casualty transit. Although the *Miss Peggy* captain's use, which occurred 24 minutes before the collision, did not ultimately contribute to the casualty, the 76-second call would have drawn attention from his primary task of navigating the vessel. The *Yangze 7* pilot's continued use leading up to the collision also affected his ability to maintain a proper lookout, and his nonoperational use of his PED ultimately contributed to the casualty. Further, the *Yangze 7* pilot's cell phone call was with another pilot actively navigating a vessel in the Houston Ship Channel. These mariners' nonoperational use of cell phones while navigating the Houston Ship Channel indicates a culture permissive of nonoperational PED use.

Just over 2 years before the collision of the *Yangze 7* and the *Miss Peggy*, on March 13, 2022, the 1,096-foot-long Hong Kong-flagged containership *Ever Forward* grounded outside Craighill Channel, near Baltimore, Maryland. A licensed Maryland State Pilot was conning the vessel at the time of the casualty.

The Coast Guard investigated the accident and found that, during the outbound transit, the pilot made a series of five phone calls (amounting to over 60 minutes). Just before the grounding, the pilot exited the active navigation function of his PPU to view a previous transit, sent two text messages, and began drafting an email about issues he experienced with facility line handlers (US Coast Guard 2022a). The Coast Guard determined that a failure to maintain situation awareness and attention while navigating and inadequate BRM contributed to the casualty.

As a result of its investigation into the casualty, the Coast Guard issued two recommendations for preventing nonoperational use of personal electronic devices, such as cell phones:

1. It is recommended that vessel owners and marine operators develop and implement effective policies outlining when the use of cell phones and other portable electronic devices is appropriate or prohibited. Sector Maryland-National Capital Region drafted a Finding of Concern, which serves as an update to Marine Safety Advisory 01-10. While the original advisory cautions against the use of cellular devices and distracted operations, this new Finding of Concern reiterates the original warnings and emphasizes the additional dangers associated with fixation on electronic devices as well as over reliance on a singular piece of equipment while navigating or performing safety sensitive functions.

2. It is recommended that vessel owners and operators ensure and promote crew awareness of policies regarding the duties and obligations of officers on watch for the safety of the ship, even when a pilot is embarked. International Maritime Organization Resolution A.960(23) highlights that efficient pilotage largely depends upon the effectiveness of communications and information exchange between the pilot, master, and bridge personnel regarding navigational procedures, local conditions, and ship's characteristics. The IMO advises that this information exchange should be a continuous process that is generally ongoing for the duration of the pilotage. The IMO further emphasizes that Masters and bridge officers have a duty to support the pilot and ensure that his or her actions are monitored at all times. It is essential that these procedures are not only reflected in the vessel's Safety Management System but also regularly used and practiced during transits with pilots on board.

While the Coast Guard has "strongly" recommended that vessel owners and operators have operational policies outlining when the use of cell phones or other PEDs is appropriate or prohibited, it has not extended this recommendation to pilots or pilot associations. However, pilots direct the movement of a vessel and, thus, should be subject to the same guidance, operational policies, and regulations pertaining to nonoperational use of PEDs.

Although pilots are generally regulated by the states or territories where they operate, they also operate on federal waterways, which are under the Coast Guard's jurisdiction. Therefore, the Coast Guard could mandate that any person directing the movement of a vessel within a federal waterway be prohibited from nonoperational use of a PED.

Placing sole responsibility on the bridge team of any ship, foreign or domestic, to challenge a pilot (or anyone directing a vessel's movement) about the nature of his or her phone call and ask the pilot to end nonoperational calls cannot be reasonably enforced. Therefore, the NTSB recommends that the Coast Guard prohibit the nonoperational use of PEDs by persons directing the movement of a vessel through the waterways under its jurisdiction.

3 Conclusions

Findings

1. None of the following were factors in this casualty: (1) the vessels' crew complements and mariner credentialing; (2) fatigue (*Miss Peggy* captain); and (3) traffic density and vessel traffic service traffic management.
2. Because the *Miss Peggy* captain failed to maintain a proper lookout by all available means—including actively monitoring the electronic chart system and radar, maintaining a visual lookout, and tuning to and monitoring the proper vessel traffic service radio frequency—his situation awareness while operating the towboat in the Houston Ship Channel was degraded, which resulted in him not detecting the *Yangze 7* approaching from astern.
3. Because the *Yangze 7* bridge team failed to maintain a proper lookout, their situation awareness while operating the bulk carrier in the channel was degraded, resulting in them not detecting the *Miss Peggy* until it was less than a ship's length ahead.
4. Because the pilot on the *Yangze 7* failed to maintain a proper lookout by all available means, his situation awareness while directing the movement of the bulk carrier in the Houston Ship Channel was degraded, resulting in him not detecting the *Miss Peggy* as the *Yangze 7* approached the towboat from astern.
5. The *Yangze 7* pilot's failure to maintain a proper lookout was due to his extended nonoperational cell phone use, which distracted him from his primary task of directing the safe movement of the vessel.
6. Had the *Yangze 7* bridge team communicated their concerns about the pilot's cell phone use, the pilot may have been prompted to end the phone call, allowing him to focus his attention to operational tasks.
7. The *Yangze 7* bridge team's failure to raise concerns to the pilot regarding his extended nonoperational cell phone use reflected ineffective bridge resource management.
8. Because the Houston Pilots did not prohibit its pilots from using personal electronic devices for nonoperational purposes while navigating, the use of personal electronic devices while actively directing the movement of a vessel likely became normalized over time, jeopardizing the safety of vessels and the vessels' crews.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the collision between the bulk carrier *Yangze 7* and towing vessel *Miss Peggy* was

the loss of situation awareness of the Houston pilot, *Yangze 7* bridge team, and captain of the *Miss Peggy* due to a failure to maintain a proper lookout. Contributing to the pilot's inadequate lookout was distraction caused by extended nonoperational cell phone use. Contributing to the pilot's nonoperational cell phone use was the lack of prohibition by the Houston Pilots against the use of personal electronic devices by its pilots actively directing the movement of a vessel.

4 Recommendations

4.1 New Recommendations

As a result of this investigation, the National Transportation Safety Board makes the following new safety recommendations.

To the US Coast Guard:

Prohibit the nonoperational use of personal electronic devices by persons directing the movement of a vessel through the waterways under your jurisdiction. (M-26-001)

To the American Pilots' Association:

Develop and implement guidance prohibiting nonoperational use of personal electronic devices by pilots actively directing the movement of a vessel and encourage your member associations to adopt such guidance in their operational rules and policies. (M-26-002)

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

JENNIFER L. HOMENDY
Chairwoman

MICHAEL GRAHAM
Vice Chairman

THOMAS CHAPMAN
Member

JOHN DELEEUW
Member

Report Date: July 22, 2026

Appendixes

Appendix A: Investigation

The US Coast Guard was the lead federal agency in this safety investigation. The National Transportation Safety Board (NTSB) learned of this casualty from the Coast Guard on July 20, 2024, and an NTSB marine accident investigator arrived on scene in Houston, Texas, on July 21, 2024.

While on scene, the NTSB participated with the Coast Guard in joint interviews of the *Yangze 7* bridge team, the crew of the *Miss Peggy*, and the crew of the *George M*. Throughout the investigation, investigators also spoke to Vessel Traffic Service Houston-Galveston personnel and members of the Houston Pilots. Investigators also examined both vessels, gathered documentation, and retrieved physical evidence relevant to the casualty.

The Coast Guard, the Houston Pilots, the Board of Pilot Commissioners for Harris County Ports, Shanghai Run Yuan Shipping Management Co Ltd, and Ingram Barge Group were parties to the investigation.

Appendix B: Consolidated Recommendation Information

Title 49 United States Code 1117(b) requires the following information on the recommendations in this report.

For each recommendation—

(1) a brief summary of the Board's collection and analysis of the specific accident investigation information most relevant to the recommendation;

(2) a description of the Board's use of external information, including studies, reports, and experts, other than the findings of a specific accident investigation, if any were used to inform or support the recommendation, including a brief summary of the specific safety benefits and other effects identified by each study, report, or expert; and

(3) a brief summary of any examples of actions taken by regulated entities before the publication of the safety recommendation, to the extent such actions are known to the Board, that were consistent with the recommendation.

To the US Coast Guard

M-26-001
Prohibit the nonoperational use of personal electronic devices by persons directing the movement of a vessel through the waterways under your jurisdiction.

Information that addresses the requirements of 49 *USC* 1117(b), as applicable, can be found in section 2.3 Nonoperational Use of Cell Phones and Other Personal Electronic Devices While Conning Vessels. Information supporting (b)(1) can be found on pages 55–57; (b)(2) is not applicable; and (b)(3) can be found on pages 59–63.

To the American Pilots' Association

M-26-002
Develop and implement guidance prohibiting nonoperational use of personal electronic devices by pilots actively directing the movement of a vessel and encourage your member associations to adopt such guidance in their operational rules and policies.

Information that addresses the requirements of 49 *USC* 1117(b), as applicable, can be found in section 2.3 Nonoperational Use of Cell Phones and Other Personal

Electronic Devices While Conning Vessels. Information supporting (b)(1) can be found on pages 57–59; (b)(2) is not applicable; and (b)(3) can be found on pages 59–62.

Appendix C: National Transportation Safety Board and Coast Guard Investigations

C.1 National Transportation Safety Board Marine Investigations–Distraction by Personal Electronic Devices

Table C-2. National Transportation Safety Board marine investigations involving distraction by personal electronic devices.

Report	Investigation	Year	Title	Summary	Probable Cause
MIR-26-13	DCA25FM012	2024	Collision between Towing Vessel *Patrick J Studdert* and Bulk Carrier *Clara B* and Subsequent Sinking of *Patrick J Studdert*	On December 29, 2024, about 1934 local time, the towing vessel *Patrick J Studdert* and bulk carrier *Clara B* collided while underway on the Lower Mississippi River at mile 122, near Luling, Louisiana. The *Patrick J Studdert* sank, forcing all five crewmembers to abandon the vessel into the water. A sheen of diesel fuel was visible downriver. The crew of the *Patrick J Studdert* were rescued by a nearby vessel; four crewmembers sustained minor injuries. The *Patrick J Studdert* was considered a total constructive loss valued at over $2.3 million. The *Clara B* sustained minor damage to its hull, estimated at $250,000 to repair.	The National Transportation Safety Board determines that the probable cause of the collision between the bulk carrier *Clara B* and towing vessel *Patrick J Studdert* and subsequent sinking of the *Patrick J Studdert* was the *Patrick J Studdert* captain's distraction due to his cell phone use, which resulted in him not maintaining a proper lookout and navigating the towing vessel directly into the path of the upbound *Clara B*.
MIR-25-26	DCA24FM033	2024	Collision of *William B Klunk* Tow with Moored Barges	On April 17, 2024, about 1655 local time, the towing vessel *William B Klunk* was pushing 22 barges downbound on the Lower Mississippi River at mile 227, near Baton Rouge, Louisiana, when the tow collided with moored barges at a fleeting area. Thirteen barges broke away from the *William B Klunk* tow, and three barges broke away from the fleeting area, resulting in damage to the barges, a fleet crew boat, and two mooring dolphins. There was one minor injury, and no pollution was reported. Total damages were estimated to be $810,000.	The National Transportation Safety Board determines that the probable cause of the collision of the towing vessel *William B Klunk* and tow with moored barges was the *William B Klunk* pilot becoming distracted due to cell phone use in the minutes leading up to the collision. Contributing was the pilot's fatigue due to limited sleep the night before the casualty, which decreased his attentiveness and vigilance while operating the vessel.

Report	Investigation	Year	Title	Summary	Probable Cause
MIR-25-14	DCA24FM025	2024	Contact of *Amber Brittany* Tow with Vane Dike	On March 8, 2024, about 1550 local time, the towing vessel *Amber Brittany* was transiting upbound on the Ohio River, pushing a 15-barge tow, when the tow struck the vane dike at the upstream end of the McAlpine Locks and Dam in Louisville, Kentucky, and broke apart. There were no injuries, and no pollution was reported. Total damages to the barges, cargo, and dam gates were estimated at $1.3 million.	The National Transportation Safety Board determines that the probable cause of the contact of the *Amber Brittany* tow with the vane dike was the pilot not effectively compensating for the outdraft current while navigating out of the lock channel entrance, likely due to the pilot's inexperience in transiting the Portland Channel on the *Amber Brittany* and his distraction due to cell phone use.
MIR-23-09	DCA22FM030	2022	Collision between Bulk Carrier *Bunun Queen* and Offshore Supply Vessel *Thunder*	On July 23, 2022, about 1314 local time, the bulk carrier *Bunun Queen*, transiting eastbound in the Gulf of Mexico with 20 crewmembers on board, and the northbound offshore supply vessel *Thunder* collided about 66 miles south of Port Fourchon, Louisiana. The *Thunder* sustained substantial damage to its port side, which resulted in the flooding of one of its propulsion rooms and three other spaces. Eleven of *Thunder*'s 18 crew were evacuated to a good Samaritan vessel, and the remaining crew stayed with the vessel to control the flooding while it was towed back to port. There were no injuries, and no pollution was reported. Damage to both vessels was estimated at $12.3 million.	The National Transportation Safety Board determines that the probable cause of the collision between the bulk carrier *Bunun Queen* and the offshore supply vessel *Thunder* was the *Bunun Queen* officer's distraction due to performing non-navigational tasks and the *Thunder* officer's distraction due to cell phone use, which kept both officers from keeping a proper lookout. Contributing to the casualty was the *Thunder*'s officer on watch not following his company's watchkeeping policies.

Report	Investigation	Year	Title	Summary	Probable Cause
MAB-17/30	DCA16FM023	2016	Allision of Tanker *Nordbay* with Docks and Water Intakes	On February 2, 2016, at 2213 local time, the tanker *Nordbay* was southbound on the Lower Mississippi River in New Orleans, Louisiana, with a pilot on board when it allided with a dock and water intakes on the left descending bank. Less than an hour later, as the vessel maneuvered through another bend in the river while heading toward an anchorage, it allided with a wharf on the left descending bank. No pollution or injuries were reported. The dock, water intakes, the wharf, and the *Nordbay* sustained an estimated $6.4 million in total damage.	The National Transportation Safety Board determines that the probable cause of the *Nordbay*'s allisions with water intakes and docks was the pilot and the master not adequately assessing the risks of handling the ballasted vessel during high-river conditions with strong following currents while turning into the wind. Contributing was the bridge team's poor situational awareness of the vessel's position in the waterway. Contributing to the second allision was the master's distraction from his duties while making a phone call.
MAB-17/01	DCA16FM022	2016	Collision of Bulk Carrier *Aris T* with Tank Barge *WTC 3019*, Towing Vessel *Pedernales*, and Shoreside Structures	On January 31, 2016, at 1953 local time, bulk carrier *Aris T* collided with tank barge *WTC 3019*, towing vessel *Pedernales*, and two facility structures, all of which were located on the left descending bank of the Mississippi River between mile marker (mm) 125.2 and mm 126.0 at Norco, Louisiana. Also damaged during the collision were one additional shoreside structure, another towing vessel, and two other tank barges, bringing the total damage cost to more than $60 million. No pollution resulted from the accident; however, two dock workers reported injuries.	The National Transportation Safety Board determines that the probable cause of the collision of bulk carrier *Aris T* with tank barge *WTC 3019*, towing vessel *Pedernales*, and shoreside structures was the failure of the pilot on the *Aris T* to take early and effective action to mitigate the risk presented by the developing upriver traffic situation, and the distraction of the captain on the *Loretta G. Cenac* from safety-critical navigational functions as a result of his cell phone use.
MAB-13/18	DCA13LM004	2013	Allision of Tanker *Overseas Reymar* with San Francisco–Oakland Bay Bridge	On January 7, 2013, at 1118 local time, the 752-foot-long tanker *Overseas Reymar* allided with the fendering system of the San Francisco–Oakland Bay Bridge's Echo tower. The vessel was outbound in San Francisco Bay. No one was injured and no pollution was reported. Damage to the vessel was estimated at $220,000, and the cost to repair the Echo tower's fendering system was estimated at $1.4 million.	The National Transportation Safety Board determines that the probable cause of the *Overseas Reymar* allision with the San Francisco–Oakland Bay Bridge was the pilot's decision to alter course from the CD span to the DE span without sufficient time to avoid alliding with the bridge's *Echo* tower, and the master's failure to properly oversee the pilot by engaging in a phone conversation during a critical point in the transit.

Report	Investigation	Year	Title	Summary	Probable Cause
MAR-11/02	DCA10MM025	2010	Collision of Tugboat/Barge *Caribbean Sea*/ *The Resource* with Amphibious Passenger Vehicle *DUKW 34*	On Wednesday, July 7, 2010, the empty 250-foot-long sludge barge *The Resource*, being towed alongside the 78.9-foot-long tugboat *Caribbean Sea*, collided with the anchored 33-foot-long amphibious passenger vehicle *DUKW 34* in the Delaware River at Philadelphia, Pennsylvania. *DUKW 34* carried 35 passengers and 2 crewmembers. On board the *Caribbean Sea* were five crewmembers. As a result of the collision, *DUKW 34* sank in about 55 feet of water. Two passengers were fatally injured, and 26 passengers suffered minor injuries. No one on the *Caribbean Sea* was injured. Damage to *DUKW 34* totaled $130,470. Damage to the barge was minimal; no repairs were made.	The National Transportation Safety Board determines that the probable cause of this accident was the failure of the mate of the *Caribbean Sea* to maintain a proper lookout due to (1) his decision to operate the vessel from the lower wheelhouse, which was contrary to expectations and to prudent seamanship, and (2) distraction and inattentiveness as a result of his repeated personal use of his cell phone and the company laptop computer while he was solely responsible for navigating the vessel. Contributing to the accident was the failure of Ride The Ducks International maintenance personnel to ensure that *DUKW 34*'s surge tank pressure cap was securely in place before allowing the vehicle to return to passenger service, and the failure of the *DUKW 34* master to take actions appropriate to the risk of anchoring his vessel in an active navigation channel.

Report	Investigation	Year	Title	Summary	Probable Cause
MAR-11-03	DCA10FM005	2009	Collision Between U.S. Coast Guard Vessel *CG 33118* and Sea Ray Recreational Vessel CF 2607 PZ	On Sunday, December 20, 2009, about 1744 Pacific standard time, the 33-foot-long Coast Guard vessel *CG 33118*, designated by the Coast Guard as a "special purpose craft – law enforcement" or SPC-LE, with five crewmembers on board, collided with a 24-foot-long Sea Ray recreational vessel with state registration number CF 2607 PZ, carrying 13 people, on San Diego Bay, California. The collision occurred during the city's annual holiday boat parade, the Parade of Lights. The Sea Ray was headed west near the main shipping channel to enable the occupants to watch the boat parade. The *CG 33118*, on patrol in the bay, was also headed west, its crew responding to a reported grounding. The *CG 33118* struck and overran the Sea Ray's stern near the west end of Harbor Island. As a result of the collision, an 8-year-old boy on board the Sea Ray was fatally injured and four other people on board sustained serious injuries. No *CG 33118* crewmembers were injured in the accident. Damages to the Sea Ray were estimated at $30,000, and damage estimates for *CG 33118* were not available at the time the investigation report was published.	The National Transportation Safety Board determines the probable cause of the collision between the *CG 33118* and the Sea Ray was the failure of the *CG 33118* crew to see and avoid the Sea Ray because of the excessive speed at which the coxswain operated the *CG 33118*, given the prevailing darkness, background lighting, and high vessel density, and the U.S. Coast Guard's lack of effective oversight of its small boat operations both nationally and at Coast Guard Station San Diego.

Report	Investigation	Year	Title	Summary	Probable Cause
MAB-11/02	DCA10FM003	2009	*Thriller 09/CG 25689* (collision)	On Saturday, December 5, 2009, at 2028 local time, the 25-foot-long U.S. Coast Guard response boat – small (RB-S) *CG 25689* collided with the 55-foot-long small passenger vessel *Thriller 09* in Charleston Harbor, South Carolina. Before the accident, the *CG 25689*, accompanied by the RB-S *CG 25788*, had been providing a security escort to the U.S. cargo ship *Green Ridge*, which was outbound to sea. At the time of the accident, the *CG 25689* had completed the escort and was traveling back up the main shipping channel, returning to the Military Outload (MOL) detachment operations facility on Goose Creek. The *Thriller 09* was on a 1-hour nighttime sightseeing cruise in Charleston Harbor.	The National Transportation Safety Board determines that the probable cause of the collision was the inadequate lookout by the crewmembers of both vessels, given the speed at which they were being operated and the nighttime conditions.

C.2 National Transportation Safety Board Marine Investigations Resulting in Safety Recommendations

C.2.1 Collision Between Coast Guard Vessel *CG 25689* and Passenger Vessel *Thriller 09*, and Collision Between Coast Guard Vessel *CG 33118* and Sea Ray Recreational Vessel CF 2607 PZ

On December 5, 2009, at 2028 eastern standard time, the 25-foot-long Coast Guard response boat–small *CG 25689* collided with the 55-foot-long passenger vessel *Thriller 09* in Charleston Harbor, South Carolina (NTSB 2011c). Before the casualty, the *CG 25689*, with two crewmembers aboard, had been providing a security escort with another Coast Guard vessel to the cargo vessel *Green Ridge*, which was outbound to sea. At the time of the casualty, the *CG 25689* had completed the escort and was traveling back up the main shipping channel, returning to the Military Outload detachment operations facility on Goose Creek, when it struck the *Thriller 09*, which had 2 crewmembers and 22 passengers on board, and had been on nighttime sightseeing cruise in Charleston Harbor. Six passengers aboard the *Thriller 09* were injured. None of the *CG 25689* crewmembers sustained injuries.

During the casualty investigation, National Transportation Safety Board (NTSB) investigators found that the *CG 25689* crewmembers had used their personal cell phones while under way. The cell phone use took place before the crew escorted the *Green Ridge* out of the harbor.

About 2 weeks later, on December 20, about 1744 Pacific standard time, the 33-foot-long Coast Guard vessel *CG 33118*, with five crewmembers on board, collided with a 24-foot-long Sea Ray recreational vessel with state registration number CF 2607 PZ, carrying 13 people, on San Diego Bay, California (NTSB 2011a). The collision occurred during the city's annual holiday boat parade, the Parade of Lights. The Sea Ray was headed west near the main shipping channel to enable the occupants to watch the boat parade. The *CG 33118*, on patrol in the bay, was also headed west, its crew responding to a reported grounding. The *CG 33118* struck and overran the Sea Ray's stern near the west end of Harbor Island. As a result of the collision, an 8-year-old boy on board the Sea Ray was fatally injured and four other people on board sustained serious injuries. No *CG 33118* crewmembers were injured in the casualty.

All crewmembers were responsible for performing lookout duties during small boat operations, according to the Coast Guard's *Boat Crew Seamanship Manual*. Additionally, Coast Guard crewmembers were trained to voice safety concerns or "speak up" if they noted an unsafe condition, such as operating at an unsafe speed or

in an area of high boat-traffic density. The NTSB concluded from phone records from the *CG 33118*'s personal cell phone service providers that the coxswain, boatswain, and the officer on duty were using their cell phones while underway, distracting them from effectively performing their duties as lookouts.

At the time of the accident the Coast Guard had no policy governing the use of cell phones and similar portable electronic devices by its crewmembers during vessel operations. In August 2010, the NTSB issued two recommendations to the Coast Guard as a result of our investigations into the December 2009 casualty.

> Develop and implement national and local policies that address the use of cellular telephones and other wireless devices aboard U.S. Coast Guard vessels. (M-10-2, Closed—Acceptable Action)

> Issue a safety advisory to the maritime industry that (1) promotes awareness of the risk posed by the use of cellular telephones and other wireless devices while operating vessels and (2) encourages the voluntary development of operational policies to address the risk. (M-10-3, Closed—Acceptable Action)

C.2.2 Collision Between Tugboat/Barge *Caribbean Sea*/*The Resource* with Amphibious Passenger Vehicle *DUKW 34*

On July 7, 2010, the empty 250-foot-long sludge barge *The Resource*, being towed alongside the 79-foot-long tugboat *Caribbean Sea*, collided with the anchored 33-foot-long amphibious passenger vehicle *DUKW 34* in the Delaware River in Philadelphia, Pennsylvania (NTSB 2011b). The *DUKW 34* carried 35 passengers and two crewmembers. On board the *Caribbean Sea* were five crewmembers. As a result of the collision, the *DUKW 34* sank in about 55 feet of water. Two passengers were fatally injured, and 26 passengers suffered minor injuries. No one aboard the *Caribbean Sea* was injured.

As a result of its investigation into this casualty, in 2011, the NTSB issued four recommendations to the Coast Guard concerning cell phone use following its investigation of the collision.

To the US Coast Guard:

> Develop and implement an investigative protocol that directs your investigation officers to routinely check for nonoperational use of cell phones and other wireless electronic devices by on-duty crewmembers in safety-critical positions involved in marine accidents. (M-11-1, Closed—Acceptable Action)

Revise your commercial vessel accident database (MISLE) to maintain a record of nonoperational use of cell phones and other wireless electronic devices by on-duty crewmembers in safety-critical positions when such use is causal or contributory to marine accidents. (M-11-2, Closed—Acceptable Action)

Regulate and enforce the restriction on nonoperational use of cell phones and other wireless electronic devices by on-duty crewmembers in safety-critical positions so that such use does not adversely affect vessel operational safety. (M-11-3, Closed—Unacceptable Action)

Until you can develop regulations governing nonoperational use of cell phones and other wireless electronic devices by on-duty crewmembers in safety-critical positions, continue your outreach program of information and education to the maritime industry on this issue. (M-11-4, Closed—Acceptable Alternate Action)

C.3 Coast Guard Investigation—*Ever Forward*

On March 13, 2022, about 2018 eastern standard time, the 1,096-foot-long Hong Kong-flagged containership *Ever Forward* grounded outside Craighill Channel, east of Lighted Buoy 16. A licensed Maryland State Pilot was conning the vessel at the time of the accident. During the outbound transit, the pilot made a series of five phone calls (amounting to over 60 minutes of time). Just before the grounding, the pilot exited the active navigation function of his PPU to view a previous transit, sent two text messages, and began drafting an email about issues he experienced with facility line handlers (US Coast Guard 2022a).

The Coast Guard determined that the initiating event of the casualty was the grounding with causal factors that contributed to the casualty, including: (1) failure to maintain situational awareness and attention while navigating, and (2) inadequate bridge resource management.

As a result of the investigation into the *Ever Forward* accident, the Coast Guard issued two recommendations for promoting safety:

(1) It is recommended that vessel owners and marine operators develop and implement effective policies outlining when the use of cell phones and other portable electronic devices is appropriate or prohibited. Sector Maryland-National Capital Region drafted a Finding of Concern, which serves as an update to Marine Safety Advisory 01-10. While the original advisory

cautions against the use of cellular devices and distracted operations, this new Finding of Concern reiterates the original warnings and emphasizes the additional dangers associated with fixation on electronic devices as well as over reliance on a singular piece of equipment while navigating or performing safety sensitive functions.

(2) It is recommended that vessel owners and operators ensure and promote crew awareness of policies regarding the duties and obligations of officers on watch for the safety of the ship, even when a pilot is embarked. International Maritime Organization Resolution A.960(23) highlights that efficient pilotage largely depends upon the effectiveness of communications and information exchange between the pilot, master, and bridge personnel regarding navigational procedures, local conditions, and ship's characteristics. The IMO advises that this information exchange should be a continuous process that is generally ongoing for the duration of the pilotage. The IMO further emphasizes that Masters and bridge officers have a duty to support the pilot and ensure that his or her actions are monitored at all times. It is essential that these procedures are not only reflected in the vessel's Safety Management System but also regularly used and practiced during transits with pilots on board.

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Casualty Summary

NTSB Casualty Category	Collision
Location	Houston Ship Channel, Lynchburg, Texas 29°45.60' N, 095°4.27' W
Date	July 19, 2024
Time	1404 central daylight time (coordinated universal time –5 hrs)
Injuries	1 fatal, 1 serious, 1 minor
Property damage	$3.7 million est.
Environmental damage	Oil sheen (diesel oil, unknown quantity)
Persons on board	22 (*Yangze 7*), 5 (*Miss Peggy*)

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