Lessons Learned from Marine Accident Investigations
The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—marine, railroad, highway, and pipeline.

The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents. In addition, the NTSB carries out special studies concerning transportation safety and coordinates the resources of the federal government and other organizations to provide assistance to victims and their family members impacted by major transportation disasters.
There is a saying, famously quoted in the film *Schindler’s List*: “Whoever saves one life, saves the world entire.”

During 2016, the NTSB’s work to make marine transportation safer took us to many accident sites and continued in our laboratories in Washington, D.C. The accidents in *Safer Seas Digest* involved loss of life, injuries, and property damage. The lessons learned in these accidents can prevent such losses in the future if marine stakeholders apply what has been learned.

Not only mariners, but management and executives as well, should take these lessons to heart. Safety culture begins at the top; the lessons in *Safer Seas Digest* should be as important to those in C-suites as they are to those at sea.

It is difficult to express how important the men and women of the US Coast Guard are in helping us learn these potentially life-saving lessons. Beyond their initial rescue efforts, they secure the scene of marine casualties, and our investigators work collaboratively with theirs. Without their help, our work to improve marine safety would be much more difficult.

Similarly, without navigational assistance from the Coast Guard’s Vessel Traffic Services (VTS) system, pilots in many of our nation’s ports would have fewer and less robust resources to resolve conflicts in constricted waterways.

To improve these resources, the Coast Guard supported an NTSB review of the VTS that culminated in a 2016 safety study, *An Assessment of the Effectiveness of the U.S. Coast Guard Vessel Traffic Service System*. It is our hope that our recommendations to the Coast Guard and others help to add value on VTS watchfloors and will allow them to provide consistently outstanding service nationwide.

In 2016, we also continued our investigation into the October 2015 sinking of the cargo vessel *El Faro*. After three separate search and recovery voyages, and with the help of many federal and private institutions, the *El Faro*’s voyage data recorder (VDR) was recovered in August 2016. Specialists in the NTSB recorders laboratory worked tirelessly to faithfully document the words of the crew, barely audible among the sounds of hurricane winds and relentless seas.

The NTSB will not release our report until we fully understand what happened. That is our obligation to those who were lost and their families, and it enables us to fulfill our mission to improve the future of transportation safety. Although our final report is not yet complete, the docket of factual information, including the VDR transcript, is available now on our website.

There is difficult reading there. But it’s often the hard truths that lead to new safety advances. Sadly, our investigations cannot undo such tragedies; they can only provide guidance toward safer voyages in the future.

We hope that *Safer Seas Digest 2016* continues to help the marine industry discuss and address the safety issues confronting it.

Sincerely,

Robert L. Sumwalt, III
Acting Chairman
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Abbreviations
AB Able-bodied Seaman
AIS Automatic Identification System
ATB Articulated Tug and Barge
CO Commanding Officer
ECDIS Electronic Chart Display and Information System
EPIRB Emergency Position Indicating Radio Beacon
gm/dl Grams per Deciliter
IAS Integrated Automation System
MSD Marine Safety Detachment
MSU Marine Safety Unit
OOD Officer of the Deck
OS Ordinary Seaman
PFD Personal Flotation Device
QMOW Quarter Master of the Watch
RPM Revolutions per Minute
SCC Sector Command Center
VHF Very High Frequency
VTS Vessel Traffic Service

Cover photo courtesy of Michael Gordon
### Vessels covered in this Digest, listed by Group and Accident Type

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Allision of Offshore Supply Vessel Connor Bordelon with Unmanned Platform South Timbalier 271A

ACCIDENT LOCATION
GULF OF MEXICO
5.25 MILES SOUTH OF PORT FOURCHON, LOUISIANA

ACCIDENT DATE
01/23/2015

REPORT NUMBER
MAB-16/03

NTSB ID
DCA15LM012

DATE ISSUED
02/12/2016
On the morning of January 23, 2015, the offshore supply vessel *Connor Bordelon* was transiting in the Gulf of Mexico en route to Port Fourchon, Louisiana. Two mates were on watch on the bridge, along with an able-bodied seaman (AB) and an ordinary seaman (OS). One mate had the conn, while the second sat awake on a settee located on the bridge. The AB had gone below deck to the galley, and the OS sat in the captain’s office on the bridge without a view out the windows.

The mate at the conn stated that he was using the autopilot to steer the vessel and adjusted the heading to aim for the “hole in the wall,” an area with wide separation between the charted oil and gas platforms in the area. He was independently controlling propulsion engine RPM at a speed of about 8 knots.

According to video from the bridge, at 0428, the mate appeared to notice an unmanned natural gas platform directly ahead of the vessel, when the platform was about 0.5 mile away. The video showed the mate rising from the conning chair and glancing up and down from the windows to the navigation console. The mate left the conning station twice between 0429 and 0431, returning to the chair the second time with binoculars. He then continued to look out the windows using the binoculars and to look down at the navigation console.

At 0431:35, the mate at the conn pointed out the window and appeared to alert the other mate and the OS, who moved to the conning station. They were looking forward as the mate at the conn manipulated the autopilot. The mate stated that he was able to reduce the engine RPM but was not able to disengage the autopilot fast enough to maneuver away from the platform. At 0432:00, the vessel allided with the South Timbalier 271A platform.

The allision caused the pipelines attached to the platform to rupture and the natural gas and oil inside the pipelines to ignite. After the allision, the pipelines were shut down, while three good Samaritan vessels in the area applied water to put out the fire. The allision also resulted in a breach in the *Connor Bordelon*’s hull below the waterline that caused the vessel to begin taking on water. The captain contacted the US Coast Guard to report the accident, and the Coast Guard released the vessel from the accident area. The *Connor Bordelon* proceeded to Port Fourchon while the crew addressed the flooding.

The captain told investigators that, before getting under way, he directed the mate who was not at the conn to perform lookout duties when the AB or the OS were not available. This expectation was corroborated by the captain’s night orders and standing orders. The company’s *Safe Operations Manual* instructed the bridge team to maintain a proper lookout; plot frequent fixes to avoid allisions, groundings, or collisions; and be thoroughly familiar with the proper operation of all bridge equipment.

Additionally, the vessel had a voyage plan which laid out a course line that should have noted and avoided obstructions. Although the company’s *Safe Operations Manual* instructed watchstanders to “check the planned route for proximity to hazards,” the captain and mates told investigators that they could not precisely follow the course line due to marked obstructions. They stated that navigating around the entire area would be too much of a diversion, so they plotted a course line through the area, steered near the line, and used radar and visual sightings to maneuver past obstructions. Although it is challenging to draw a course line that avoids all of the obstructions in the Gulf of Mexico, failing to plot and follow a track line that is clear of hazards is an inherently poor practice.

The National Transportation Safety Board determined that the probable cause of the allision of the offshore supply vessel *Connor Bordelon* with the unmanned natural gas platform South Timbalier 271A was the failure of the mate on watch to ensure that the bridge team maintained a proper lookout, and his delay in changing from the autopilot to manual steering, which precluded him from taking the necessary action to prevent the allision with the platform.
Allision of Fishing Vessel Ferrigno Boy with Ventura Harbor Boatyard Travel Lift Pier

ACCIDENT LOCATION
VENTURA HARBOR, CALIFORNIA

ACCIDENT DATE
07/29/2015
REPORT NUMBER
MAB-16/21

NTSB ID
DCA15LM029
DATE ISSUED
10/26/2016

Figure 3: Fishing vessel Ferrigno Boy after alliding with the Ventura Harbor Boatyard travel lift pier concrete deck, pilings, and floating docks.
In the early morning on July 29, 2015, the uninspected commercial fishing vessel *Ferrigno Boy* was inbound to Ventura Harbor, California, to offload 13 tons of squid. Prior to the vessel entering the harbor, the captain shifted from the bridge helm to the port bridge wing control station. He told investigators that he had frequently transited the harbor and routinely offloaded at the harbor’s commercial fish dock during his 30-plus years aboard the vessel.

The captain navigated the vessel from the port bridge wing while maneuvering inside the harbor. He stated that, due to the configuration of equipment on the pier and vessel, he always backed the vessel into the commercial dock and moored port side to the pier to facilitate the offload. As the captain made his approach to the pier, he made a wide turn in order to pass near the end of the pier and thus provide enough maneuvering room to turn the bow away from the berth before backing down. The captain positioned the throttle in reverse and increased the main propulsion engine RPMs to slow the forward movement of the vessel as it continued to turn to port.

After making this maneuvering change, the captain instantly realized something was wrong because the vessel accelerated in the forward direction and there was a lack of prop wash along the side of the hull that would have been produced by the astern thrust from the propeller. He immediately shut down the main engine and turned hard to starboard to avoid colliding with a sailing vessel and private sport fishing vessels moored in the slips directly ahead of the *Ferrigno Boy’s* projected course. The vessel continued forward at a speed of approximately 3 knots until its starboard bow struck the concrete deck, pilings, and floating docks of the travel lift pier at the Ventura Harbor Boatyard. About 1030, the fishing vessel came to a stop on floating docks that were parallel to the harbor shoreline.

After the allision, staff members from Ventura Harbor Boatyard, the Ventura Harbor Dockmaster, and nearby boat owners assisted in securing the *Ferrigno Boy* to the pier and dock. About an hour and a half later, the *Ferrigno Boy* was towed by its skiff and was safely moored at the commercial dock.

The recreational sailing vessel *Solera*, moored at a slip next to the travel lift pier, was also damaged during the accident when its bowsprit was impacted by the *Ferrigno Boy’s* port quarter.

After the allision, staff members from Ventura Harbor Boatyard, the Ventura Harbor Dockmaster, and nearby boat owners assisted in securing the *Ferrigno Boy* and the *Solera* to the pier and dock. About an hour and a half later, the *Ferrigno Boy* was towed by its skiff and was safely moored at the commercial dock.

The navigation controls on the *Ferrigno Boy* consisted of an integrated throttle that controlled both the propulsion engine RPM and the transmission. The transmission coupled the engine driveshaft to the propeller shaft in either the forward or astern (reverse) direction, or decoupled the engine for neutral. The captain told investigators that he went down to the machinery spaces shortly after the accident and noticed that a control cable that linked the throttle controls on the bridge and bridge wings to the transmission’s mechanical control valve was disconnected.

Because the control cable was detached from the mechanical control valve lever, the transmission remained in the forward position despite the captain’s command inputs for neutral and reverse. As the captain applied increasing RPM with the throttle, the vessel continued to accelerate ahead until he shut down the engine.

During interviews and a review of the vessel’s documentation, investigators learned that the main propulsion engine and transmission were replaced in early 2015. Although a company representative was present during the installation of the new engine and transmission, neither the owner nor the company representative knew the exact method or type of securing device, such as a lock washer, locknut, or double-nut, that was used to refasten the existing control cable ball joint to the new transmission’s mechanical control valve. Likewise, the captain and crew did not know how the ball joint was secured to the control valve lever prior to the accident.

Investigators concluded that the disconnection was likely due to the control cable ball joint not being correctly fastened to the mechanical control valve shift lever using the manufacturer’s recommended connection kit nut with lock washer.

The National Transportation Safety Board determined that the probable cause of the allision of the fishing vessel *Ferrigno Boy* with the Ventura Harbor Boatyard travel lift pier and the sailing vessel *Solera* was the fishing vessel’s transmission control cable not being correctly fastened to the Twin Disc mechanical control valve shift lever in accordance with the manufacturer’s recommended instructions.

**Figure 4: Damage to pier, pilings, and floating dock at Ventura Harbor Boatyard.** PHOTO BY COAST GUARD

**LEARN MORE AT** [www.ntsb.gov/investigations/AccidentReports/Pages/mab1621.aspx](http://www.ntsb.gov/investigations/AccidentReports/Pages/mab1621.aspx)
Allision of Barge Gayle Force, Under Tow by Tugboat Simone, with Norfolk Southern Bridge #7

ACCIDENT LOCATION
CHESAPEAKE, VIRGINIA
SOUTHERN BRANCH OF THE ELIZABETH RIVER

ACCIDENT DATE
04/26/2015

REPORT NUMBER
MAB-16/16

NTSB ID
DCA15LM021

DATE ISSUED
09/14/2016

Figure 5: Damage to Norfolk Southern Bridge #7 timber fendering dolphin.
In April 2015, the uninspected towing vessel Simone was contracted to tow the 220-foot-long barge Gayle Force and its cargo of large precast concrete sections from a production facility located on the Elizabeth River in Chesapeake, Virginia, to the New York City area. About 0700 on April 26, the Simone got under way to begin the tow. The tugboat Maverick was assigned to assist the tow as it transited down the Elizabeth River. The Maverick captain said that, as the barge moved into the channel, he told the Simone captain he could not see much back where he was, so he would need direction from the Simone. The Simone captain replied “okay.”

At the time, the current was ebbing about 0.5 knot—a following current that acted to increase the tow’s speed over ground. After the barge was pulled from its berth, the Maverick captain said the tow proceeded “a little bit fast” toward Norfolk Southern Railway Bridge #7 (NS#7).

NS#7 and the Gilmerton Road vehicle bridge cross the Elizabeth River about 0.7 mile downstream of the concrete production facility. After passing under these bridges, the main channel of the river makes a 90 degree turn to the left. Coast Pilot 3, a publication that provides detailed information about the waterway, warns that “large vessels must exercise caution when making the turns to these bridges because of the current.” Although this was the Simone captain’s first towage of a loaded barge through the NS#7 bridge opening, he said he did not look at the Coast Pilot before getting under way.

The Simone’s company had a policy and procedures manual containing a detailed section for bridge transits. The manual enumerated what the watch officer in charge must take into account for a safe bridge transit and what instructions should be provided to the crew helping go through the bridges.” He stated that while he looked aft, as the barge was 60–70 meters from the bridge, he told the captain they needed to go to the left. The captain stated that he pulled the barge toward the left, but “it took a dive to the right.” Investigators reviewed video of the accident that showed the barge being set to the right of the channel by the current but maintaining a relatively constant heading.

At 0720, the starboard bow of the Gayle Force struck the southeast fendering dolphin and concrete piers supporting the NS#7 bridge span. The timber dolphin was crushed and deformed, and the piers shifted laterally 15-inches toward the north. The rail alignment between the lift span and stationary track was misaligned by 11 inches, shutting down railroad traffic for 36 hours.

The Simone captain did not plan for the bridge transit in accordance with his company’s policies and procedures. As a result of inadequate planning, he did not take into account the current set in the vicinity of the bridge. Furthermore, he relied on the mate to assist him in properly aligning the tow for the passage, but he gave no instruction to the mate. The tugboat Maverick was provided to assist the tow for the bridge transits of the Elizabeth River, but the Maverick captain was not given any directions, and the assist tugboat was placed in a location where his view was obstructed.

The National Transportation Safety Board determined that the probable cause of the allision of the barge Gayle Force with the Norfolk Southern Bridge #7 was the Simone captain’s failure to plan for the bridge transit and effectively use the assist tugboat.

LEARN MORE AT www.ntsb.gov/investigations/AccidentReports/Pages/MAB1616.aspx
Capsizing and Sinking of Fishing Vessel Hawaii Five-1

ACCIDENT LOCATION
GULF OF MEXICO
161 MILES NORTHEAST OF COZUMEL, MEXICO

ACCIDENT DATE | REPORT NUMBER
11/25/2015 | MAB-16/07

NTSB ID | DATE ISSUED
DCA16FM007 | 06/30/2016

Figure 7: Side profile of fishing vessel Hawaii Five-1 while in a conversion shipyard in Pascagoula, Mississippi, prior to the accident. PHOTO BY C. E. COLLIER & ASSOCIATES, INCORPORATED
From March to November 2015, the uninspected fishing vessel *Hawaii Five-1* was converted from a shrimp trawler to a longline fishing vessel in Pascagoula, Mississippi. The conversion work included removing trawl systems and replacing an estimated 60–70 percent of the hull plating, as well as a significant amount of deck plating, internal framing, and bulkhead plating. Additionally, a new deckhouse, stern house, and bulbous bow were constructed and installed. These modifications to the vessel were made without plans and without oversight or input from a marine engineer or naval architect.

In early November, the conversion work was completed and the vessel moved to Bayou La Batre, Alabama, to be provisioned for a transit to its new homeport of Honolulu, Hawaii. Prior to departure for Hawaii, the vessel owner lashed equipment and steel plates to the overhead deck of the vessel. He estimated that the equipment weighed between 800 and 1,100 pounds, and each steel plate weighed roughly 1,215 pounds. The owner told investigators that there were only two plates on the overhead, but the vessel’s captain stated that there were five to six plates.

On November 22, the *Hawaii Five-1* departed Bayou La Batre en route to Honolulu with the captain and a deckhand on board. The captain’s intended route was to navigate the vessel southwesterly in the Gulf of Mexico, through the Straits of Yucatan, and then through the Panama Canal to the Pacific Ocean. The transit was uneventful until Tuesday, November 24, when the vessel began to encounter rougher seas. In the rough seas, the captain became concerned about the *Hawaii Five-1*’s tendency to slowly recover to an upright position from a roll to either port or starboard.

On November 25, the *Hawaii Five-1* began to experience even heavier seas, and the captain started to feel apprehensive about the vessel’s lack of responsiveness to the rolling caused by the winds and waves. The steel plates on the overhead began sliding around, and the *Hawaii Five-1* heeled over for longer durations than the captain had previously noted. After contacting owner, the captain decided to return to Bayou La Batre.

The captain told investigators that, after changing course to a generally northwest heading, the seas were “sloppy,” with estimated wave heights of 8 feet from the west-northwest. About 1158, the captain called the Coast Guard using the vessel’s satellite telephone. While the captain was on the phone, the vessel heeled significantly to port, rolled over to the point where the main deck was submerged, and then capsized. The captain told investigators that at the time of the call, he had the portside watertight door to the wheelhouse open so that he could see better.

The captain and the deckhand managed to escape the sinking vessel and enter a deployed liferaft. The vessel’s emergency position indicating radio beacon (EPIRB) began transmitting when the vessel sank, prompting the Coast Guard to launch aircraft and deploy a cutter to the scene.

About 1806, a Coast Guard helicopter arrived at the accident site and retrieved the captain and the deckhand from the liferaft.

When vessels with originally adequate stability have the height of their center of gravity substantially increased by stowing large weights on high decks, they will have less resistance when rolling to port or starboard. In this condition, when the vessel does experience a roll, it will have a larger angle of heel for a longer period of time and can capsize if the center of gravity shifts farther outboard than the center of buoyancy. This likely was the case for the *Hawaii Five-1*.

The captain took no appreciable action to address the instability or lessen the risk of capsizing, such as attempting to jettison the cargo that had been placed on the upper deck. Additionally, the captain did not close the watertight door on the port side of the wheelhouse, which would have served to stop boarding seas and may have slowed the final sinking of the vessel.

The National Transportation Safety Board determined that the probable cause of the capsizing and sinking of fishing vessel *Hawaii Five-1* was inadequate intact stability due to the owners’ failure to determine and mitigate the impacts that the conversion to longline fisheries services had on the vessel’s overall stability. Contributing to the loss of the vessel was the master’s insufficient understanding of stability principles, as demonstrated by his lack of action to improve the vessel’s stability during adverse sea conditions, and his failure to maintain watertight integrity.

**LEARN MORE AT** [www.ntsb.gov/investigations/AccidentReports/Pages/mab1607.aspx](http://www.ntsb.gov/investigations/AccidentReports/Pages/mab1607.aspx)
Collision Between the Tows of Towing Vessels Capt. Shorty C and Jackie

ACCIDENT LOCATION
PORT BOLIVAR, TEXAS
ENTRANCE TO GULF INTRACOASTAL WATERWAY, GALVESTON BAY

ACCIDENT DATE
07/20/2015
REPORT NUMBER
MAB-16/05

NTSB ID
DCA15FM027
DATE ISSUED
04/28/2016

Figure 9: Damage to barge EMS 344 resulting from the collision.

Figure 10: Damage to the bow of barge Kirby 29116 resulting from the collision.
In the early morning on July 20, 2015, the uninspected towing vessel Capt. Shorty C, pushing two tank barges carrying about 50,000 barrels of crude oil, was transiting eastward on the Gulf Intracoastal Waterway en route to Theodore, Alabama, from Corpus Christi, Texas. The Gulf Intracoastal Waterway is a network of navigable inland waterways that stretch from Texas to Florida. At Port Bolivar, Texas, the waterway crosses the Houston Ship Channel, which runs from the open ocean to the Port of Houston. At this intersection, strong tidal cross currents can impact vessels transiting the intracoastal waterway. Port Bolivar lies on the northeast side of the intersection, where the waterway narrows significantly after crossing the ship channel.

Transiting westward toward the intersection, the uninspected towing vessel Jackie was pushing two tank barges carrying about 50,000 barrels of naptha bound for Houston from Chalmette, Louisiana. The barges of both vessels were arranged one behind another.

While crossing the ship channel at 0056, the Capt. Shorty C pilot radioed the Jackie to suggest they pass portside to portside. The Jackie relief captain agreed on the passing arrangements, but neither operator identified exactly where the vessels would pass each other.

During the crossing, the Capt. Shorty C pilot adjusted his heading about 20 degrees to port to counteract the effect of the tidal current. (This maneuver, which is intended to compensate for external forces, is commonly called “crabbing.”) Suddenly, at 0102, as the vessels were approaching each other near the intracoastal waterway’s entrance, the Capt. Shorty C pilot contacted the Jackie relief captain to alert him to “watch me” because he had “caught shallow” and was trying to “back her down.” He said his vessel was “sheering right towards” the Jackie tow. He attempted to steer away using his rudders but received no response; he assumed the shallow water depth precluded his ability to steer. To swing the vessel’s heading to starboard, the pilot then attempted to shift the starboard engine astern but it unexpectedly shut down. Seconds later, the pilot announced he had “lost an engine,” which affected his ability to maneuver and correct the vessel’s heading. Recognizing that a collision was imminent, the Jackie relief captain sounded the general alarm to warn his crew. “It ain’t looking too good,” he informed the Capt. Shorty C pilot next, “don’t know how long it’s gonna take for me to back down at this point. I’mma try to steer away from you.” The pilot responded, “There ain’t much you can do. … I’m down on one [expletive] engine.”

At 0102, the Capt. Shorty C’s lead barge struck the port side of the Jackie’s lead barge before colliding with its aft barge. The collision caused a steel deck support to penetrate the overhead of a cargo tank of the Jackie’s aft barge, allowing gases to escape. The vapors ignited a fire in the stern of the aft barge. A Port of Houston Authority fireboat arrived on scene at 0230 and fought the fire using foam and water.

Neither towboat was damaged in the accident, but three barges sustained an estimated $608,000 in damages.

After the accident, an inspection of the Capt. Shorty C found that the lower 60 percent of the starboard rudder was missing and that both propellers had some damage. Investigators learned that there had been two incidents of the vessel grounding within two weeks of the accident. The pilot acknowledged that the Capt. Shorty C had been operating normally in open deep water, but in shallow water it was handling a little sluggishly.

The Capt. Shorty C had also been experiencing intermittent engine failures for the last two years. The failures typically occurred when the engine was shifted quickly from ahead to astern. An inspection found that the governors in both engines had damaged or worn parts.

The United States Coast Pilot 5 states, “Vessel Traffic Service Houston-Galveston recommends west bound tows avoid meeting east bound tows between Bolivar Peninsula Buoy 15 and Buoy 20 due to strong currents and shoaling at the entrance to Bolivar”—the location of the accident. Both operators said they were aware of the danger of this meeting location, but they had met vessels there many times in the past.

The National Transportation Safety Board determined that the probable cause of the collision between the Capt. Shorty C and the Jackie was the operators’ attempt to meet in a location known for strong currents and shoaling, which was contrary to published guidance for that waterway.

LEARN MORE AT www.ntsb.gov/investigations/AccidentReports/Pages/mab1605.aspx
Collision Between Tanker Chembulk Houston and Containership Monte Alegre

ACCIDENT LOCATION
HOUSTON, TEXAS
HOUSTON SHIP CHANNEL, GALVESTON BAY

ACCIDENT DATE
03/05/2015

REPORT NUMBER
MAR-16/04

NTSB ID
DCA16FM012

DATE ISSUED
02/23/2016

Figure 12: Photo showing the first point of contact on containership Monte Alegre, where the starboard-side anchor of tanker Chembulk Houston punctured the hull.
In the morning on March 5, 2015, the tank vessel Chembulk Houston and the containership Monte Alegre were inbound in the Houston Ship Channel. A pilot was at the conn of the Monte Alegre, while a deputy pilot—an apprentice in training to become a full pilot—was at the conn of the Chembulk Houston.

Around noon, both vessels were proceeding north with the Monte Alegre more than 2 miles ahead of the Chembulk Houston. About that time, the Monte Alegre pilot learned that the tugboats at his destination would be delayed. He therefore reduced the ship’s speed.

At 1249, the Chembulk Houston deputy pilot contacted the Monte Alegre pilot suggesting that the tanker overtake the containership. The Monte Alegre pilot agreed. By 1307, the Monte Alegre was about one-half mile ahead of the Chembulk Houston. About that time, the Monte Alegre pilot reduced from half ahead to slow ahead, and replied, “I am only making 8 knots.” The Chembulk Houston deputy pilot informed the Monte Alegre pilot that he was initiating the overtaking maneuver.

As the Chembulk Houston’s bow began overtaking the Monte Alegre’s stern, the Monte Alegre pilot ordered a speed increase from slow ahead to half ahead, and the velocity of the containership increased about 2 knots. At 1310, the Chembulk Houston deputy pilot informed the Monte Alegre pilot that he was initiating the overtaking maneuver. At 1318, the Chembulk Houston deputy pilot radioed the Monte Alegre pilot stating, “I'm losing speed all the time.” The Monte Alegre pilot then ordered the speed reduced from half ahead to slow ahead, and replied, “I am only making 8 knots.” The Chembulk Houston deputy pilot replied that he would continue his attempt to overtake the Monte Alegre, but he might have to abort the maneuver. At 1319, the Monte Alegre pilot ordered the speed reduced further, from slow ahead to dead slow ahead.

About 1320, the Chembulk Houston deputy pilot informed the Monte Alegre pilot that he was still losing speed, and the pilots agreed to abort the overtaking. The Monte Alegre pilot issued a series of commands intended to increase speed, while the Chembulk Houston deputy pilot issued a series of commands intended to slow his vessel. Nevertheless, the Chembulk Houston’s speed actually increased.

The Chembulk Houston deputy pilot then issued several helm and throttle commands that were intended to prevent the tanker from making contact with the Monte Alegre. Despite these efforts, the Chembulk Houston starboard bow collided with the Monte Alegre after portside hull. Both vessels veered to port and grounded on the soft bottom of the Houston Ship Channel.

Ships maneuvering in confined and shallow waters are subjected to hydrodynamic forces for which pilots and ship crews must account. Two vessels transiting in close proximity in a channel can create even more intense hydrodynamic forces acting on one or both vessels. Overtaking maneuvers are inherently higher risk than meeting situations because of the longer time during which the hydrodynamic forces can affect each vessel.

The Chembulk Houston, as the give-way vessel, had the responsibility to keep clear of the Monte Alegre. In turn, the Monte Alegre, as the stand-on vessel, was required to maintain its course and speed, unless it became necessary to alter either to avoid collision. The Monte Alegre pilot’s order to increase speed—without informing the overtaking vessel—depended from expectations for the stand-on vessel. The increased time and distance needed for overtaking allowed the hydrodynamic forces acting on both vessels to build. The increased hydrodynamic forces ultimately prevented the Chembulk Houston from developing enough speed to push through the bow pressure wave of the Monte Alegre.

If the Monte Alegre pilot had informed the Chembulk Houston deputy pilot of the speed increase, the deputy pilot would have realized that he could not safely complete the overtaking. By not providing this essential information, the Monte Alegre pilot contributed significantly to the deputy pilot’s decision that the best course of action was to abort the overtaking. Had the information about the speed increase been provided in a timely manner, the deputy pilot would likely have chosen a different course of action.

The National Transportation Safety Board determined that the probable cause of the collision between the Chembulk Houston and the Monte Alegre was the pilot’s decision to increase speed on the Monte Alegre without informing the deputy pilot on the overtaking Chembulk Houston.
Collision Between Bulk Carrier *Conti Peridot* and Tanker *Carla Maersk*

**ACCIDENT LOCATION**
**MORGAN’S POINT, TEXAS**
**HOUSTON SHIP CHANNEL**

**ACCIDENT DATE**
03/09/2015

**REPORT NUMBER**
MAR-16/01

**NTSB ID**
DCA16FM012

**DATE ADOPTED**
06/20/2016

*Figure 14: Damaged port side of tanker Carla Maersk.*

PHOTO BY COAST GUARD
At 0953 on March 9, 2015, the tank vessel Carla Maersk departed its berth in the northern Houston Ship Channel and headed outbound. The Carla Maersk was about a mile to a mile and a half behind the outbound vehicle carrier Gaia Leader. About 20 minutes prior, a pilot with the Houston Pilots Association had boarded the bulk carrier Conti Peridot outside the entrance to Galveston Bay for an inbound transit of the channel. Visibility in the waterway began to deteriorate as the vessels proceeded. By 1135, as the Conti Peridot met and passed the liquid propane gas carrier Karoline N, visibility was down to “800 to 900 feet.”

The pilot stated that, after meeting the Karoline N, the Conti Peridot “dove to the left.” The bulk carrier then began reacting to bank effect and the pilot was “doing everything [he] could to control her.” Once the vessel entered very low visibility, he had difficulty handling the ship because “you couldn’t see your reference points to give you a better idea of the true head[ing] of the vessel.”

The pilot radioed the pilot on the next outbound vessel, the Stolt Span, saying, “watch me, I’m coming off the bank.” As the vessels met, the Stolt Span was forced to the far-right side of the channel (in relation to its travel direction) as the Conti Peridot sheered to the left, crossing the center of the channel.

The Conti Peridot pilot struggled to get the bulk carrier under control for about 2 miles during the meeting and passing of these ships. Eventually, he regained heading control before setting up to meet the next group of outbound vessels.

About 1216, the Conti Peridot pilot contacted the pilot on the Gaia Leader and initiated a port-to-port meeting arrangement. The two vessels met and passed about 1224. The Conti Peridot pilot stated that, after passing, the Conti Peridot “[dove] into the void” behind the vehicle carrier (similar to the Stolt Span passing). The pilot said that the Conti Peridot was then “off to the races,” describing the bulk carrier’s uncontrolled motion from bank to bank. He did not communicate the continued handling difficulty to the bridge crew or anyone else. The pilot said that he did not think the master knew what was happening, and no one questioned him as to what was going on with the vessel.

About 1226, shortly after the Conti Peridot and Gaia Leader passed each other, the Conti Peridot pilot radioed the Carla Maersk pilot and requested a port-to-port meeting arrangement. The Conti Peridot pilot mentioned nothing to the Carla Maersk pilot about his ongoing difficulty controlling the ship.

The Conti Peridot pilot said that, as the Carla Maersk approached, the Conti Peridot sheered toward the left bank. He applied starboard rudder to try to slow the rate of turn to port. After sheering to the left, the Conti Peridot sheered back toward the right bank. The pilot then applied port rudder to arrest the starboard sheer and continued applying the port rudder as he came off the right bank. He then shifted the rudder to hard starboard and ordered the engine to full-ahead speed. Despite these orders, the Conti Peridot continued sheering to port, toward the Carla Maersk. The Carla Maersk pilot ordered the rudder hard right and the engine to full-ahead speed in order to turn as quickly as possible from the oncoming bow of the Conti Peridot. The actions of both pilots, however, could not prevent a collision.

At 1230, the bow of the Conti Peridot struck the port side of the Carla Maersk just forward of midship. The collision ruptured several ballast tanks and cargo tanks on the Carla Maersk and damaged the bow on the Conti Peridot. An estimated 88,200 gallons of methyl tertbutyl ether spilled from the Carla Maersk, and the two vessels sustained about $8.2 million in total damage.

The National Transportation Safety Board determined that the probable cause of the collision between bulk carrier Conti Peridot and tanker Carla Maersk in the Houston Ship Channel was the failure of the pilot on the Conti Peridot to respond appropriately to bank effect forces after meeting another vessel during restricted visibility, and his lack of communication with other vessels about this handling difficulty. Contributing to the circumstances that resulted in the collision was the poor bridge resource management between the master and the pilot on the Conti Peridot.

**Figure 15: Bulk Carrier Conti Peridot and tanker Carla Maersk, moments after the collision.**
PHOTO BY CARLA MAERSK CREWMEMBER

**LEARN MORE AT** www.ntsb.gov/investigations/AccidentReports/Pages/MAR1601.aspx
Collision between *Dewey R Tow* and *P. B. Shah Tow*

**ACCIDENT LOCATION**
COLUMBUS, KENTUCKY
LOWER MISSISSIPPI RIVER,
NEAR MILE MARKER 937

**ACCIDENT DATE** 09/02/2015
**REPORT NUMBER** MAB-16/22

**NTSB ID** DCA15LM034
**DATE ISSUED** 10/26/2016

*Figure 16: Towing vessel P. B. Shah.*
On September 2, 2015, the towing vessel P. B. Shah was upbound pushing 24 barges on the Lower Mississippi River near Columbus, Kentucky. Upriver from the P. B. Shah, the towing vessel Dewey R was downbound pushing four tank barges. At 1940, as both vessels approached a turn in the river from opposite sides, the P. B. Shah captain called the Dewey R captain and requested a port-to-port meeting arrangement. The Dewey R captain responded, "That'll be great." The Dewey R captain, who had been steering his vessel along the right descending bank, continued to follow this course based on the agreed meeting arrangement.

As the P. B. Shah captain was making the meeting arrangement with the Dewey R, he was also maneuvering his tow through a barge fleeting facility. As the captain transited the area, he heard a constant flow of conversations on the radio and maintained a dialogue with the facility dispatcher and other fleet vessels. The captain was also discussing upcoming tasks with his lead deckhand, who was in the wheelhouse with him.

As the P. B. Shah tow began its turn around the bend in the river, the captain favored the right descending bank. At 1952, 7 minutes before the collision, the P. B. Shah captain made visual contact with the Dewey R tow and observed that the Dewey R was close to the right descending bank—the same bank that the P. B. Shah was favoring.

Investigators confirmed during a review of a wheelhouse recording that the captains had agreed to a port-to-port meeting, but the P. B. Shah captain believed he had proposed a starboard-to-starboard arrangement. The P. B. Shah captain called the Dewey R captain to confirm the starboard-to-starboard meeting, and the Dewey R captain responded that he thought they had agreed to a port-to-port arrangement. After some discussion between the vessels, the Dewey R captain told the P. B. Shaw captain, "I'll make [a starboard-to-starboard meeting] work out."

When interviewed after the accident, the Dewey R captain mistakenly believed he had misheard the initial meeting agreement, so he began to steer hard to his port in an attempt to swing his tow toward the left descending bank for a starboard-to-starboard meeting. The P. B. Shah captain initially did not take any action but continued to maintain his speed and course with the head of his tow swinging slightly to port. Then at 1954, the P. B. Shah captain began backing to slow the swing of his tow, and at 1954:38 he put his engines full astern.

Despite the actions of both captains to prevent a collision, at 1959, the tank barges IB1947 and ING 5713, at the front of the flotilla pushed by the P. B. Shah, collided with the tank barges APEX 3508 and APEX 1703 in the flotilla pushed by the Dewey R. The collision breached the no. 3 starboard wing void and the no. 3 starboard cargo tank on the APEX 3508, resulting in a discharge of 120,000 gallons of clarified slurry oil into the river. The collision also caused damage to the Dewey R’s three other barges.

The P. B. Shah captain erred when he requested a port-to-port meeting with the Dewey R captain. He had meant to arrange a starboard-to-starboard meeting but was distracted by the many tasks associated with transiting through the fleeting facility.

As the operator of a downbound vessel on western rivers, the Dewey R captain made a mistake by not following the inland navigation rules, which state that a downbound vessel “shall have the right-of-way over an upbound vessel . . . [and] shall propose the manner and place of passage.” The Dewey R captain should have assessed the risk of collision presented by the two alternative meeting arrangements, chosen the option that did not include passing in front of the P. B. Shah tow, and then used his privilege as the downbound vessel to overrule the P. B. Shah captain’s change to a starboard-to-starboard arrangement.

The National Transportation Safety Board determined that the probable cause of the collision between the P. B. Shah tow and the Dewey R tow was the impact of distraction upon the decision-making and recollection of the captain of the P. B. Shah. Contributing to the collision was the failure of both captains to monitor the progress and effectiveness of the meeting proposal and take appropriate action to avoid the collision.

**LEARN MORE AT** [www.ntsb.gov/investigations/AccidentReports/Pages/mab1622.aspx](www.ntsb.gov/investigations/AccidentReports/Pages/mab1622.aspx)
Collision Between Passenger Vessel *Diamond Edge* and Liftboat *B.W. Haley*

**ACCIDENT LOCATION**
**GULF OF MEXICO**
**FRESHWATER BAYOU SAFETY FAIRWAY, LOUISIANA**

**ACCIDENT DATE**
03/02/2015

**REPORT NUMBER**
MAB-16/06

**NTSB ID**
DCA15LM015

**DATE ISSUED**
06/13/2016

*Figure 18: Hull breach on passenger vessel *Diamond Edge*’s port side caused by the collision with the liftboat *B.W. Haley*.***
On the morning of March 2, 2015, passenger vessel *Diamond Edge* was returning to its homeport of Freshwater City, Louisiana, from an offshore oil platform in the Gulf of Mexico. The vessel encountered patchy fog, with visibility worsening as the voyage continued inbound. The captain said that, at the time of the accident, visibility had decreased to about 60 feet. A lookout was posted inside the enclosed wheelhouse; however, no fog signal was being sounded as required. As the vessel approached the Freshwater Bayou Safety Fairway about 1000, it was making a speed of about 14 knots.

The *Diamond Edge* captain stated that his primary means of determining risk of collision was monitoring other vessels’ automatic identification system (AIS) information on his navigation computer. For vessels without AIS, the captain used radar for collision avoidance. The *Diamond Edge*’s two radar displays were set to short ranges, and the captain told investigators he saw something “pop up intermittently on the radar” as he approached the fairway. He did not perform long-range scanning on either of his radars, which would have allowed him to detect other vessels at a farther distance and adjust course or speed, if needed, to avert a collision.

At 1000, the liftboat *B.W. Haley* was about 1.5 miles west of the Freshwater Bayou Safety Fairway making its maximum speed of 5.5 knots, with the captain at the helm. The captain was sounding the vessel’s whistle at 2–3-minute intervals due to the fog. The vessel was not required to carry AIS, nor was it fitted with one. Without this equipment, the liftboat could not be detected by other vessels through AIS.

Two additional crewmembers were also on the bridge of the liftboat. Yet despite the low visibility, neither of the off-watch crewmembers was assigned duties while on the bridge, and no lookout was posted. The radar display aboard the *B.W. Haley* was set to short range, and the captain did not conduct long-range scanning. He said he never saw the *Diamond Edge* on the radar display.

The *B.W. Haley* captain made two Sécurité warning calls on VHF radio before and while crossing the Freshwater Bayou Safety Fairway. The *Diamond Edge* captain stated that he heard one of the Sécurité broadcasts from the *B.W. Haley*, to which he responded but received no reply.

The *Diamond Edge* captain told investigators that he saw the *B.W. Haley* coming out of the fog at a distance of 60 feet on a collision course with his port bow. The captain said he could not immediately go into reverse because it would have stalled the engines. Therefore, he sped up and turned his vessel to port to kick his stern away from the liftboat. The captain’s maneuvers, however, did not clear the *B.W. Haley*, and the vessels collided about 1027.

On board the *B.W. Haley*, a crewmember visually spotted the *Diamond Edge* coming out of the fog shortly after the second Sécurité call, and he alerted the captain. The crewmember stated that “you can’t see on that corner [of the liftboat because] it’s behind the [vessel’s starboard lifting] leg.” The *B.W. Haley* captain placed his engines full astern immediately on sighting the other vessel visually; however, this action was too late to prevent the collision.

The captain of the *Diamond Edge* was piloting his vessel in thick fog, saw a contact intermittently on the radar, and knew from the Sécurité call that the *B.W. Haley* would be crossing the safety fairway. Yet none of these factors prompted him to slow down. It is likely that an over-reliance on AIS data diverted his attention from the danger indicated on the vessel’s radar.

The *B.W. Haley* captain stated that he steered the liftboat; operated the whistle, radar, and VHF radio; navigated the vessel; and was the visual lookout. As lookout, the captain’s field of vision was blocked by the wide forward corner column of the wheelhouse and by the position of the raised starboard lifting leg.

The National Transportation Safety Board determined that the probable cause of the collision between the *B.W. Haley* and the *Diamond Edge* was the failure of both operators to properly determine the risk of collision and the excessive speed of the *Diamond Edge* in restricted visibility.

**Figures 19–20: Partially submerged passenger vessel *Diamond Edge* following the collision.** PHOTOS BY COAST GUARD

[LEARN MORE AT www.ntsb.gov/investigations/AccidentReports/Pages/mab1606.aspx](www.ntsb.gov/investigations/AccidentReports/Pages/mab1606.aspx)
Collision Between US Coast Guard Cutter *Key Largo* and Fishing Vessel *Sea Shepherd*, with Subsequent Sinking of *Sea Shepherd*

**ACCIDENT LOCATION**
**VIRGIN PASSAGE**
9 MILES EAST-NORTHEAST OF VIEQUES ISLAND, PUERTO RICO

**ACCIDENT DATE**
09/23/2014

**REPORT NUMBER**
MAB-16/09

**NTSB ID**
DCA14PM019

**DATE ADOPTED**
06/30/2016

Figure 21: Fishing vessel *Sea Shepherd* just after the collision.
PHOTO BY COAST GUARD
About 0600 on September 23, 2014, the 42-foot-long fishing vessel Sea Shepherd was stopped while retrieving a line of lobster traps about 9 miles east-northeast of Vieques Island, Puerto Rico. The two crewmembers on the fishing vessel saw a Coast Guard cutter in the far distance on a course toward their vessel. The Sea Shepherd captain told investigators that he was not concerned about the approaching vessel because he thought that the Coast Guard intended to board the Sea Shepherd to examine it. The captain placed the engine in neutral to let the fishing vessel drift, and he and the mate continued working on the lobster traps.

That morning, the 110-foot-long US Coast Guard cutter Key Largo had been patrolling a 5-by-10-mile area off the east end of Vieques Island. The cutter’s officer of the deck (OOD) and quartermaster of the watch (QMOW) were on the navigation bridge watch; however, the QMOW left the bridge to complete a safety assignment. The OOD told investigators that the QMOW did not return from his assignment in the time he expected, so he walked toward the door on the cutter’s starboard side to call out to him. The OOD told investigators that, as he opened the door, he saw the Sea Shepherd for the first time in the corner of his eye, about 100–150 feet in front of the cutter.

The OOD stated that when he saw the fishing boat, he attempted to slow the cutter by putting the engine in full reverse. However, his effort was not enough to avoid the collision. About 0635, the Key Largo struck the starboard side of the Sea Shepherd, pushing the fishing vessel sideways 50–70 feet before the two vessels separated. The Sea Shepherd sustained a 4-inch-wide vertical fracture on the starboard side just aft of the raised cabin, running from the top of the deck to below the waterline.

The Sea Shepherd captain told investigators that he and the mate had kept an eye on the cutter as it continued to approach their vessel. When the cutter closed to about 50 feet without slowing down or changing course, the captain realized that the Key Largo was going to strike his vessel. He and the mate jumped overboard at the stern just before impact. The two crewmembers were recovered from the water by the Key Largo crew following the collision.

The Key Largo OOD told investigators that he normally stood an active watch, moving about the bridge and using all of the cutter’s navigation equipment. Yet he said that leading up to the collision he spent much of the watch sitting. He also stated that in the 24-hour period before the collision he had slept only about 3.5 hours. The OOD said that, due to personal and work-related stress, his mind was preoccupied and he was having difficulty sleeping.

Most people will experience fatigue with less than 8 hours of sleep in any 24-hour period; the less they sleep under 8 hours, the more fatigued they become. The amount of sleep that the OOD said that he received would have made it difficult for him to stay awake in the early-morning hours of his watch. Being seated and alone on the navigation bridge, the OOD would have had even more difficulty remaining awake. Given the OOD’s lack of sufficient sleep and his actions prior to the collision (continuing a course and speed directly into a stopped vessel), he was likely asleep in the moments just prior to the accident.

The National Transportation Safety Board determined that the probable cause of the collision between Coast Guard cutter Key Largo and fishing vessel Sea Shepherd was the failure of the cutter’s OOD to detect and avoid the Sea Shepherd, most likely because he had fallen asleep prior to the accident. Contributing to the collision was the OOD’s failure to report to the commanding officer his unfitness for duty due to lack of sleep.

Figures 22–24: Flooding of the Sea Shepherd from damage due to the collision. The vessel sank about 2 hours after it was struck.
On January 14, 2016, the articulated tug and barge (ATB) Lucia/Caribbean was moored port side to (bow upriver) at Perry Street Wharf, located on the right descending bank of the Mississippi River in Gretna, Louisiana. Beginning at midnight, the ATB intended to move to a marine repair berth located downriver.

The voyage plan entailed getting under way and proceeding upriver to an area near the left descending bank, where the Lucia/Caribbean would turn around to port using the downbound river current and the assist tugboat William S to swing the ATB around. It would then begin the downriver transit.

At 0001 on January 15, the Lucia/Caribbean got under way and moved upriver with the assistance of the William S positioned near the forward end of the ATB. About 0010, the ATB received permission from Vessel Traffic Service New Orleans to begin its port turn. In preparation for the turn, the William S was positioned perpendicular to the centerline of the ATB. At 0011, the Lucia put its rudders to full port and throttle at half astern, and then ordered the William S to push full ahead.
At this time, the ATB was being carried downriver and not turning to port at the anticipated rate. At the direction of the embarked pilot, the Lucia chief mate tried to use the vessel’s twin screws to assist with the swing by going full astern on the port side and full ahead on the starboard side. However, the maneuver was unsuccessful. The master and the pilot then ordered the chief mate to bring both of the Lucia’s engines to full astern to keep the ATB from drifting further across the river, but by this time the ATB was nearly perpendicular to the right descending bank and drifting downriver due to the current.

At 0020, the port bow of the Caribbean struck a tank barge moored at the Stone Oil Distributor facility. The impact holed the port bow of the Caribbean and damaged the dock, two other tank barges, and a barge used as a floating dock. One tank barge broke loose and began drifting downriver, as did two barges and a dock barge that were connected together as a unit.

Moments after the collision, with the William S’s assistance, the ATB was backed out into the river and positioned with the bow upstream. The William S was then released to help retrieve the adrift barges, which had subsequently struck two other tank barges. Those two tank barges also broke loose and began drifting downriver as a connected unit. Several local towing vessels assisted with recovering the adrift barges. Before they could collect the adrift vessels, one of the barges struck and damaged the starboard side of a moored passenger ferry. At 0200, the ATB was re-moored at its original mooring location.

When investigators asked the William S mate why he did not push at full-ahead throttle to initiate the turn to port, he explained that, when he initially applied full throttle, the tugboat’s bow rose up on the hull of the Caribbean. He said that he did not want any steel-to-steel contact between his vessel and the barge, which could cause damage.

The Lucia chief mate was commanding the navigation of his own vessel and giving maneuvering commands to the William S. Based on the William S mate’s own assessment, those commands should have been properly executed in a timely manner, unless they placed the vessel and/or its crew in danger. In this case, investigators found that the commands from the Lucia to the William S did not endanger the vessel or its crew. In fact, they were reasonable, prudent, and performed successfully by both vessel crews several times previously.

The National Transportation Safety Board determined that the probable cause of the collision of ATB Lucia/Caribbean, assisted by tugboat William S, with multiple barges at the Stone Oil Distributor facility was the decision by the mate on the William S to not fully execute the navigational commands provided to him.

**Figure 26: Towing vessel Angus R Cooper holding damaged tank barge S-35 against the right descending bank of the Mississippi River.** PHOTO BY COAST GUARD
Collision and Sinking of Towing Vessel Miss Natalie

ACCIDENT LOCATION
ROMEVILLE, LOUISIANA
LOWER MISSISSIPPI RIVER,
MILE MARKER 162

ACCIDENT DATE  
05/30/2015

REPORT NUMBER  
MAB-16/17

NTSB ID  
DCA15LM023

DATE ISSUED  
09/20/2016

Figure 27: Salvage of towing vessel
Miss Natalie. PHOTO BY COAST GUARD
On the morning of May 30, 2015, the towing vessel Miss Natalie, a fleet boat used to assemble or disassemble tow fleets, was under way on the Lower Mississippi River near Romeville, Louisiana, to check the moorings of barges as well as pick up and drop off nearby barges. Sailing upriver, the towing vessel George W Banta contacted the Miss Natalie to report that it was pushing nine barges and intended to drop off eight. Both towboat captains agreed that the Miss Natalie would move the George W Banta’s port lead barge to the starboard side of the tow to facilitate dropping off the other barges.

At about 0750, the Miss Natalie captain informed the George W Banta captain that he was going to perform a “downstreaming” maneuver in order to relocate the barge. Downstreaming is a procedure in which a towboat moves downstream with the current in order to approach and land on another object, such as a barge in a tow fleet. Generally, the towboat uses astern propulsion while moving downstream to allow it to move toward the barge at a slower speed than the current. The towboat will face up to the barge squarely, deckhands will tie off to the barge, and the towboat will back out the barge to remove it from the tow fleet. When downstreaming on a moving tow, it is critical that the tow heading upriver maintains a 0-mph speed over the ground as the towboat approaches.

The captain of the George W Banta questioned the plan to downstream and asked if there was an alternative. At the time, the surface current may have been as high as 5.5 mph—a swift current. The captain of the Miss Natalie, nonetheless, assured the George W Banta captain that he had accomplished this task numerous times.

At about 0753, the Miss Natalie began approaching the George W Banta’s barge, drifting with the current with its engines astern. Deckhands on the Miss Natalie noticed that the tow was still moving toward them as the fleet boat was beginning to face up to it. A deckhand alerted the captain, who then backed down the vessel. However, when they approached to within about 2 feet of the barge, the fleet boat’s stern swung quickly to port, pinning the portside of the fleet boat across the bow of the barge. The Miss Natalie captain responded by placing all four engines full ahead and moving his rudders back and forth. Next, he put all four engines in reverse to separate his vessel from the barge but was unsuccessful.

Once the Miss Natalie was pinned, the force of the river current on the vessel’s starboard side combined with the force from the forward movement of the tow on the port side caused the Miss Natalie to capsize. Water began entering through two open doors on the main deck, consequently flooding the hull and sinking the vessel at 0756.

The captain and three deckhands escaped the sinking vessel, but a fourth deckhand who had been sleeping in his stateroom prior to the accident drowned.

In 1997, a quality action team (QAT) formed through a partnership between the Coast Guard and the American Waterways Operators conducted a risk assessment of downstreaming accidents and made recommendations for safely employing this maneuver. In the case of the Miss Natalie, the characteristics of the downstreaming operation mirrored almost exactly those that the QAT associated with vessels at risk for capsizing: swift-river current, opened doors on the main deck, low freeboard, and upstream-facing rakes on the tow’s lead barges.

The National Transportation Safety Board determined that the probable cause of the sinking of the towing vessel Miss Natalie was its captain’s decision to downstream on a line-haul tow given the prevailing conditions. Contributing to the sinking was the George W Banta tow moving ahead as the Miss Natalie approached rather than holding its position in the river.

Learn more at www.ntsb.gov/investigations/AccidentReports/Pages/MAB1617.aspx
Breakaway of Bulk Carrier *Privocean* and Subsequent Collision with Tanker *Bravo* and Tugboat *Texas*

**ACCIDENT LOCATION**
**CONVENT, LOUISIANA**
**MILE MARKER 161, LOWER MISSISSIPPI RIVER**

**ACCIDENT DATE** 04/06/2015  **NTSB ID** DCA15LM019
**REPORT NUMBER** MAB-16/08  **DATE ISSUED** 06/29/2016

Figure 29: Port side of tugboat Texas, showing bent handrails and damaged stack. PHOTO BY COAST GUARD
On April 4, 2015, the bulk carrier Privocean docked at the Convent Marine Terminal on the Lower Mississippi River to onload coal. During the period that the vessel was moored at the terminal, the river was at a high-water stage with very strong currents. Given the conditions, the pilot who docked the ship at the terminal advised the Privocean master to put out extra lines and suggested that two “hold-in tugs” be used. Accordingly, the master used 14 lines instead of the 10 lines he would normally have used. The master told investigators that there were “no good mooring points for the forward and aft breast lines,” however, and thus forward breast lines were not used. The bollards for the aft breast lines were located directly beneath the aft breast line chocks of the Privocean where the ship was positioned alongside the dock. Before the accident, the master expressed concern to the vessel charterer and agent about the location of the bollards on the pier and the force of the river current.

Based on the pilot’s suggestion, the Privocean master also requested two hold-in tugs from the vessel charterer, but the charterer directed the master to use only one. Not confident that a single tug would be sufficient, the master tested the need for two tugs. After the ship had moored, he requested that the tugboats Texas and Ned Ferry, which had been assisting the Privocean as it docked, slack off to see how the ship would settle with mooring lines alone. As soon as the tugs eased off, the Privocean’s bow began swinging away from the pier. Consequently, the charterer agreed to provide two tugs. The Texas and the Ned Ferry remained as the hold-in tugs, on the bow and stern respectively, throughout cargo operations.

As the Privocean loaded cargo, its draft increased, subjecting more of the vessel’s hull to the strong currents. After 2 days of loading, the power of the two hold-in tugs became insufficient to hold the bulk carrier in place. Therefore, about 1548 on April 6, the master called the charterer’s agent to request a third hold-in tug. Three minutes later, before a third tug was dispatched, the first forward mooring hawser parted on the Privocean. The remaining lines parted or paid out under “tremendous strain” during the next 3 minutes, and the bulk carrier drifted across the river.

The Privocean struck the starboard side of the tanker Bravo, which was offloading crude oil while docked at the Ergon-St. James Terminal on the opposite side of the river. The Bravo had been moored using 17 lines and two hold-in tugs, the G. Shelby Friedrichs and the Admiral Jackson. After the initial contact, the Privocean bounced off and made contact with the Bravo a second time. As a result of the impacts, the Bravo’s mooring lines parted, allowing the tanker to drift with the current. Both anchors of the Bravo were let go, bringing the vessel to a stop about 500 feet downriver.

The hold-in tugs Texas and Ned Ferry tried to escape from the Privocean as it broke free from its mooring. The Ned Ferry crew let go one line, and the line fell into the water. The current pushed the line into the starboard propeller of the Ned Ferry, where it became entangled. The Privocean crew released Ned Ferry’s second line, allowing the tug to back away using the port propeller. The Texas was unable to release its lines and was pinned between the Privocean and the Bravo as they collided. The stern of the Texas was submerged on impact, flooding the engine room with about 5 feet of water.

The Admiral Jackson was able to release itself from the Bravo and came to assist the damaged Texas. The G. Shelby Friedrichs escaped after the crew used an axe and a steak knife to cut the tow line when its winch malfunctioned.

During the accident, the Privocean, Bravo, and Texas; the dock at the terminal; and deck equipment on the three other tugboats sustained damage totaling about $11 million. Additionally, about 10 barrels of fuel oil spilled into the river, and four crewmembers aboard the Texas sustained minor injuries.

The National Transportation Safety Board determined that the probable cause of the collision between bulk carrier Privocean, tanker Bravo, and tugboat Texas was the inadequate mooring arrangement for the Privocean and the insufficient number of hold-in tugs provided by the vessel operator given the prevailing conditions.
Collision Between Containerships
*St. Louis Express* and *Hammersmith Bridge*

**ACCIDENT LOCATION**
**HANSWEERT, NETHERLANDS**
**WESTERN SCHELDT RIVER**

**ACCIDENT DATE**  
02/22/2015

**REPORT NUMBER**  
MAB-16/10

**NTSB ID**  
DCA15RM014

**DATE ISSUED**  
06/30/2016

Figure 31: Structural damage to containership *St. Louis Express*.  
PHOTO BY COAST GUARD
At 0433 on February 22, 2015, the US-flagged containership *St. Louis Express* got under way from Antwerp, Belgium, with a pilot conning the vessel, the second mate standing the officer of the watch, and the master on the bridge in overall command. Upon departure from the dock, the vessel proceeded outbound via the Scheldt River at about 14.5 knots. About 0522, the pilot ordered a speed increase to 17 knots. He later told investigators that he needed this speed to reach the mouth of the river in time to meet an inbound vessel. The master and pilot both told investigators that this speed was normal for the transit.

All communications between the pilot and Vessel Traffic Service (VTS) centers along the route were in Dutch. The pilot said that during “normal traffic” they did not translate communications for the bridge teams unless the bridge team inquired or there was something unusual.

The considerably larger Panama-flagged containership *Hammersmith Bridge* had begun an inbound transit of the Scheldt River when a pilot boarded about 0400. Once the pilot was aboard, a master/pilot exchange was conducted, and at some point after the exchange the master left the bridge and did not return. The chief officer and helmsman were left alone on watch with the pilot. The pilot told investigators that the crew did not speak to the captain again prior to the accident.

The inbound *Hammersmith Bridge* was travelling at 14 knots as it approached a nearly 180-degree bend in the river near the town of Hansweert, Netherlands. The pilot told investigators that he monitored the outbound *St. Louis Express* on radar and then saw it visually when he neared the exit of the bend.

There were no communications between the ships as they approached each other at a relative speed of about 30 knots. At 0547:49, the VTS in Hansweert called the *St. Louis Express* to ask if they had left enough space for the *Hammersmith Bridge* to pass. The pilot on *St. Louis Express* replied, “Yes, yes, it is going to be alright.” The dialogue between the pilot and VTS was in Dutch and was not communicated to the bridge team.

The pilot and bridge team on the *St. Louis Express* told investigators that, as they approached, they saw the stern of the *Hammersmith Bridge* advance across the channel towards them as the vessel came out of its turn. The *St. Louis Express* pilot ordered the rudder hard to starboard to avoid hitting the other vessel with his bow. Once the bow was clear, he ordered the rudder hard to port in an attempt to clear the stern of his vessel. On board the *Hammersmith Bridge*, the pilot ordered starboard 20 degrees rudder to come right. As the bow on the *Hammersmith Bridge* passed the bow of the *St. Louis Express*, he ordered hard to port to swing the vessel’s stern away. The actions of both pilots, however, were insufficient to avoid impact, and at 0548:57, the vessels collided.

Although each pilot claimed to be generally aware of the other vessel, there were no communications between them, nor did there appear to be any consideration for potential risks associated with the area where they were meeting. There was no evidence that the *St. Louis Express* reduced speed, and no recognition by either vessel of their high rate of closure.

Vessels proceeding along a fairway should keep as near to the right side of the channel as is safe and practicable. The *Hammersmith Bridge* was just coming out of its turn, so encroachment toward the center of the channel was not completely avoidable. On the other hand, the *St. Louis Express*, a smaller vessel by comparison, was well-established in the main channel. The pilot and bridge team had ample time to determine and anticipate the movement of the *Hammersmith Bridge*.

The National Transportation Safety Board determined that the probable cause of the collision between the containerships *St. Louis Express* and *Hammersmith Bridge* was the failure of the pilots and bridge teams on both vessels to assess the risk of collision, inadequate bridge resource management on both vessels, and a lack of communication between the pilots. Contributing to the accident was the failure to establish adequate passing room between the vessels while meeting near a major bend in a narrow channel.

**Figure 32: St. Louis Express moored port side to.** PHOTO COURTESY OF MARTIN TOLLE

**Figure 33: Hammersmith Bridge under way.** PHOTO COURTESY OF R. LUDWIGSON

**LEARN MORE AT** www.ntsb.gov/investigations/AccidentReports/Pages/mab1610.aspx
Collision between Towing Vessel William E Strait and Margaret Ann Tow

ACCIDENT LOCATION
LOWER MISSISSIPPI RIVER
MILE MARKER 727.4

ACCIDENT DATE
12/14/2015
REPORT NUMBER
MAB-16/13

NTSB ID
DCA16FM010
DATE ISSUED
08/12/2016

Figure 34: Partially submerged towing vessel William E Strait shortly after the collision.
On December 14, 2015, the uninspected towing vessel William E Strait, which was pushing a flotilla of 30 gravel barges, was holding position on the left bank of the Lower Mississippi River near mile marker 727.4. At 1100, the captain was relieved by the pilot (“pilot” is a term used aboard towing vessels on the Mississippi River and its tributaries for the person, other than the captain, who navigates the vessel). During the watch relief, the captain briefed the pilot on expected vessel traffic, including the uninspected towing vessel Margaret Ann, which was upriver and proceeding downbound pushing three tank barges.

The William E Strait’s location was at the end of a wide bend in the river. During certain conditions, an upstream eddy—a short reverse current—was known to develop in the bend where the towing vessel was holding position. The eddy flowed upstream close to the left bank and then toward the center of the river to a point where it was influenced by the stronger downbound current. The William E Strait pilot stated that the eddy was present on the day of the accident, and it was acting on the vessel and tow in a manner that pushed the flotilla away from the bank.

About 1100, the Margaret Ann pilot called the William E Strait on VHF channel 13 to arrange for passage. The pilots on both vessels agreed that the William E Strait would back slowly off the left bank and then hold position to allow the Margaret Ann to pass safely. The Margaret Ann would widen its turn and stay close to the right bank to provide the William E Strait with more maneuvering room.

As the Margaret Ann approached mile marker 728.8, the vessel’s pilot noticed that the William E Strait was maneuvering in a manner he felt was not consistent with the passing arrangement; he said that the stern of the William E Strait was “coming out towards the middle of the channel.” The Margaret Ann pilot contacted the William E Strait pilot to ask if he was going to be able to hold the vessel’s stern where it was. The William E Strait pilot replied that he intended to apply some ahead propulsion and swing the stern of his vessel back in toward the left bank.

The Margaret Ann pilot told investigators that the stern of the William E Strait continued to swing toward the center of the channel. He took evasive maneuvers in an attempt to avoid the collision, but his actions were unsuccessful. At 1122, the aft port side of the Margaret Ann’s lead barge and the port bow of its second barge struck the aft starboard corner of the William E Strait.

The Margaret Ann’s lead barge sustained a hull penetration and broke free from the tow string, while the second barge received damage to its bow and forward deck area. The William E Strait sustained a 6-foot by 5-foot opening in its hull, which allowed rapid flooding of the engine room. Additionally, the force of the collision pushed the port bow of the William E Strait into the last row of its tow flotilla, holing a stern void in one of its barges.

The William E Strait pilot maneuvered the vessel and its flotilla back to the left bank. The crew then boarded the aftermost barge in the flotilla before the William E Strait partially sank. The Margaret Ann recovered its lead barge and proceeded to McKellar Lake near the accident site.

Electronic charting system and automatic identification system data from both vessels indicated that, from 1011 through 1119, the William E Strait began a slow, continuous shift of position in a westerly direction toward the opposite bank. The vessel’s true heading decreased gradually from 180 degrees at 1100 to 163 degrees at the time of collision. Based on this information, investigators determined that the William E Strait pilot did not hold the vessel and tow’s position along the left bank as he had agreed to do. Furthermore, his attempt to apply forward propulsion and starboard rudder in an effort to swing the stern of the William E Strait back toward the bank was neither timely nor effective.

The National Transportation Safety Board determined that the probable cause of the collision between the Margaret Ann and the William E Strait was the William E Strait pilot’s inability to hold his vessel in position along the left descending bank, as had been agreed on, to allow the safe and unimpeded passage of the Margaret Ann.

LEARN MORE AT www.ntsb.gov/investigations/AccidentReports/Pages/mab1613.aspx
Fire Aboard Freighter Alpena

ACCIDENT LOCATION
STURGEON BAY, WISCONSIN
FINCANTIERI BAY SHIPBUILDING

ACCIDENT DATE 12/11/2015
REPORT NUMBER MAB-16/20

NTSB ID DCA16FM012
DATE ISSUED 10/26/2016

Figure 36: Freighter Alpena under way.
PHOTO COURTESY OF ROGER LELIEVRE
In early December, 2015, the 73-year-old freighter Alpena arrived at Fincantieri Bay Shipbuilding at Sturgeon Bay, Wisconsin, for a scheduled 5-year-interval dry dock inspection. The shipyard work was to be completed by December 31, after which the vessel was to return to service.

On the afternoon of December 11, 2015, three shipyard workers were in the machinery spaces near an electrical control room for the vessel’s aft winches. Sometime after 1700, one of the workers, who was forward of the electrical control room by about 20 feet, informed his leadman that he smelled a sulfur smell and left the vessel to get a respirator. The second worker, who was in the engine room, recalled an abnormal smell that he described as burned plastic. The third worker, a welder, was in the aft peak tank. The tank opening was approximately 15 feet forward of the electrical control room. About 1740, the welder exited the tank to get additional welding rods and recalled being engulfed in heavy smoke, which burned his eyes and throat. As the welder exited the tank, the first worker returned with his leadman.

All four workers reported that the smoke was initially white with a slight yellow tint. The welder exited to the fantail to report the smoke via radio and request ventilation. The workers tried to identify from where the smoke originated. In the meantime, the smoke switched color to black. The workers quickly concluded that a fire had started, and they began to notify everyone and evacuate the vessel. Shipyard workers and Alpena crew members mustered and accounted for all personnel. Shortly thereafter, at 1747, the Sturgeon Bay Fire Department arrived on scene and began preparations to fight the fire.

At 1903, the fire was under control, and by 0117, all spaces were fully cleared. In total, more than 80 firefighters responded to the accident.

A subsequent survey report stated that the ongoing welding activities showed “no evidence of being connected to the fire.” Rather, the fire appeared to have started in the electrical control room and subsequently spread to the steering gear flat and paint locker located in the aft section of the engine room. The fire also spread to the dining room, galley, and several state-rooms located on the main deck.

Based on both the Coast Guard and the local fire department investigations, the most likely cause of the fire was an electrical fault in the wiring from the electrical control panel to the aft winch. The electrical system for the aft winch was original to the vessel and complied with regulations for original equipment; however, it did not have the more extensive circuit protection that modern shipboard electrical systems have. (According to the Coast Guard, planned postaccident modifications to the Alpena would feature additional circuit protection in accordance with current regulations.) The power cable to the aft winch was completely melted for a length of 10–15 feet. Similar conductors in the same wiring bundle were not damaged, which led investigators to believe that this specific conductor experienced a fault of some kind rather than being destroyed by the heat of the ensuing fire. As further evidence to support this conclusion, the same cable’s sheathing and insulation had signs of significant deterioration on the boat deck, several decks above where the fire started, where the aft winch was located. This area of the vessel was not affected by the fire.

Fire department investigators noted that an electrical fault at the winch (which would have resulted in high current flow in the wiring circuit) could have possibly caused further electrical faults in the winch circuit resulting in a switchboard/fuse overload.

Another potential fault source could have been caused by chafing, which damages the protective sheathing and reduces the thickness of a conductor’s insulation jacket over time. The wiring in the electrical control room had areas susceptible to chafing, specifically where the wires passed through sheet metal unprotected from its rough edges. According to the Coast Guard, the fire damage prevented full assessment of the pre-existing adequacy of this through-metal passage; however, planned postaccident modifications would feature protection for wire passage points.

The National Transportation Safety Board determined that the probable cause of the fire aboard the Alpena was a fault in the electrical wiring providing power to the aft anchor winch.

Learn more at www.ntsb.gov/investigations/AccidentReports/Pages/mab1620.aspx
Fire Aboard Containership Gunde Maersk

ACCIDENT LOCATION
SEATTLE, WASHINGTON

ACCIDENT DATE 12/08/2015
REPORT NUMBER MAB-16/24

NTSB ID DCA16FM009
DATE ISSUED 11/03/2016

Figure 38: Containership Gunde Maersk berthed in Seattle, Washington, two days after the fire.
On November 25, 2015, the containership Gunde Maersk switched from using heavy fuel oil to ultra-low sulfur marine gas oil as it entered the North American Emission Control Area en route to Long Beach, California. Soon after the switch, the vessel’s auxiliary engines began leaking fuel.

To repair the leaks on the auxiliary engines, the crew of the Gunde Maersk replaced the O-rings in the fuel supply piping rail for auxiliary engine no. 3 on November 26, auxiliary engine no. 2 on December 1, and auxiliary engine no. 1 on December 2. Each fitting requiring a replacement O-ring was secured in place with four bolts. After completing the work on each engine, the crew tested the installation for 10 minutes, running the engine at idle speed. Fuel flow at idle speed, however, was less than normal operating flow.

The Gunde Maersk departed Long Beach on December 1 and arrived at Seattle’s Terminal 46 berth 37 on December 7. At 0502 on December 8, the containership got under way from its berth en route to Busan, South Korea. A few minutes later, at 0509, fire broke out on auxiliary engine no. 1. The engine had run a total of 3 hours since the installation of the new O-rings.

A fire alarm was triggered by a detector located above the engine and the engine automatically shut down. An installed high pressure water-mist system activated automatically and extinguished the fire. Ventilation fans for the space shut down when their controllers burned and the fire dampers for each fan closed. Doors to the space had been closed before the fire started, which prevented a further supply of air reaching the affected space.

The general alarm activated automatically almost immediately after the fire began. Two firefighting teams were assembled to fight the fire. One team entered the space at 0523, confirmed the fire was out, and reported that the compartment was filled with black smoke. That fire team left the space at 0528. The crew monitored bulkhead and internal temperatures until the temperature inside the space cooled to 196 degrees F, at which time they ventilated the space.

The loss of auxiliary engine no. 1 and its associated generator introduced an error in the high voltage electrical system and integrated automation system (IAS), causing a loss of control of the main propulsion engine fuel pumps. As a result, the vessel’s IAS shut down the main propulsion engine. Crewmembers were unsuccessful in their attempt to manually restart the engine, so at 0538 the vessel anchored about a quarter mile from its original berth. Four tugboats were employed to return the vessel to the pier.

Investigators determined that the fire was caused by fuel leaking from a dislodged 1.5 inch diameter O-ring in the fuel supply line to the no. 3 cylinder fuel injection pump located near the top of auxiliary engine no. 1. Fuel in the supply line sprayed out around the O-ring. Some of the spray struck shields designed to prevent atomized fuel from spraying the engine room, while the remainder of the spray entered the exhaust side of the engine through the space between the cylinder heads.

The source of ignition was most likely fuel spraying and flowing onto the exhaust side of the engine between the cylinder covers. The exact point of ignition could not be determined. However, the exhaust piping, which is estimated to have been between 575 and 850 degrees F at the time of the fire, was the most likely location.

Investigators found that the bolts and fitting where the leak occurred were in good condition, and no damage or imperfections were found on the O-ring. It is likely that the leak occurred because the fitting was not tightened with a torque wrench as prescribed in the manufacturer’s written procedures.

Additionally, a root cause report issued by the operating company after the accident noted that procedures to replace O-rings on auxiliary engines did not include a post-repair testing procedure. Had the fuel system been tested using a standard procedure under normal operating conditions, it is possible that the leak would have been found before the fire started.

The National Transportation Safety Board determined that the probable cause of the fire aboard the containership Gunde Maersk was an improperly installed fitting on a fuel line supplying a fuel injector pump for auxiliary engine no. 1.

LEARN MORE AT www.ntsb.gov/investigations/AccidentReports/Pages/mab1624.aspx
Engine Room Fire on Board Commercial Fishing Vessel Miss Eva, with Subsequent Sinking

ACCIDENT LOCATION
GULF OF MEXICO
NEAR SHIP SHOAL BLOCK 154,
ABOUT 35 MILES SOUTHWEST OF GRAND ISLE, LOUISIANA

ACCIDENT DATE 12/01/2014
REPORT NUMBER MAB-16/01

NTSB ID DCA15LM005
DATE ISSUED 01/14/2016
In late 2014, the commercial fishing vessel *Miss Eva* was under way in the Gulf of Mexico en route to Port of Palacios, Texas, to offload its catch of shrimp. The 13-year-old vessel was not fitted with a fixed fire extinguishing system, but it was equipped with seven Coast Guard-approved portable fire extinguishers that were located in the wheelhouse, galley, and engine room. The owner and operator stated that smoke detectors were installed in the galley and the centerline passageway leading to the aft exit.

About 0708 on December 1, the senior deckhand on watch smelled smoke in the wheelhouse, placed the main engine in neutral, and went with another deckhand to investigate. They told investigators that there were no visual annunciations or audible alarms, but they observed black smoke escaping through the two engine room access doors.

Neither crewmember sounded the general alarm to alert the other crewmembers of the situation. Instead, they awoke the master, who proceeded to the aft deck where he observed flames coming from the exhaust stack. The fourth crewmember, who was asleep, was alerted by a deckhand knocking on the cabin wall. He woke up, exited the cabin, jumped overboard, and held onto the vessel’s fishing rigging and net.

The master and two remaining crewmembers went to the aft engine room access door, a piece of plywood fitted with a fixed fire extinguishing system, but it was observed black smoke escaping through the two engine room access doors.

The master and two remaining crewmembers went to the aft engine room access door, a piece of plywood with several penetrations in it, to determine the status of the engine. At that time, an explosion occurred. Overcome by flames, the master and the senior deckhand jumped into the water. The senior deckhand and the master also jumped into the water. They joined the other crewmembers boarding the liferaft, including the crewmember who had been clinging to the fishing rigging. None of the crewmembers retrieved lifejackets or the vessel’s emergency position indicating radio beacon (EPIRB) before entering the liferaft.

While on his morning rounds, a crewmember on board the platform Ship Shoal 154-E observed the *Miss Eva* on fire. The platform crew notified the Coast Guard and coordinated rescue and first aid. An offshore supply vessel retrieved *Miss Eva*’s crewmembers from the liferaft and transported them to the platform, where first aid was administered. At 0920, a Coast Guard helicopter arrived and evacuated the master, who was the most critically injured, followed shortly afterwards by a second Coast Guard helicopter, which evacuated the remaining crewmembers.

About 4–6 hours after the fire started, the *Miss Eva* sank. Because of the sinking, investigators could not conduct an inspection of the vessel and were unable to determine the source of the fire in the engine room.

The *Miss Eva*’s engine history did not reveal the cause of the fire; however, the information did show that the master, owner, and operator took no action to resolve an observed increase in fuel consumption in the main engine, which was a precursor to degraded performance. Although the alarm system did not indicate a condition or failure resulting from the increased fuel consumption, the vessel should have returned to port to be evaluated. Furthermore, the main engine manufacturer’s recommended check at 250 hours was not performed, even though the engine had accumulated more than 400 hours since its last overhaul.

The owner, operator, and crewmembers of the *Miss Eva* did not conduct required fire and abandon ship drills, which would have included instructions for donning lifejackets and taking the vessel’s EPIRB onto the liferaft. Also, a general alarm to alert all crewmembers of an emergency was not sounded by the crew, as required by regulations.

The National Transportation Safety Board determined that the probable cause of the accident involving the commercial fishing vessel *Miss Eva* was an engine room fire that began from an undetermined source followed by downflooding and the eventual sinking of the vessel.

**Figure 41: Fishing vessel *Miss Eva* sinking bow down.**

 PHOTO PROVIDED BY MASTER OF SISTER VESSEL NIKOLAS

**LEARN MORE AT** [www.ntsb.gov/investigations/AccidentReports/Pages/MAB1601.aspx](http://www.ntsb.gov/investigations/AccidentReports/Pages/MAB1601.aspx)
Figure 42: Fishing vessel Northern Pride hull washed ashore at Cape Chiniak within the Katmai National Park, Alaska.
PHOTO BY GLOBAL DIVING & SALVAGE INC.

Figure 43: Fishing vessel Northern Pride adrift after capsizing.
PHOTO BY COAST GUARD

Figure 44: Coast Guard rescue of the fishing vessel Northern Pride’s crew.
PHOTO BY COAST GUARD
The uninspected fishing vessel *Northern Pride* was employed as a fish tender, a vessel that meets at sea with fishing boats that have reached full capacity, on-loads the fish, and transports the catch to the nearest fish-processing plant. The 70-year old vessel was constructed of wood frames and planks with spike and bolt fasteners.

The captain and two crewmembers joined the *Northern Pride* on April 11, 2015, in Seward, Alaska, where it had been in drydock for 8 months. The crew told investigators that they found the vessel in disrepair. There were leaks in the roof of the deckhouse, electrical wiring issues, electrical junction boxes missing, and portable fire extinguishers not serviced. Several propulsion engine gauges as well as wheelhouse engine monitoring gauges were not operational, and there was no alarm system for the main engine or reduction gears.

Despite the various deficiencies, the crew prepared the vessel for sea. When the vessel was relaunched, it began to leak through the wood hull planking. Some leakage was expected, but the leaking did not subside as the wood planks swelled.

On April 20, the vessel departed Seward en route to the Togiak herring fishery, about 900 miles away by sea. The deckhand told investigators that the bilge pumps were running about every 10 minutes to keep up with the inflow of seawater from the hull leaks.

About 0600 the next day, the vessel’s two generators shut down due to clogs in the engine-mounted fuel filters. There were no spare generator fuel oil filters on board, so the engineer flushed the fuel lines and changed the day-tank fuel filter. After the day-tank fuel filter was replaced, the generators ran for about 15 minutes and shut down again due to the day-tank filter clogging again. The crew replaced the fuel filter on the day-tank six times after each shutdown. Ultimately, they decided to remove the generator’s engine-mounted filters, effectively bypassing them. As with the generators, the main propulsion engines also lost power due to clogged fuel filters, requiring the crew to replace the filters multiple times.

About 1200, the *Northern Pride* generators ceased functioning, resulting in the vessel’s complete loss of electrical power. About 30 minutes later, the captain noticed smoke exiting the starboard vent of the forepeak machinery space where the generators were located. When the engineer and deckhand went forward and opened the forepeak hatch to investigate, they noticed thick billowing dark smoke that smelled like burning electrical wiring. The crew determined that the fire could not be fought or extinguished.

The *Northern Pride* did not have fire-protected subdivision bulkheads, so the smoke and fire spread quickly to the main cabin and wheelhouse. The captain broadcast the international distress signal Mayday and prepared to abandon ship. He then activated the emergency position indicating radio beacon (EPIRB) and ordered the crew to manually launch the inflatable liferaft and don their survival suits. Once their suits were on, the crew abandoned the vessel into the liferaft.

A Coast Guard helicopter from Air Station Kodiak, Alaska, arrived on scene and hoisted the three crewmembers safely on board by 1445. About the same time, the *Northern Pride* capsized but did not sink. On May 7, the vessel’s splintered hull washed ashore in Katmai National Park, Alaska.

Despite a lack of maintenance documentation, it became apparent during the investigation that the *Northern Pride* was in poor condition. Although the vessel was not subject to inspection by regulations, the owner and the captain had the responsibility to maintain the vessel in a safe condition. The decision to get under way for a lengthy transit was imprudent given known significant safety deficiencies.

The vessel was not equipped with a fixed fire-suppression system. Therefore, the crew had only handheld fire extinguishers and fire hoses to combat smoke and flames, which they deemed ineffectual. Crewmembers also reported that several portable fire extinguishers had not been inspected.

The National Transportation Safety Board determined that the probable cause of the loss of the commercial fishing vessel *Northern Pride* was a fire in the forepeak machinery space and flooding through the hull planking, which led to its capsizing. Contributing to the accident were the overall poor condition and maintenance of the vessel and the captain’s decision to get under way in a vessel with known deficiencies. Also contributing to the accident was the rapid spread of the fire in the wooden vessel due to the absence of machinery space fire-suppression systems and fire-protected subdivision bulkheads, neither of which was required for uninspected fishing vessels.
Fire Aboard Towing Vessel San Gabriel

ACCIDENT LOCATION
HOUSTON, TEXAS
LYONDELLBASELL REFINERY DOCK “D”

ACCIDENT DATE
02/26/2016

REPORT NUMBER
MAB-16/25

NTSB ID
DCA16FM027

DATE ISSUED
11/03/2016

Figure 46: Fire damage to the towing vessel San Gabriel.
About 2100 on February 25, 2016, the uninspected towing vessel San Gabriel arrived at dock “D” of the LyondellBasell terminal in Houston, Texas, in preparation for the loading of liquid molten sulfur into barges alongside. About 2220, while making a round of the engine room, a deckhand noticed a fire in the lavatory on the upper level. He notified the captain who was in the galley, grabbed a nearby fire extinguisher, and then kicked the door open and discharged the extinguisher into the lavatory. The captain sounded the general alarm to alert the remaining three crewmembers who were sleeping. He then proceeded to the lavatory and attempted to fight the fire with a second fire extinguisher.

Another crewmember attempted to use a firehose to assist, but the fire pump would not start due to electrical short-circuits in the system wiring resulting from the fire.

After failing to put out the fire with extinguishers, the captain locked down the engine room by closing both doors, ordered the crew to vacate the area, and activated the engine room’s CO₂ fire suppression system.

The crew monitored the fire through the engine room exterior windows for about 30 minutes and believed that the fire was extinguished. But when they opened the exterior door to check on the fire, it re-flashed. They attempted to fight the fire in the lavatory with the last remaining extinguishers, to no avail.

About 2330, the captain contacted the terminal facility fire department. The captain and the crew then abandoned ship to a barge; later, they moved to the pier. The fire spread through the house from the main deck up to the quarters deck and the wheelhouse.

The Houston Refinery Fire Department dispatched refinery assets to the scene immediately. Two Houston Port Authority fireboats and several other firefighting assets also responded. About 2347, shoreside fire teams began battling the fire, and the fire was not completely extinguished until 0115.

Based on a fire-pattern analysis, fire damage survey, and witness statements, the Harris County (Texas) fire marshal concluded that the fire had originated in the lavatory in the area of an exhaust fan. He observed hot spots and burn patterns on the outboard bulkhead under the exhaust fan opening that were not seen anywhere else in the lavatory. Nothing remained of the suspect fan, which was burned completely.

The San Gabriel had nine heat detectors installed in the engine room and four smoke detectors located throughout the crew quarters and galley. Yet, none of the detectors aboard the vessel activated before the crew noticed the fire. A random check of the smoke detectors and a test of the heat detector in the galley had been satisfactorily conducted on January 29, 2015, during an internal audit. According to inspection records, the fire detection system, fixed CO₂ system, and all fire extinguishers were inspected on April 23, 2015.

The effectiveness of the fixed CO₂ system was diminished by the fact that there were no dampers in the engine room’s ventilation ducts for the crew to close. The lack of dampers prevented isolation of the engine room from incoming air during the fire suppression attempt. In addition, terminal video recordings revealed that an exterior door on the port side of the vessel was left open when the crew abandoned the San Gabriel allowing fresh air to fuel the fire.

Although there was no guidance for a fire in port, the captain did not contact any shoreside assistance for over an hour after the fire was reported to him and not until the crew had depleted all of the vessel’s firefighting capabilities. Shoreside firefighters with proper firefighting equipment would have been able to provide guidance on re-entering the engine room space and would have been in position to assist when the fire re-flashed. Once they arrived, shoreside firefighting teams effectively extinguished the fire.

According to a representative from the San Gabriel’s operating company, the exhaust fan had been installed in the shipyard the previous October. The fan manufacturer’s specifications stated that the fan motor drew 1.5 amps and was not “engineered for continuous usage.” Crewmembers stated that they typically shut off the fan after use, but there were times when it had been left on.

The National Transportation Safety Board determined that the probable cause of the fire aboard towing vessel San Gabriel was an electrical anomaly related to the lavatory exhaust fan located directly above combustible materials. Contributing to the extent of the damage was the captain’s excessive delay in requesting shoreside assistance.

LEARN MORE AT www.ntsb.gov/investigations/AccidentReports/Pages/MAB1625.aspx
Sinking of Fishing Vessel Capt Richie Rich

ACCIDENT LOCATION
GULF OF MEXICO
10 MILES SOUTHWEST OF POINT AU FER, LOUISIANA

ACCIDENT DATE 08/30/2015
REPORT NUMBER MAB-16/14

NTSB ID DCA15LM033
DATE ISSUED 08/17/2016

Figure 48: Fishing vessel Capt Richie Rich listing to starboard, lying on the bottom.
PHOTO BY COAST GUARD

Figure 49 (opposite page): Partially sunken fishing vessel Capt Richie Rich resting on mud in 10–12 feet of water. The broken port outrigger is shown in the upper right.
PHOTO BY COAST GUARD
On double-beam shrimp trawlers such as the Capt Richie Rich, the tow wire used to deploy the fishing gear is paid out from the port and starboard deck winches through towing blocks located at the outermost end of each respective outrigger. This configuration allows the trawl boards, sled, and catch nets to be deployed independently of each other on the seafloor. To offset the tension on the outrigger that results from the tow wire and fishing gear being dragged on the sea floor, each outrigger deployed is held in place by stay wires that are made fast to the vessel’s gunwale and mast. Based on images of the partially sunken Capt Richie Rich, it appears that the outrigger frame fractured and failed just outboard of those securing points. Because the crewmembers did not speak English very well and no translators were available during interviews, investigators could not determine whether the failure was caused by poor maintenance, the fishing gear becoming snagged on a bottom obstruction, or a combination thereof.

The National Transportation Safety Board determined that the probable cause of the sinking of fishing vessel Capt Richie Rich was a collapse of the port outrigger and a hull penetration resulting in uncontrolled flooding in the engine room.
Figure 50: Fishing vessel Kupreanof under way prior to the accident. Note equipment lashed to the aft deck that blocked access to the lazarette.
PHOTO COURTESY OF LANA PARKER

Sinking of Fishing Vessel Kupreanof

ACCIDENT LOCATION
GULF OF ALASKA
50 MILES WEST-NORTHWEST OF CAPE SPENCER, ALASKA

ACCIDENT DATE
06/10/2015

REPORT NUMBER
MAB-16/23

NTSB ID
DCA15LM025

DATE ISSUED
10/26/2016
About 0500 on June 9, the uninspected fishing vessel *Kupreanof* departed Juneau, Alaska, en route to Bristol Bay, Alaska, via the Inside Passage and the Gulf of Alaska. The *Kupreanof* was a fish tender, a vessel that meets at sea with fishing boats that have reached full capacity, on-loads the fish, and transports the catch to the nearest fish processing plant. According to crewmembers, the transit to Bristol Bay was to be the vessel’s first voyage in the open ocean in over two decades.

About 1500, as the vessel transited the Inside Passage, the captain checked the weather forecast but was not concerned with the conditions. The National Weather Service forecast, issued at 0400 that morning, predicted winds increasing to 30 knots and seas building to 11 feet through the evening. A small craft advisory was in effect through the night.

An hour later, before reaching the open waters of the Gulf of Alaska, the captain anchored the vessel to test the anchoring equipment, check the lashings of the gear on deck, and review safety equipment and procedures with the crewmembers. During the safety review, the captain instructed the three crewmembers on donning survival suits, launching the liferaft, and locating and operating the emergency position indicating radio beacon (EPIRB). The captain also assigned each crewmember specific responsibilities in the event of an emergency.

About 1800, the vessel resumed its voyage. Three hours later, after the vessel entered the Gulf of Alaska, the weather conditions worsened as waves increased to 15–20 feet. Just prior to midnight, the captain checked the weather forecast again; the latest forecast, which had been issued at 1600 (an hour after the captain had last checked the forecast), included a gale warning with 35-knot winds and 10-foot seas predicted through the night. The captain noticed that the stern was “sitting down” more than normal and not shedding water as expected. Soon after, he noted that the vessel had taken on a port list. In an attempt to resolve the list, the captain checked the engine room for water accumulation and pumped out the bilges in the space, along with the shaft alley. He then began pumping out the lazarette, the aft-most space on the vessel. A single pump was used to remove water, with a valve manifold in the engine room controlling which space was being pumped. The captain did not find a significant amount of water in the engine room spaces, but he could not check the lazarette because equipment was stowed atop the access hatch.

After unsuccessfully attempting to resolve the list, the captain woke the other crewmembers to alert them of the problem and directed them to move to the upper decks with their survival suits. The list and aft trim on the vessel progressively worsened with the stern continuing to sink further into the sea and waves breaking over the transom.

At 0342, the captain made a Mayday distress call to the Coast Guard, and Coast Guard Sector Juneau launched rescue helicopters to assist the sinking vessel.

After all attempts to correct the list had failed, the crew donned their immersion suits, deployed the liferaft, and moved to the bow for safety while they waited for the Coast Guard to arrive. After a helicopter arrived on scene about 0510, the crew moved to the aft deck, entered the water, and boarded the liferaft. A Coast Guard rescue swimmer assisted each crewmember into the helicopter’s rescue basket where they were hoisted one by one into the aircraft. The last crewmember was rescued from the water about 0540 as the vessel sank stern first.

Crewmembers stated that none of the vessel’s bilge alarms sounded prior to abandoning the vessel. The captain told investigators that he had tested all bilge alarms prior to getting under way, with the exception of the lazarette. He could not test the lazarette alarm because the access was blocked by equipment on deck.

The captain stated that he did not know what caused the vessel to sink, since he was unable to determine the source or location of the flooding. He believed a crack might have developed on the stern deck that led to flooding of an aft compartment.

The National Transportation Safety Board determined that the probable cause of the sinking of the fishing vessel *Kupreanof* was the flooding of an aft compartment, likely the lazarette.

**Figure 51:** Coast Guard video image of the sinking fishing vessel *Kupreanof* soon after the arrival of a rescue helicopter.

About 0330, the captain noticed that the stern was “sitting down” more than normal and not shedding water as expected. Soon after, he noted that the vessel had taken on a port list. In an attempt to resolve the list, the captain checked the engine room for water accumulation and pumped out the bilges in the space, along with the shaft alley. He then began pumping out the lazarette, the aft-most space on the vessel. A single pump was used to remove water, with a valve manifold in the engine room controlling which space was being pumped. The captain did not find a significant amount of water in the engine room spaces, but he could not check the lazarette because equipment was stowed atop the access hatch.

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**Figure 51:** Coast Guard video image of the sinking fishing vessel *Kupreanof* soon after the arrival of a rescue helicopter.

About 0330, the captain noticed that the stern was “sitting down” more than normal and not shedding water as expected. Soon after, he noted that the vessel had taken on a port list. In an attempt to resolve the list, the captain checked the engine room for water accumulation and pumped out the bilges in the space, along with the shaft alley. He then began pumping out the lazarette, the aft-most space on the vessel. A single pump was used to remove water, with a valve manifold in the engine room controlling which space was being pumped. The captain did not find a significant amount of water in the engine room spaces, but he could not check the lazarette because equipment was stowed atop the access hatch.

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The National Transportation Safety Board determined that the probable cause of the sinking of the fishing vessel *Kupreanof* was the flooding of an aft compartment, likely the lazarette.

**Figure 51:** Coast Guard video image of the sinking fishing vessel *Kupreanof* soon after the arrival of a rescue helicopter.
Figure 52: Barge Margaret beached after salvage, awaiting destruction.
PHOTO BY US COAST GUARD

Sinking of Deck Barge Margaret

ACCIDENT LOCATION
CONVENT, LOUISIANA
LOWER MISSISSIPPI RIVER,
MILE MARKER 159.5

ACCIDENT DATE
08/31/2015

REPORT NUMBER
MAB-16/15

NTSB ID
DCA15LM032

DATE ISSUED
08/17/2016
In August 2015, the deck barge Margaret was anchored in the Mississippi River near Convent, Louisiana, and was moored bow-to-bow with another deck barge. The barges were used for staging equipment in support of loading and discharging phosphorous rock at a terminal located about half a mile upriver. The Margaret’s hull was compartmented with one longitudinal and four transverse bulkheads subdividing the hull into eight void compartments. A 2014 survey of the vessel noted visible damage, wastage, and holing to numerous areas of the starboard bow, side plates, deck plates, and port stern. However, during the survey, gauging was not conducted to determine the thickness of structural members, watertight integrity was not inspected, and none of the internal compartments were available for inspection.

Production managers for the barge ownership company were responsible for monitoring cargo operations and checking the company barges. The regular day-shift production manager told investigators that the port stern void of the Margaret had been taking on water intermittently for more than 5 years. He said that this void space had free communication with the void forward of it on the port side, and both voids needed to be pumped out “once or twice a month.” The other production managers were aware of the water ingress and would make three rounds each 12-hour watch to check for flooding.

The production managers were also responsible for dewatering the barges as needed. They used four prestaged portable submersible gasoline-powered pumps staged on the main deck, putting a dropdown hose through manholes that accessed the voids. When fully fueled, the pumps would run until the voids were pumped dry, the pumps lost suction, or until they ran out of fuel, for a maximum pumping time of about 2.5 hours. The regular dayshift production manager stated that the Margaret’s normal freeboard was about 3 feet and that he would wait until there was about 4 feet of water in the void before pumping. The company did not have formal reporting procedures or response actions for adverse conditions involving its vessels.

The regular day-shift production manager was on vacation August 23–31, 2015, and during that time, the dayshift crane manager took over the production manager’s responsibilities. The crane manager did not know the condition of the barges and made no rounds of them. At 0730 on August 29, the captain of a crew boat transporting company personnel throughout its fleet reported that the Margaret was listing. The crane manager went out and started two pumps, which pumped out about 7 feet of water from the barge by the time his shift ended. The night-shift production manager estimated that the Margaret’s water ingress flooding rate had tripled.

Neither manager notified company officials of the barge’s list or the change in flooding rate. At 0800 on August 30, the crane manager dewatered the Margaret and determined that the barge’s freeboard had returned to normal. During the next shift, the nightshift production manager made four rounds of the barges by small boat. On his first round at 0230, he observed that the Margaret had a slight list to port, and he started two pumps before departing. On his second round at 2300, he saw that the Margaret had only about 1 foot of freeboard and that one of the two pumps had stopped working. He replaced the failed pump and departed the Margaret with both pumps running.

During his third round at 0130 on August 31, the night-shift production manager again discovered that one of the two pumps had stopped working. He replaced the pump, refueled both pumps, and departed the Margaret with both pumps running.

As he approached the barges for his fourth round at 0330, the production manager noted that the Margaret was listing heavily to port. The port stern soon submerged, followed by the rest of the barge. The Margaret was raised on October 3, 2015. An investigator from Coast Guard Sector New Orleans who examined the barge noted no obvious location of water ingress into the port stern void; however, the void was filled with 2 feet of river mud.

The National Transportation Safety Board determined that the probable cause of the sinking of deck barge Margaret was flooding of the port stern void due to the barge’s overall lack of maintenance and watertight integrity. Contributing to the sinking was the barge company’s lack of formal reporting procedures for its production managers conducting inspection rounds of the barges.
VESSLE GROUP: FISHING

Grounding of Fishing Vessel
Day Island

ACCIDENT LOCATION
VENTURA BEACH, CALIFORNIA

ACCIDENT DATE
01/10/2016

REPORT NUMBER
MAB-16/26

NTSB ID
DCA16FM016

DATE ISSUED
11/15/2016

Figure 54: Fishing vessel Day Island being dismantled on Ventura Beach. PHOTO COURTESY OF MICHAEL GORDON
On January 9, 2016, about 1900, the un-inspected commercial fishing vessel Day Island departed Long Beach, California, for a planned 4–5-day trip to catch shrimp off the California coast, west of the city of Santa Barbara. The Day Island was crewed by a captain, a second operator who assisted the captain in navigating and operating the vessel, and a deckhand. The captain and the second operator initially agreed that the captain would operate the vessel from Long Beach to Santa Barbara. However, before they left Long Beach, the captain told the second operator that he had a toothache and asked the second operator to take over so that he could rest. The second operator agreed.

After the Day Island arrived off Santa Barbara about 0700–0800 the next morning, the three crewmembers began fishing. They worked in cycles: deploying the net, retrieving it, unloading the catch, and then moving the vessel to a different area before beginning the cycle again. According to the second operator, they continued in this manner “on and off,” occasionally taking breaks, until about 1800–1900 that night.

The captain told investigators that the toothache he experienced at the start of the trip had begun about 4–5 days before the voyage. As he explained to investigators, the pain was bearable before he set out from Long Beach, which was why he agreed to take the trip and operate the vessel as captain. However, he said that his pain from the toothache increased after he assisted untangling the net cables during the day on January 10. He initially tried to just tolerate the pain but, because of the intensity, he took medication that a friend had provided him. The captain was unfamiliar with the medication but said that he took two of ten available pills. Because the vessel was destroyed after the accident with the pills still aboard, NTSB investigators were unable to identify the medication and determine its effects on performance.

The captain attempted to back the Day Island off the beach but was unsuccessful. Soon after, units from the Ventura City Fire Department and other first responders arrived on scene. Rescue personnel entered the water and assisted the crew while they exited the vessel.

The owner of the Day Island was unable to cover the cost of removing the vessel from the beach after the accident. Consequently, he transferred ownership to the state, which then arranged to have the vessel dismantled and removed in pieces in order to reduce environmental damage.

The captain likely experienced chronic fatigue from several days of toothache pain that disrupted his sleep each night. He exacerbated that fatigue by awakening early on the day of the accident and engaging in the physically demanding efforts involved in fishing. Thus, he would have easily fallen asleep after being seated in the vessel’s wheelhouse for several hours, even without pain medication.

Additionally, if the medication that the captain took was a prescription analgesic, it likely had sedating qualities sufficient to cause him to sleep. By his taking the second pill, the potentially sedating effects of the medication were magnified, further increasing the likelihood of his falling asleep.

The National Transportation Safety Board determined that the probable cause of the grounding of fishing vessel Day Island was the captain falling asleep while operating it due to the effects of his acute fatigue. Contributing to the grounding was the captain’s use of medication that may have been sedating.
Grounding of Fish-processing Vessel Gordon Jensen

ACCIDENT LOCATION
BELLA BELLA, BRITISH COLUMBIA, CANADA

ACCIDENT DATE
12/19/2015

REPORT NUMBER
MAB–16/18

NTSB ID
DCA16FM013

DATE ISSUED
09/29/2016

Figure 56: Fish-processing vessel Gordon Jensen undergoing postaccident repairs in Ketchikan, Alaska.

The master was in the wheelhouse navigating the vessel at the time. He had set the vessel’s steering to autopilot for the passage. The autopilot had built-in alarm features that, if properly set, would have alerted him when the vessel veered off track into shallow water. However, the master did not set these alarms.

The grounding occurred as the crew was preparing for an abandon-ship drill that the master had scheduled to begin at 1815. The master told investigators that, in hindsight, scheduling the drill for a time when the vessel would be traversing a narrow passage was a mistake. He said that he was distracted from navigating by his supervision of the drill, and told investigators that had he waited 15 minutes, “I would have been in pretty clear, open water and would not have had to focus as much on the navigation part there, as opposed to where I was.”

In addition, because of the dark evening, the master had illuminated numerous deck lights in advance of the drill to enable vessel personnel to readily locate and proceed to their assigned muster stations. Postaccident, the master believed that these lights limited his ability to scan the environment and restricted his navigation to radar.

Investigators attempted to determine why the master—who, according to his estimate, had made 50 transits through that waterway and had years of experience as a fishing vessel master—decided to conduct a drill while transiting the narrow waterway. The vessel’s safety officer and the fish-processing operations manager tested the master for alcohol about 1940 that evening using a saliva swab. The result was positive for alcohol consumption, and a second swab revealed the same result. Consequently, at 2037, company officials took a breathalyzer sample of the master. The master’s breath alcohol level indicated that at the time of the accident his level exceeded the Coast Guard’s maximum-allowable alcohol level of 0.040 gm/dl and likely ranged from about 0.066 to 0.076 gm/dl. At 2100, company officials searched the master’s onboard living quarters, which he shared with his spouse, and two mostly empty bottles of alcohol were found. The company prohibited possession and consumption of alcohol on its vessels.

In addition, the master told investigators, and Coast Guard medical records confirmed, that he was taking gabapentin, an anti-seizure medication that may be sedating. The master’s physician had prescribed the gabapentin to treat back pain. The Coast Guard approved the master’s use of the drug after reviewing supplemental information that the physician provided about the master’s acceptable history of its use. The approval of the master’s using gabapentin was predicated on his avoiding the use of other medications, including over-the-counter ones, simultaneously.

The master also told investigators that he had taken an over-the-counter cold medicine the afternoon of the accident because he was having flu-like symptoms and stomach problems that caused him to use the restroom frequently, even during the night. The medication contained doxylamine, a sedating antihistamine that is also the active ingredient in over-the-counter sleep aids. The medication also contains 10-percent alcohol, which investigators ruled out as having caused the master’s breath alcohol level but may have been sedating.

Therefore, at the time of the accident, the master was under the influence of alcohol and two sedating medications that interacted with each other. Moreover, he was sleep-deprived as a result of being awakened numerous times throughout the night by his coughing and the need to use the restroom. Consequently, the master’s ability to make good decisions, to shift attention as needed, and to quickly react to events, among other cognitive skills, was compromised at the time of the accident.

The National Transportation Safety Board determined that the probable cause of the grounding of fish-processing vessel Gordon Jensen was the combined effects of prescription pain medication, over-the-counter cold medication, alcohol, and sleep deprivation, which led to the master’s impaired cognitive performance, preventing him from recognizing that he could not effectively perform the duties and responsibilities of master.
Grounding of Commercial Fishing Vessel SeaHawk No. 68

ACCIDENT LOCATION
PAGO PAGO, AMERICAN SAMOA
PALA LAGOON

ACCIDENT DATE
05/22/2015

REPORT NUMBER
MAB-16/02

NTSB ID
DCA15LM022

DATE ISSUED
02/11/2016

Figure 58: Fishing vessel SeaHawk No. 68 grounded on its port side.
PHOTO BY COAST GUARD
On May 21, 2015, the Taiwan-flagged fishing vessel SeaHawk No. 68 was transiting en route to Pago Pago, American Samoa. The wheelhouse of the SeaHawk No. 68 was outfitted with an autopilot system, a global positioning system, and an electronic chart display and information system (ECDIS). However, the captain had not updated the navigational charts stored in the vessel’s ECDIS computer during the 11 months he had been aboard the vessel. The vessel was not equipped with a fathometer.

Crewmembers spoke only their native language; consequently, the captain and engineer who were Chinese were unable to communicate with the rest of the crew who were Indonesian. Moreover, those assigned as watchstanders were not provided with written instructions or checklists for watchstanding, lifesaving, or emergency procedures, nor were they trained in these areas.

About 2300, the SeaHawk No. 68 was about 27 miles east of Pago Pago Harbor. With plans to arrive in the harbor at 0830 the next day, the captain shut down the engine to delay the vessel’s arrival until morning. About 0100 on May 22, he restarted the engine and set the autopilot so that the vessel would travel in a westerly direction at about 8 knots. Three hours later, he shifted the engine to idle to allow the vessel to drift (likely because it was closer to the harbor than anticipated) and then left the wheelhouse, without advising the safety/lookout crewmembers of his intentions. The wheelhouse of the SeaHawk No. 68 was poorly equipped to provide information to the watchstanders about his navigation plans and maneuvering intentions, while the language barrier exacerbated the situation.

The watchstanders reported seeing lights along the shoreline as well as the beacon from Pago Pago International Airport, but they did not notify the captain.

At 0520, there was “panic” in the wheelhouse, according to one crewmember, when a large wave came from behind pushing the vessel forward toward a reef. The captain returned to the wheelhouse and attempted to put the engine astern, but the vessel had grounded. The SeaHawk No. 68 then rolled to its port side. The crew prepared to abandon ship, but had to locate a knife to cut away lines securing the liferaft to its storage bracket. The crew boarded the liferaft after it deployed. The liferaft then floated to the shore.

Coast Guard investigators found that the SeaHawk No. 68’s emergency position indicating radio beacon (EPIRB) battery had expired in July 2011. The EPIRB transmits a coded message to facilitate search and rescue services during emergencies. The captain was the only crewmember who knew how to operate the EPIRB.

In addition, the SeaHawk No. 68’s ship inspection certificate indicated that the vessel was equipped with safety equipment for 21 persons, yet the vessel was carrying 22 persons at the time of the accident.

While examining the grounded-vessel’s sister vessel, the SeaHawk No. 18, investigators found that personal flotation devices (PFDs) were stored in a locked fiberglass box without a key nearby. Two crewmembers selected to don PFDs struggled to properly put on and fasten them. The captain of the SeaHawk No. 68 stated that the PFDs aboard his vessel were typically kept in the crew’s chambers. However, two days before the accident he had the PFDs moved to a locked box to prevent theft while in port.

Investigators also found that the liferaft on the SeaHawk No. 18 was improperly secured using several lines. The captain and the engineer of the SeaHawk No. 68 stated that the liferaft aboard their vessel was secured in the same manner, which is why crewmembers had to use a knife to release it. Neither vessel’s liferaft was equipped with a hydrostatic-release device.

The liferafts aboard the SeaHawk No. 18 were found to have been significantly deteriorated, similar to the degraded condition of the liferafts aboard the SeaHawk No. 68, according to the vessel’s crew. Although not a factor in this accident, the issues with the lifesaving equipment aboard both vessels demonstrated the owner/operator’s lack of emphasis on safety.

Lack of communication and training were significant factors in the accident. The captain provided no information to the watchstanders about his navigation plans and maneuvering intentions, while the language barrier exacerbated the situation.

The National Transportation Safety Board determined that the probable cause of the grounding of the commercial fishing vessel SeaHawk No. 68 was the captain’s failure to effectively monitor the vessel’s position and progress as well as provide specific watchstanding instructions. Contributing to this accident was the owner/operator’s lack of policies and procedures for navigation and training of vessel crewmembers.
Towing by Coast Guard Cutter *Kiska* of Recreational Vessel *Kolina*, Resulting in Loss of Life

**ACCIDENT LOCATION**

ALENUIHAHA CHANNEL
26 NAUTICAL MILES SOUTH OF MAUI, HAWAII

**ACCIDENT DATE**
11/05/2015

**REPORT NUMBER**
MAB-16/19

**DATE ADOPTED**
10/03/2016

**NTSB ID**
DCA16PM005

**PHOTO BY COAST GUARD**

Figure 60: Sailing vessel *Kolina* adrift during Coast Guard search and rescue operations.
On November 5, 2015, about 1551 local time, the captain of the recreational sailing vessel *Kolina* radioed US Coast Guard Station Maui (Hawaii) via VHF radio to report that he was adrift in the Alenuihaha Channel between the islands of Hawaii and Maui. He said the vessel’s tiller had snapped and he had only a mizzenmast with a trysail for propulsion.

The captain requested that the Coast Guard tow his vessel across the channel to Molokai. Coast Guard Sector Honolulu command center (SCC) classified the captain’s radio call as a distress incident and coordinated with its search-and-rescue mission coordinator to provide a tow.

A Coast Guard helicopter located the *Kolina* and vectored the Coast Guard cutter *Kiska*, a 110-foot-long patrol boat, toward the *Kolina*’s location. The *Kiska* arrived on scene at 2123 and prepared to take the sailing vessel under tow. The *Kolina* captain reiterated twice that he wished to remain aboard the *Kolina* to monitor a portable dewatering pump, as the vessel was taking on water. The *Kolina* captain attached the towline to the keel-stepped mizzenmast (located about 6.5 feet aft of the bow) due to lack of deck fittings, forward cleats, and a bullnose chock at the bow.

The *Kolina* captain radioed the *Kiska* and stated that the mizzenmast was the strongest point on the vessel to which to attach the towline. However, the jury-rigged mizzenmast was smaller in diameter than the main mast for which the stepped-in collar was originally fitted, and the mizzenmast was not supported to compensate for this size disparity; nothing was preventing the mizzenmast from moving laterally inside the collar. Furthermore, the mizzenmast was inadequately equipped with only polypropylene line instead of customary wire-rope standing rigging.

About 2242, the tow was established and the two vessels got under way about 2250. Due to the darkness, a rough sea state, and the length of the towline, the *Kiska* crew did not have visual sight of the *Kolina* or the captain.

Sometime between 2258 and 2305, the *Kiska* crew, who had communicated continually with the *Kolina* captain, lost radio contact with him. They shortened the towline from the original 325 feet to about 100 feet to try to gain visibility of the *Kolina* and the captain. The *Kiska* crew then noted that the *Kolina*’s mizzenmast had snapped and was floating in the water. They could not see the captain nor re-establish contact with him. The *Kiska* crew continued to shorten the towline; eventually, at 2331, they cut the line to prevent the *Kiska*’s propellers from being fouled in the *Kolina*’s rigging.

The *Kiska* crew tried unsuccessfully to locate the captain, and the SCC directed a helicopter to the scene. The helicopter crew conducted a brief search, deployed a rescue swimmer to confirm that the captain was not on board the *Kolina*, and, together with the *Kiska* crew, conducted additional search patterns.

The SCC deployed additional search assets the following morning, and, at 0917, a Maui-based response boat crew found the captain in the water underneath the *Kolina*, entangled in the mast rigging and unresponsive. The captain’s body was brought ashore and an autopsy was later conducted. The results indicated that the captain suffered a fatal head injury, which occurred on board the vessel before he went into the water.

Shortly after 1900 on November 6, the *Kolina* was swamped by the large rolling seas and sank about 37 miles south of Maui.

Investigators learned that the vessel was in poor condition prior to the accident. Fittings and equipment throughout the vessel were broken, and there was significant water leakage. The operating company of a vessel that had previously towed the *Kolina* told investigators that “the vessel was in no condition to be in the water, let alone go outside the harbor.” State officials familiar with the vessel expressed amazement that the captain would consider attempting a cross channel voyage in a vessel as degraded as the *Kolina*.

The National Transportation Safety Board determined that the probable cause of the accident involving Coast Guard cutter *Kiska* and recreational vessel *Kolina*, with the death of the *Kolina* captain, was the *Kolina* captain’s decision to launch and operate a poorly maintained vessel and his failure to protect his personal safety during the subsequent tow in the Alenuihaha Channel.
Lessons Learned from Marine Accident Investigations

Fatigue

Fatigue continues to be a leading cause of accidents among all modes of transportation, and reducing fatigue-related accidents is once again a top safety improvement on the NTSB’s Most Wanted List. Mariners should recognize the effects of sleep loss on performance and should never take a watch while too fatigued to be fit for duty. When fatigued to the point that it affects the ability to properly stand a watch, mariners should arrange for a qualified watchstander to serve in their place or otherwise avoid being on duty until they are able to safely carry out their responsibilities.

Fatigue was a significant factor in the Key Largo/Sea Shepherd, Day Island, and Gordon Jensen accidents.

Use of Medication While Operating Vessels

For the safety of the crew, equipment, and vessel, use of medication in conjunction with the operation of a vessel must be done with caution. Mariners are encouraged to consult with a medical professional before using any medication, whether prescribed or over the counter. (For credentialed mariners, use of certain medications can be disqualifying.) Furthermore, mariners should never use medications that they are unfamiliar with or for which they are not the prescribed user. In many states, use of a prescription drug that is not prescribed to the user is illegal.

Improper use of medication, combined with fatigue, played a role in the Day Island and Gordon Jensen accidents.

Standard Maintenance and Repair Procedures

The NTSB continues to see fires and other accidents caused by failures to adhere to standardized procedures during the maintenance, repair, and testing of equipment. Standardized procedures, which include the use of proper tools and parts, ensure system integrity and the safe operation of equipment within designed specifications.

Failure to effectively use standardized procedures and manufacturer-recommended parts contributed to the Gunde Maersk and Ferrigno Boy accidents.

Operational Testing Procedures

After repairs or maintenance, operational testing of equipment should be performed using standardized procedures. Where possible, testing should be conducted at normal operational pressures and loads to verify the quality and reliability of the maintenance or repair. Vessels should also have procedures to regularly test all alarms and sensors to verify operation so that the crew has early warning of developing hazards.

The absence of a standardized testing procedure was a factor in the Gunde Maersk fire.

The inability to test all bilge alarms on the Kupreanof may have contributed to the lack of any indications that the vessel was beginning to flood.

Operating In Strong Currents

Operating in strong currents—particularly during high-water conditions when currents are stronger than normal—presents unique challenges to mariners, including maneuvering difficulties and increased risk of dragging anchor or parting lines. Owners and operators should encourage mariners to be aware of prevailing conditions, assess dangers, heed Coast Guard and other authoritative guidance, and take measures to reduce risks.

Unusually high water on the Mississippi led to the breakaway of the Privocean from its moorings and the subsequent collision of the bulk carrier with two other vessels. The danger of strong currents is particularly significant while performing the “downstreaming” maneuver practiced in the inland towing industry. An attempted downstreaming maneuver in a strong current resulted in the sinking of the towing vessel Miss Natalie.

“The accidents in Safer Seas Digest involved loss of life, injuries, and property damage. The lessons learned in these accidents can prevent such losses in the future if marine stakeholders apply what has been learned.”
Familiarization with Local Recommendations

Vessel operators should be familiar with and heed the recommendations and guidance of local experts and publications such as the United States Coast Pilot.

- In the Capt. Shorty C/Jackie collision and the Gayle Force allision, cautionary information that may have prevented these accidents was provided in the Coast Pilot, yet the information was not reviewed or simply ignored.

- In the Gayle Force accident, the captain of the tow vessel also failed to use the local expertise of his assist tugboat captain.

Bridge Resource Management

Bridge Resource Management (BRM) is the utilization of all available resources, including equipment and human resources, to safely operate a vessel. BRM is particularly important in piloting waters where hazards are at close range and reaction times are limited. All members of the bridge team contribute to effective BRM, and the presence of a pilot on board does not relieve the master or the crew of their responsibility for the safe navigation of the ship.

- Inadequate bridge resource management during piloting situations were contributing causes in the St. Louis Express/Hammersmith Bridge and Conti Peridot/Carla Maersk collisions.

- A failure to assign a proper lookout—also an element of BRM—was noted as a factor in the Connor Bordelon allision and the Diamond Edge/B.W. Haley collision.

Distraction

The hazard of distraction has been well documented in other modes of transportation, particularly on roadways, but marine transportation is not immune to its effects. Communicating with crew and dispatchers, checking instruments and equipment, and completing scheduled tasks may be part of normal work duties, but engaging in tasks other than vessel operation can have dangerous consequences. Eliminating distractions in all modes of transportation is one of the top safety improvements on the NTSB’s Most Wanted List.

- In the P.B. Shaw/Dewey R accident, distraction by radio traffic and pilot house conversation caused confusion while making vessel meeting arrangements, eventually leading to a collision.

Safety Equipment

Owner/operators and vessel crewmembers must maintain safety equipment so that it functions as designed in an emergency and provides crewmembers with the best chance for survival. Owner/operators should also ensure that there is sufficient safety equipment on board for each crewmember and that it is readily available in an emergency.

- The investigation into the SeaHawk No. 68 accident found numerous deficiencies with the safety equipment on board the accident vessel and a sister vessel, including PFDs stored in a locked storage box, liferafts secured to their cradles with several lines instead of hydrostatic-release devices, and liferings that were faded, cracked, and deteriorated.

Access to High-Risk Spaces

Blocking access to high-risk spaces is a safety hazard, particularly in those spaces that have hull penetrations such as a steering gear room. Without access, operators cannot be sure of the condition of the space, nor can they respond when emergencies such as flooding affect those spaces.

- In the Kupreanof accident, access to the lazarette was obstructed by equipment on deck, which prevented crewmembers from determining the source of flooding and possibly addressing the hazard.
### Vessel Particulars

<table>
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<th>Vessel</th>
<th>Flag</th>
<th>Type</th>
<th>Length</th>
<th>Draft</th>
<th>Beam/Width</th>
<th>Persons on Board</th>
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## Accident Locations

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<td>Gulf of Mexico</td>
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<td>Fishing Vessel Ferrigno Boy</td>
<td>Ventura Harbor, California</td>
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<td></td>
<td>Barge Gayle Force / Tugboat Simone</td>
<td>Chesapeake, Virginia</td>
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<td>Capsizing</td>
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### KEY TO VESSEL GROUPS

- **Cargo**
  - Bulk Carriers
  - Containerships
  - Freighters
- **Fishing**
  - Fish Tenders
  - Fish-processing Vessels
  - Fishing Vessels
- **Offshore Supply**
  - Liftboats
  - Offshore Supply Vessels
  - Passenger Vessels
- **Public**
  - Coast Guard Cutters
- **Recreational**
  - Sailing Vessel
- **Tanker**
  - Self-propelled Tank Vessels
- **Towing/Barge**
  - Barges
  - Towing Vessels
  - Tugboats
## Acknowledgments

For each marine accident the NTSB investigated, investigators from the Office of Marine Safety worked closely with the following Coast Guard units:

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### Who has the lead:

Coast Guard or NTSB?

In a memorandum of understanding (MOU) signed December 18, 2008, the NTSB and the US Coast Guard agreed that when both agencies investigate a marine casualty, one agency will serve as the lead federal agency for the investigation. The NTSB Chairman and the Coast Guard Commandant, or their designees, will determine which agency will lead the investigation. The NTSB may lead the investigation of “significant marine casualties,” defined in the MOU as a loss of three or more lives on a commercial passenger vessel; loss of life or serious injury to 12 or more persons on any commercial vessel; loss of a mechanically propelled commercial vessel of 1,600 or more gross tons; loss of life involving a highway, bridge, railroad, or other shore side structure; serious threat, as determined by the NTSB Chairman and the Coast Guard Commandant, or their designees, to life, property, or the environment by hazardous materials; and significant safety issues, as determined by the NTSB Chairman and the Coast Guard Commandant, or their designees, relating to Coast Guard marine safety functions.
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SAFER SEAS DIGEST

Lessons Learned from Marine Accident Investigations

National Transportation Safety Board

2016