



SAFER SEAS DIGEST

LESSONS LEARNED FROM MARINE ACCIDENT INVESTIGATIONS

2016



NATIONAL
TRANSPORTATION
SAFETY BOARD

SAFER SEAS DIGEST

2016

The bottom half of the cover features a background image of a turbulent sea with large, white-capped waves under a dark, overcast sky. The entire image is overlaid with a semi-transparent orange filter.

LESSONS LEARNED FROM
MARINE ACCIDENT
INVESTIGATIONS

MISSION

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.





A message
from the
Acting Chairman



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,

A handwritten signature in blue ink that reads "Robert L. Sumwalt, III". The signature is written in a cursive style with a small flourish at the end.

Robert L. Sumwalt, III
Acting Chairman

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Abbreviations

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

Vessels covered in this Digest, listed by Group and Accident Type

VESSEL GROUP	VESSEL TYPE	NAME	ACCIDENT TYPE
CARGO Bulk Carriers, Containerships, Freighters	Freighter	<i>Alpena</i>	Fire
	Bulk Carrier	<i>Conti Peridot</i>	Collision
	Containership	<i>Gunda Maersk</i>	Fire
	Containership	<i>Hammersmith Bridge</i>	Collision
	Containership	<i>Monte Alegre</i>	Collision
	Bulk Carrier	<i>Privocean</i>	Collision
	Containership	<i>St. Louis Express</i>	Collision
FISHING Fishing Vessels, Fish Tenders, Fish-processing Vessels	Fishing	<i>Capt Richie Rich</i>	Flooding
	Fishing	<i>Day Island</i>	Grounding
	Fishing	<i>Ferrigno Boy</i>	Allision
	Fish-processing	<i>Gordon Jensen</i>	Grounding
	Fishing	<i>Hawaii Five-1</i>	Capsizing
	Tender	<i>Kupreanof</i>	Flooding
	Fishing	<i>Miss Eva</i>	Fire
	Tender	<i>Northern Pride</i>	Fire
	Fishing	<i>Sea Shepherd</i>	Collision
Fishing	<i>SeaHawk No. 68</i>	Grounding	
OFFSHORE SUPPLY Offshore Supply Vessels, Passenger Vessels, Liftboats	Liftboat	<i>B.W. Haley</i>	Collision
	Offshore Supply	<i>Connor Bordelon</i>	Allision
	Passenger	<i>Diamond Edge</i>	Collision

VESSEL GROUP	VESSEL TYPE	NAME	ACCIDENT TYPE
PUBLIC Coast Guard Cutters	Cutter	<i>Key Largo</i>	Collision
	Cutter	<i>Kiska</i>	Loss of Life
RECREATIONAL	Sailing	<i>Kolina</i>	Loss of Life
TANKER Self-propelled Tank Vessels	Tanker	<i>Bravo</i>	Collision
	Tanker	<i>Carla Maersk</i>	Collision
	Tanker	<i>Chembulk Houston</i>	Collision
TOWING/BARGE Towing Vessels, Tugboats, Barges	Towing	<i>Capt. Shorty C</i>	Collision
	Towing	<i>Dewey R</i>	Collision
	Barge	<i>Gayle Force</i>	Allision
	Towing	<i>Jackie</i>	Collision
	Towing/Barge	<i>Lucia/Caribbean</i>	Collision
	Barge	<i>Margaret</i>	Flooding
	Towing	<i>Margaret Ann</i>	Collision
	Towing	<i>Miss Natalie</i>	Collision
	Towing	<i>P. B. Shaw</i>	Collision
	Towing	<i>San Gabriel</i>	Fire
	Tugboat	<i>Simone</i>	Allision
	Tugboat	<i>Texas</i>	Collision
Towing	<i>William E Strait</i>	Collision	
Tugboat	<i>William S</i>	Collision	



VESSEL GROUP: OFFSHORE SUPPLY

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

NTSB ID

DCA15LM012

REPORT NUMBER

MAB-16/03

DATE ISSUED

02/12/2016

Figure 1: Damage to offshore supply vessel *Connor Bordelon* resulting from its allision with the unmanned platform.

PHOTO BY COAST GUARD



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.

The conning station had an emergency transfer button that immediately reverted all automation to manual control. Depressing the button would have allowed the mate to manipulate the steering more quickly prior to the accident, but the mate stated that he did not know about the button.

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.

LEARN MORE AT www.nts.gov/investigations/AccidentReports/Pages/mab1603.aspx

Figure 2: South Timbalier 271A platform after the allision and fire.

PHOTO PROVIDED BY COAST GUARD



VESSEL GROUP: **FISHING**

Allision of Fishing Vessel *Ferrigno Boy* with Ventura Harbor Boatyard Travel Lift Pier

ACCIDENT LOCATION

VENTURA HARBOR, CALIFORNIA

ACCIDENT DATE

07/29/2015

NTSB ID

DCA15LM029

REPORT NUMBER

MAB-16/21

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.

PHOTO BY COAST GUARD

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.



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

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.

LEARN MORE AT www.nts.gov/investigations/AccidentReports/Pages/mab1621.aspx ▾

VESSEL GROUP: TOWING/BARGE

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

NTSB ID

DCA15LM021

REPORT NUMBER

MAB-16/16

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



Figure 6: Tugboat *Simone* under way.

PHOTO COURTESY OF WILL VAN DORP, TUGSTER.WORDPRESS.COM

on the towing vessel and any assist vessel. Prior to the start of the towing operation, the *Simone* captain did not hold a company-required safety briefing, he did not brief his crew on their specific duties for the bridge transit, and he did not discuss the towage evolution with the *Maverick* captain. When the *Maverick* captain questioned the *Simone* captain as to “what he needed me to do,” the *Simone* captain replied, “just keep an eye on the barge as I pull it out and then get a line on the back end somewhere.”

The *Simone* captain stated that he stood at the starboard wheelhouse conning station as he navigated the vessel. The *Simone* had large windows that afforded the operator a good view forward, but gear, stanchions, railings, and the stack obstructed the view aft. Therefore, the captain asked the towing vessel’s mate to stand on the starboard bridge wing. The mate said he was “assigned no specific duties” and was an “observer

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.nts.gov/investigations/AccidentReports/Pages/MAB1616.aspx ▾

VESSEL GROUP: **FISHING**

Capsizing and Sinking of Fishing Vessel *Hawaii Five-1*

ACCIDENT LOCATION**GULF OF MEXICO**

161 MILES NORTHEAST OF COZUMEL, MEXICO

ACCIDENT DATE

11/25/2015

REPORT NUMBER

MAB-16/07

NTSB ID

DCA16FM007

DATE ISSUED

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



Figure 8: Satellite image of the Gulf of Mexico with the approximate location of the capsizing and subsequent sinking marked by a red triangle.

BACKGROUND BY GOOGLE EARTH

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.

LEARN MORE AT www.nts.gov/investigations/AccidentReports/Pages/mab1607.aspx ▾

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.

VESSEL GROUP: TOWING/BARGE

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 cumene, was transiting eastward on the Gulf Intracoastal Waterway en route to Theodore, Alabama, from Corpus Christi, Texas. The Gulf Intercoastal 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 naphtha 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 unexpect-



Figure 11: Fire aboard barge EMS 343 after the collision. PHOTO BY PENNENERGY, JULY 2015

edly 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 [expletive] 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.nts.gov/investigations/AccidentReports/Pages/mab1605.aspx ▾

VESSEL GROUPS: TANKER CARGO

Collision Between Tanker *Chembulk Houston* and Containership *Monte Alegre*

ACCIDENT LOCATION**HOUSTON, TEXAS**

HOUSTON SHIP CHANNEL, GALVESTON BAY

ACCIDENT DATE

03/05/2015

NTSB ID

DCA16FM012

REPORT NUMBER

MAR-16/04

DATE ISSUED

02/23/2016

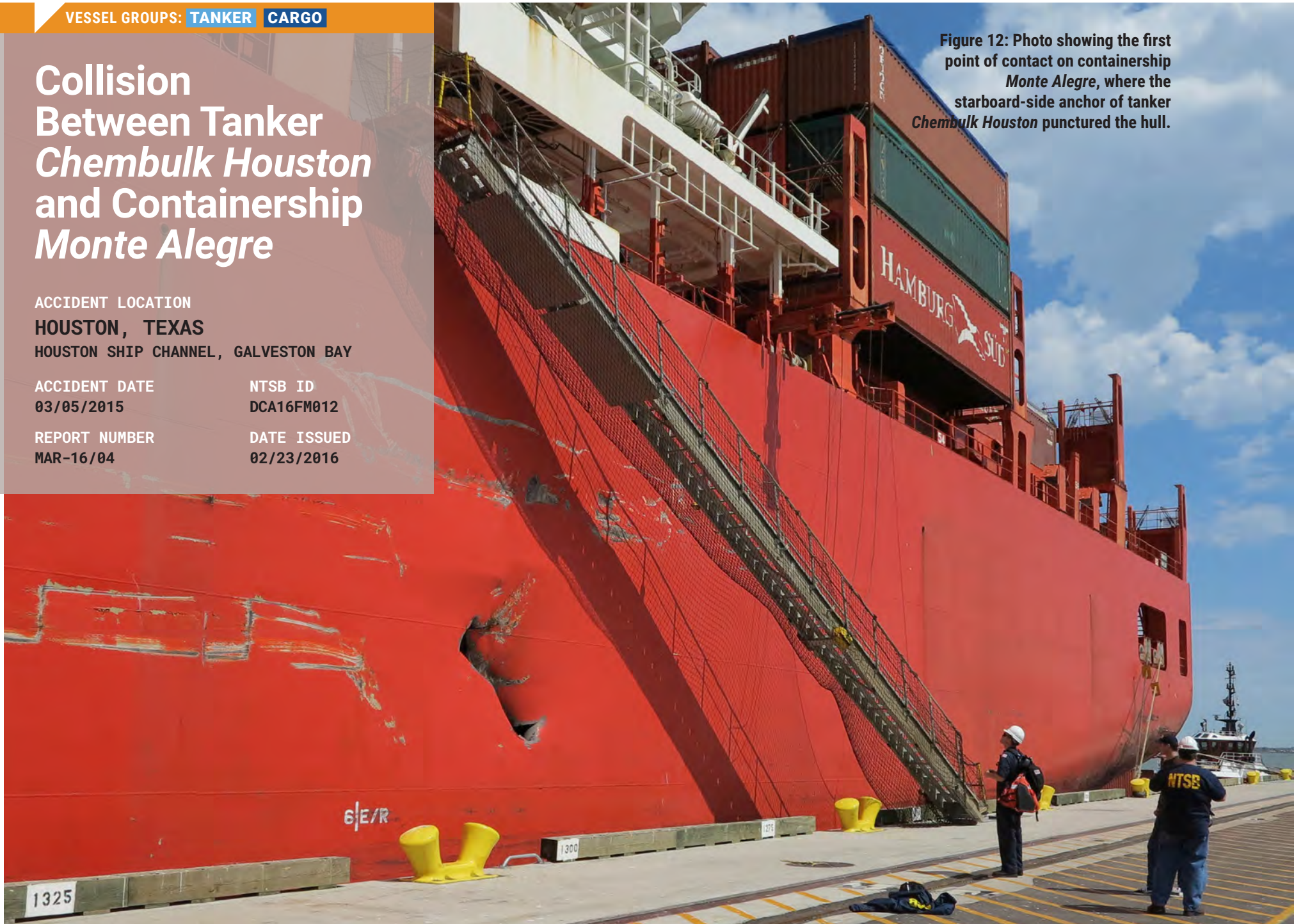


Figure 12: Photo showing the first point of contact on containership *Monte Alegre*, where the starboard-side anchor of tanker *Chembulk Houston* punctured the hull.

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* and transiting at about 6.5 knots. The *Chembulk Houston* was transiting at 10.5 knots. At 1310, 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 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.



Figure 13: Video screen capture of tanker *Chembulk Houston's* bow and anchor in contact with containership *Monte Alegre*.

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* aft 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—departed 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*.

VESSEL GROUPS: CARGO TANKER

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.

LEARN MORE AT www.nts.gov/investigations/AccidentReports/Pages/MAR1601.aspx



Figure 15: Bulk Carrier *Conti Peridot* and tanker *Carla Maersk*, moments after the collision.

PHOTO BY CARLA MAERSK CREWMEMBER

■ 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*.

VESSEL GROUP: TOWING/BARGE

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 dis-



Figure 17: Damaged barge APEX 3508 from *Dewey R* tow; shell and deck plate have been removed. PHOTO BY COAST GUARD

cussion between the vessels, the *Dewey R* captain told the *P. B. Shah* 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*.

LEARN MORE AT www.nts.gov/investigations/AccidentReports/Pages/mab1622.aspx ▾

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.

VESSEL GROUP: OFFSHORE SUPPLY

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.



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

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.

LEARN MORE AT www.nts.gov/investigations/AccidentReports/Pages/mab1606.aspx ▾

VESSEL GROUPS: FISHING PUBLIC

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 *Key Largo* commanding officer's (CO's) *Standing Orders for the Officer of the Deck* required the OOD to inform the CO if he was unable to stand watch, but the OOD made no such report to the CO. The OOD was not asked to provide a reason for failing to inform the CO, but he did provide investigators with information regarding the considerable personal and career-related stress that he was under at the time. This stress may have influenced his decision not to inform the CO.

■ 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.

LEARN MORE AT www.nts.gov/investigations/AccidentReports/Pages/mab1609.aspx ▾

Figures 22–24: Flooding of the *Sea Shepherd* from damage due to the collision. The vessel sank about 2 hours after it was struck.

PHOTOS BY COAST GUARD



VESSEL GROUP: TOWING/BARGE

Collision of Articulated Tug and Barge *Lucia/Caribbean*, Assisted by Tugboat *William S*, with Multiple Barges

ACCIDENT LOCATION

GRETNA, LOUISIANA
LOWER MISSISSIPPI RIVER,
NEAR MILE MARKER 96.5

ACCIDENT DATE
01/15/2016

REPORT NUMBER
MAB-16/11

NTSB ID
DCA16FM017

DATE ISSUED
08/09/2016



Figure 25: Damaged forward portside bow of tank barge *Caribbean* after the collision.

PHOTO BY COAST GUARD

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



on the *Caribbean's* hull. The *William S* mate verbally acknowledged the full-ahead command.

However, about 3 minutes later, the *William S* mate advised the *Lucia* that he was pushing at only 40-percent throttle because he was concerned that the assist tugboat's permanently installed bow-fendering was "riding up on the barge." Crewmembers on the *Lucia* examined the point of contact between the *Caribbean's* hull and the bow of the *William S* and advised the *William S* mate that about 1–1.5 feet of fendering was still touching the barge's hull.

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.

LEARN MORE AT www.nts.gov/investigations/AccidentReports/Pages/MAB1611.aspx

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

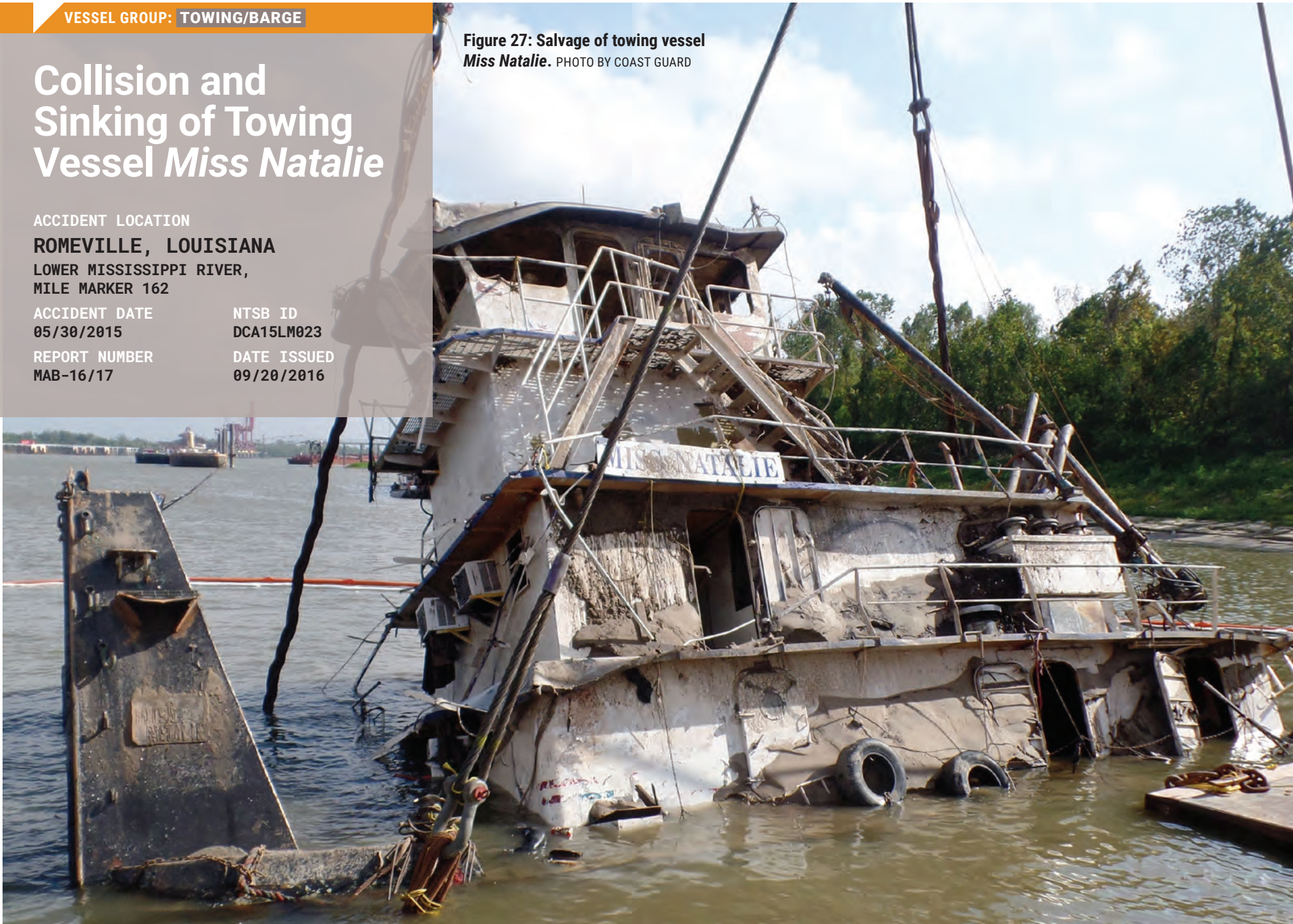


VESSEL GROUP: TOWING/BARGE

Collision and Sinking of Towing Vessel *Miss Natalie*

ACCIDENT LOCATION**ROMEVILLE, LOUISIANA**LOWER MISSISSIPPI RIVER,
MILE MARKER 162**ACCIDENT DATE****05/30/2015****NTSB ID****DCA15LM023****REPORT NUMBER****MAB-16/17****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.

LEARN MORE AT www.nts.gov/investigations/AccidentReports/Pages/MAB1617.aspx

PHOTO BY WESTERN RIVERS BOAT MANAGEMENT



Figure 28: Towing vessel *Miss Natalie*.

Also adding to the safety risk was the speed of the *George W Banta* tow at about 2 mph. The QAT had stated, “As a rule [downstreaming on line tows] should be avoided,” because “if the tow moves at a critical moment, the downstreaming boat may be swept under the rake end of a barge very quickly.”

■ 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.

VESSEL GROUPS: CARGO TANKER TOWING

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.



Figure 30: Bulk carrier *Privocean* drifting across the river, with tanker *Bravo* in the background.

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 tank vessel *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

PHOTO BY CONVENT MARINE TERMINAL CRANE OPERATOR

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.

LEARN MORE AT www.nts.gov/investigations/AccidentReports/Pages/mab1608.aspx ▾

VESSEL GROUP: **CARGO**

Collision Between Containerships *St. Louis Express* and *Hammersmith* Bridge

ACCIDENT LOCATION

HANSWEERT, NETHERLANDS

WESTERN SCHELDT RIVER

ACCIDENT DATE

02/22/2015

NTSB ID

DCA15RM014

REPORT NUMBER

MAB-16/10

DATE ISSUED

06/30/2016

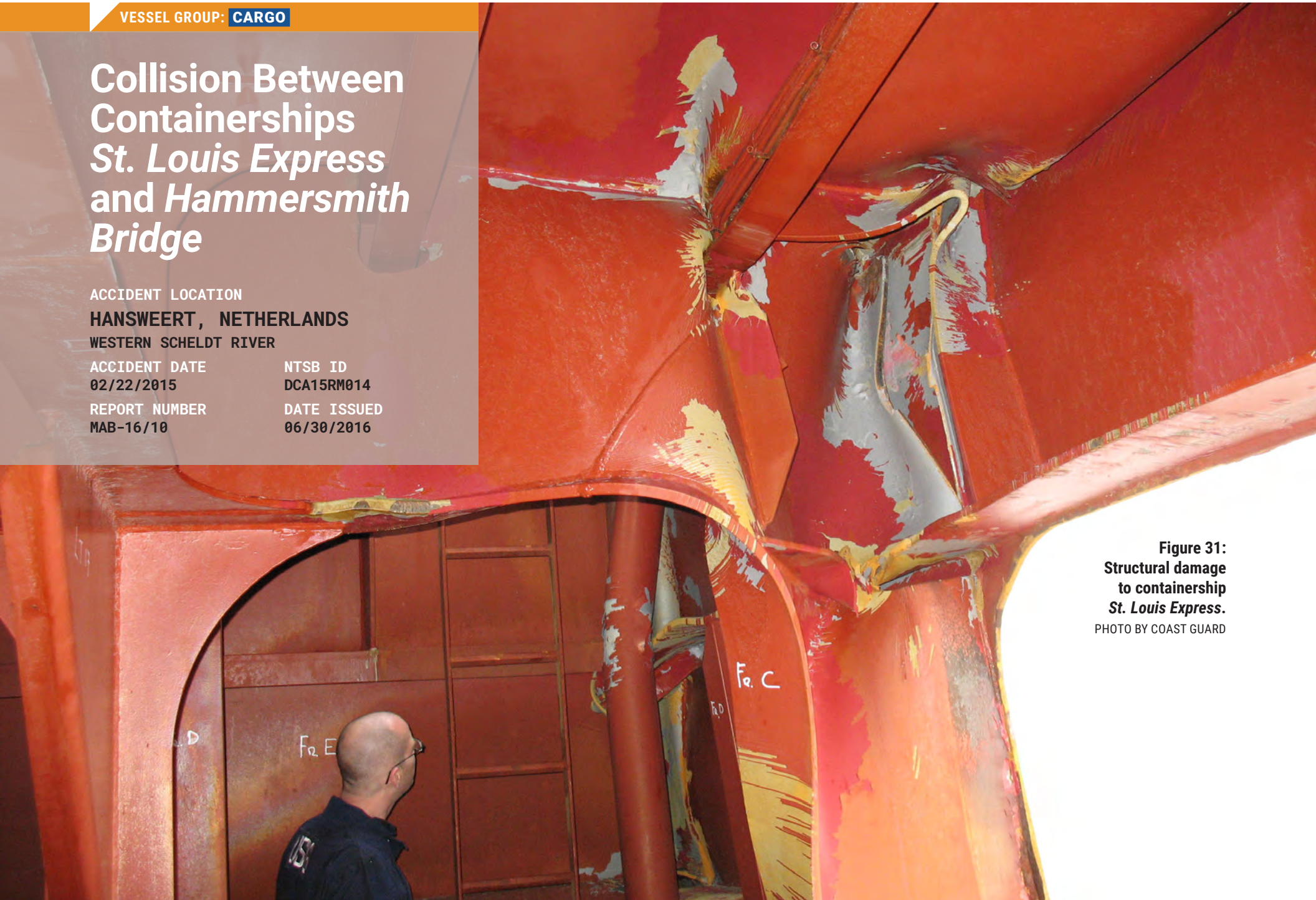


Figure 31:
Structural damage
to containership
St. Louis Express.

PHOTO BY COAST GUARD

At 0433 on February 22, 2015, the US-flagged container-ship *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.



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

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.

The bridge team on the *St. Louis Express* was distinctly hands-off, deferring completely to the pilot. The bridge team could

not understand any communications or warnings from VTS, and they did not recognize the developing situation between both vessels.

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.

LEARN MORE AT www.nts.gov/investigations/AccidentReports/Pages/mab1610.aspx ▾

VESSEL GROUP: TOWING/BARGE

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

NTSB ID
DCA16FM010

REPORT NUMBER
MAB-16/13

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 pro-

pulsion 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



Figure 35: Damaged hull near the starboard stern of the towing vessel *William E Strait*. Photo taken after the vessel was salvaged.

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*.

VESSEL GROUP: **CARGO**

Fire Aboard Freighter *Alpena*

ACCIDENT LOCATION**STURGEON BAY, WISCONSIN
FINCANTIERI BAY SHIPBUILDING****ACCIDENT DATE
12/11/2015****NTSB ID
DCA16FM012****REPORT NUMBER
MAB-16/20****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* crewmembers 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 fire-fighters responded to the accident.



Figure 37: Shoreside fire department units responding to fire on board freighter *Alpena*.

PHOTO BY US COAST GUARD

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.nts.gov/investigations/AccidentReports/Pages/mab1620.aspx ▾

VESSEL GROUP: **CARGO**

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



Figure 39: Fire damage to containership *Gunde Maersk*'s auxiliary engine no. 1 inboard side, looking forward.

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.

LEARN MORE AT www.nts.gov/investigations/AccidentReports/Pages/mab1624.aspx ▾

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.

VESSEL GROUP: **FISHING**

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****Figure 40: Fishing vessel *Miss Eva* on fire.**

IMAGE FROM VIDEO BY CHAD GUIDROZ



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 annunciators 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 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 master was severely burned, sustaining second- and third-degree burns to 60 percent of his body, while the senior deckhand sustained third-degree burns to 9 percent of his body. The third crewmember stayed on board and placed a ladder on the side of the vessel so that the master and the senior deckhand could re-board.

A second explosion then occurred that blew out the wheelhouse windows. A deckhand, who had been manually releasing the vessel's six-person liferaft located

on top of the wheelhouse, received burns to 6 percent of his body and was forced to jump 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 the *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.

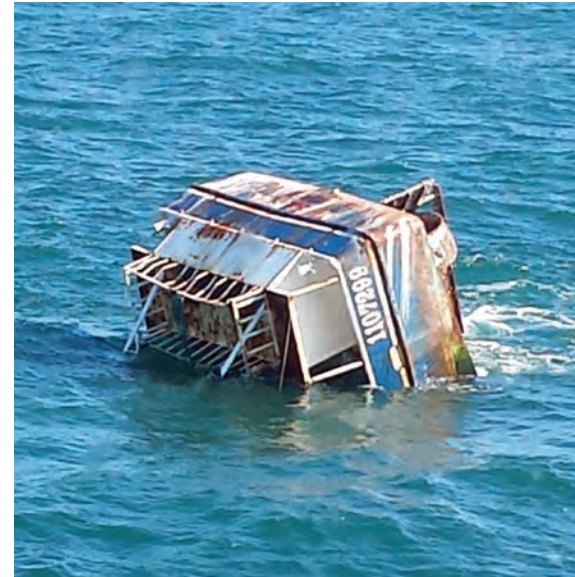


Figure 41: Fishing vessel *Miss Eva* sinking bow down.

PHOTO PROVIDED BY MASTER OF SISTER VESSEL *NIKOLAS*

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 condi-

tion 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.

LEARN MORE AT www.nts.gov/investigations/AccidentReports/Pages/MAB1601.aspx

VESSEL GROUP: **FISHING**

Fire on Board Fishing Vessel *Northern Pride*, with Subsequent Capsizing

ACCIDENT LOCATION

GULF OF ALASKA

12 MILES EAST OF SHUYAK ISLAND, ALASKA

ACCIDENT DATE

04/21/2015

NTSB ID

DCA15LM020

REPORT NUMBER

MAB-16/12

DATE ISSUED

08/12/2016

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 genera-



Figure 45: Fishing vessel *Northern Pride* with smoke exiting the forepeak and wheelhouse. PHOTO BY COAST GUARD

tors, 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.

LEARN MORE AT www.nts.gov/investigations/AccidentReports/Pages/mab1612.aspx

VESSEL GROUP: TOWING/BARGE

Fire Aboard Towing Vessel *San Gabriel*

ACCIDENT LOCATION

HOUSTON, TEXAS

LYONDELLBASELL REFINERY DOCK "D"

ACCIDENT DATE

02/26/2016

NTSB ID

DCA16FM027

REPORT NUMBER

MAB-16/25

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 fire-hose 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.



Figure 47: Fire damage to the towing vessel *San Gabriel* galley located on the main deck. PHOTO BY COAST GUARD

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 *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.

■ 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.nts.gov/investigations/AccidentReports/Pages/MAB1625.aspx

VESSEL GROUP: **FISHING**

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****NTSB ID****DCA15LM033****REPORT NUMBER****MAB-16/14****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

In the evening on August 30, 2015, the uninspected fishing vessel *Capt Richie Rich* was underway and trawling for shrimp in coastal waters about 10 miles southwest of Point au Fer, Louisiana. The vessel was rigged for double-beam trawling, with fishing gear deployed on both the port and starboard sides. About 2200, the vessel's port outrigger broke and penetrated the vessel's hull below the waterline. The breach led to an uncontrolled ingress of water into the engine room followed by the loss of electrical power. The *Capt Richie Rich* began listing to starboard and then partially sank in 10–12 feet of water.

The crewmembers stated that they did not have time to make a distress call before abandoning the vessel. They launched two liferafts and abandoned the *Capt Richie Rich*, taking with them the vessel's

emergency position indicating radio beacon (EPIRB). They then fired about 10 emergency flares, with no immediate sign of detection. After tying the liferaft to the sunken fishing vessel, the crewmembers waited for rescue. Based on their recount of events, they attempted to activate the EPIRB; however, no EPIRB alerts were received by the Eighth US Coast Guard District command center in New Orleans, Louisiana. It was later determined that the crewmembers did not properly activate the EPIRB. Rather than turning on the beacon and leaving it activated, they were turning the device on and then off.

At 1154 on August 31, 2015, the crew on a passing commercially operated helicopter spotted both the liferaft and the partially sunken *Capt Richie Rich* and reported the situation to the Coast Guard. In response, the Coast Guard launched a short-range recovery helicopter from Coast Guard Air Station New Orleans and diverted a nearby 29-foot-long small response boat from Marine Safety Unit Morgan City (Louisiana). A good Samaritan vessel arrived on scene and located the survivors after they fired off another flare. Later, the response boat crew safely rescued the three crewmembers, who were subsequently transported to Morgan City.

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.



LEARN MORE AT www.nts.gov/investigations/AccidentReports/Pages/MAB1614.aspx

VESSEL GROUP: **FISHING**

Sinking of Fishing Vessel *Kupreanof*

ACCIDENT LOCATION**GULF OF ALASKA**
50 MILES WEST-NORTHWEST OF
CAPE SPENCER, ALASKA**ACCIDENT DATE****06/10/2015****NTSB ID****DCA15LM025****REPORT NUMBER****MAB-16/23****DATE ISSUED****10/26/2016**

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



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 seas 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 said the report surprised him based on what he had seen in the earlier report.



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.

After unsuccessfully attempting to resolve the port 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.

LEARN MORE AT www.nts.gov/investigations/AccidentReports/Pages/mab1623.aspx

VESSEL GROUP: TOWING/BARGE

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

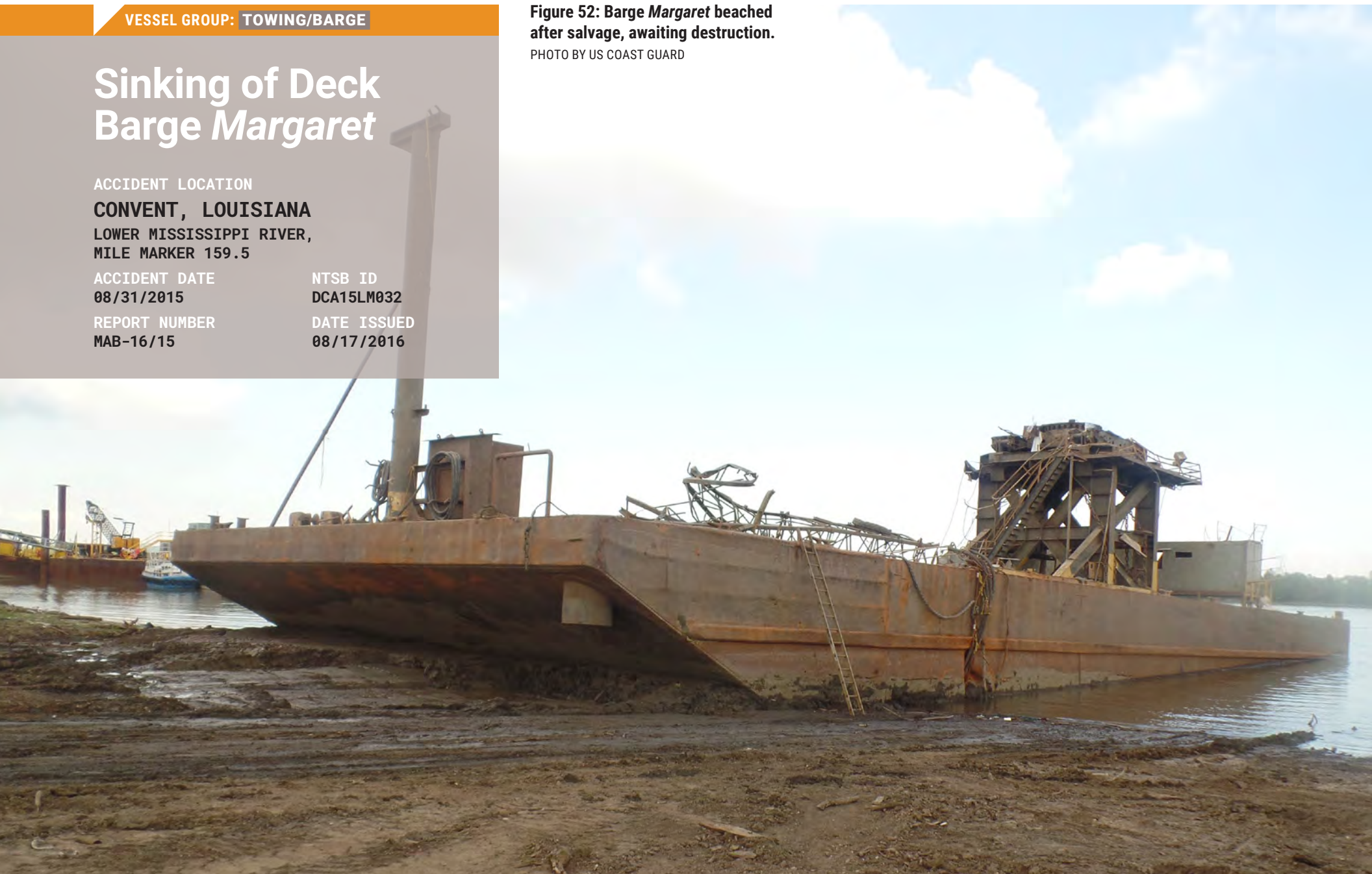
DCA15LM032

DATE ISSUED

08/17/2016

Figure 52: Barge *Margaret* beached after salvage, awaiting destruction.

PHOTO BY US COAST GUARD



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



Figure 53: Portable pump and hose rigged to dewater a void on a similar deck barge.

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 day-shift 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 2030, 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.

VESSEL GROUP: **FISHING**

Grounding of Fishing Vessel *Day Island*

ACCIDENT LOCATION

VENTURA BEACH, CALIFORNIA

ACCIDENT DATE

01/10/2016

NTSB ID

DCA16FM016

REPORT NUMBER

MAB-16/26

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 uninspected 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.



Figure 55: Fishing vessel *Day Island* on Ventura Beach, California, after the grounding. PHOTO COURTESY OF MICHAEL GORDON

The captain told investigators that the first pill relieved the pain; he felt “normal” afterwards and experienced only the type of fatigue that “everybody felt” when working aboard a fishing vessel. He did not see a problem, therefore, taking the second pill 4–5 hours later.

After the day’s fishing was completed, the *Day Island* headed toward Ventura Harbor, California, to the southeast of Santa Barbara, to offload the day’s catch. For the 2.5-hour transit to Ventura Harbor, the captain operated the vessel using autopilot while he sat in the wheelhouse. He told investigators that, at some point, he fell asleep and was awakened about 30 minutes later when the vessel ran aground on Ventura Beach, about 1.25 miles north of the harbor.

LEARN MORE AT www.nts.gov/investigations/AccidentReports/Pages/MAB1626.aspx ▾

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.

VESSEL GROUP: **FISHING**

Grounding of Fish-processing Vessel *Gordon Jensen*

ACCIDENT LOCATION**BELLA BELLA, BRITISH COLUMBIA,
CANADA****ACCIDENT DATE**
12/19/2015**NTSB ID**
DCA16FM013**REPORT NUMBER**
MAB-16/18**DATE ISSUED**
09/29/2016

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

On December 19, 2015, about 1810 local time, the US-flagged fish-processing vessel *Gordon Jensen*, en route from Seattle, Washington, to Dutch Harbor, Alaska, grounded in a narrow passage near the town of Bella Bella, British Columbia, about 250 miles northwest of Vancouver, Canada.

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



Figure 57: Breached hull on the fish-processing vessel *Gordon Jensen*'s port side.

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.

VESSEL GROUP: **FISHING**

Grounding of Commercial Fishing Vessel *SeaHawk No. 68*

ACCIDENT LOCATION**PAGO PAGO, AMERICAN SAMOA
PALA LAGOON****ACCIDENT DATE
05/22/2015****NTSB ID
DCA15LM022****REPORT NUMBER
MAB-16/02****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 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



Figure 59: Liferaft aboard sister-vessel *SeaHawk No. 18* secured to its cradle with lines. PHOTO BY COAST GUARD

cut away lines securing the liferaft to its stowage 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 liferings aboard the *SeaHawk No. 18* were found to have been significantly deteriorated, similar to the degraded condition of the liferings 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.

LEARN MORE AT www.nts.gov/investigations/AccidentReports/Pages/MAB1602.aspx ▾

VESSEL GROUPS: RECREATIONAL PUBLIC

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

NTSB ID

DCA16PM005

REPORT NUMBER

MAB-16/19

DATE ADOPTED

10/03/2016

Figure 60: Sailing vessel *Kolina* adrift during Coast Guard search and rescue operations. PHOTO BY COAST GUARD



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.



Figure 61: Sailing vessel *Kolina* on the morning after the accident. PHOTO BY COAST GUARD



Figure 62: US Coast Guard cutter *Kiska* under way off the Hawaiian Islands. PHOTO BY COAST GUARD

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.

LEARN MORE AT www.nts.gov/investigations/AccidentReports/Pages/MAB1619.aspx

LESSONS LEARNED



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 break-away 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** collision, 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** collision 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*.

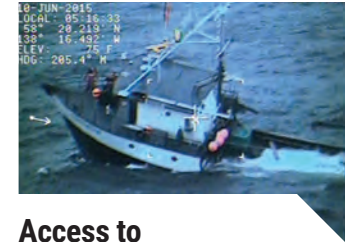
■ In the **P. B. Shaw/Dewey R** accident, distraction by radio traffic and pilot house conversation caused confusion while making vessel meeting arrangements, eventually leading to a collision.



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

Vessel	Flag	Type	Length	Draft	Beam/Width	Persons on Board	Page Number
Alpena	United States	Freighter	503.3 ft (153.4 m)	25 ft (7.6 m)	67 ft (20.4 m)	10	36
B.W. Haley	United States	Liftboat	61.5 ft (18.7 m)	4.5 ft (1.4 m)	32 ft (9.8 m)	3	22
Bravo	Malta	Tank Vessel	816.9 ft (249 m)	49.2 ft (15 m)	143.7 ft (43.8 m)	23	30
Capt Richie Rich	United States	Fishing Vessel	75 ft (22.9 m)	11.2 ft (3.4 m)	22.4 ft (6.8 m)	3	46
Capt. Shorty C	United States	Towing Vessel	88 ft (26.8 m)	11 ft (3.4 m)	31 ft (9.4 m)	8	14
Caribbean	United States	Tank Barge	460 ft (140.2 m)	29 ft (9.5 m)	72 ft (21.9 m)	0	26
Carla Maersk	Denmark	Tank Vessel	600 ft (183 m)	33.5 ft (10.2 m)	106 ft (32 m)	27	18
Chembulk Houston	Singapore	Tank Vessel	444.5 ft (135.5 m)	23 ft (6.9 m)	73.8 ft (22.5 m)	24	16
Connor Bordelon	United States	Offshore Supply Vessel	257 ft (78.3 m)	15 ft (4.6 m)	52 ft (15.8 m)	24	6
Conti Peridot	Liberia	Bulk Carrier	623 ft (190 m)	31 ft (9.5 m)	106 ft (32 m)	25	18
Day Island	United States	Fishing Vessel	73.2 ft (15.1 m)	9.8 ft (1.6 m)	22 ft (4.9 m)	3	52
Dewey R	United States	Towing Vessel	136 ft (41.5 m)	10 ft (3 m)	40 ft (12.2 m)	8	20
Diamond Edge	United States	Passenger Vessel	121.4 ft (37 m)	7.9 ft (2.4 m)	27 ft (8.2 m)	4	22
Ferrigno Boy	United States	Fishing Vessel	69.6 ft (21.2 m)	12.5 ft (3.8 m)	25 ft (7.6 m)	7	8
Gayle Force	United States	Barge	220 ft (67 m)	11 ft (3.3 m)	56 ft (17.1 m)	0	10
Gordon Jensen	United States	Fish-processing	311 ft (95 m)	50 ft (15 m)	25 ft (7.6 m)	165	54
Gunde Maersk	Denmark	Containership	1,204 ft (366.9 m)	49.2 ft (15 m)	141 ft (43 m)	24	38
Hammersmith Bridge	Panama	Containership	1,102.3 ft (336 m)	46.1 ft (14 m)	150.3 ft (45.8 m)	23	32
Hawaii Five-1	United States	Fishing Vessel	71 ft (21.6 m)	12 ft (3.7 m)	22 ft (6.7 m)	2	12
Jackie	United States	Towing Vessel	76.8 ft (23.4 m)	9.5 ft (2.9 m)	28 ft (8.5 m)	5	14
Key Largo	United States	Coast Guard Cutter	110 ft (33 m)	6.1 ft (1.8 m)	21.1 ft (6.3 m)	17	24

Vessel	Flag	Type	Length	Draft	Beam/Width	Persons on Board	Page Number
Kiska	United States	Coast Guard Cutter	110 ft (33 m)	6.1 ft (1.8 m)	21.1 ft (6.3 m)	20	58
Kolina	United States	Sailing Vessel	30 ft (9.1 m)	4.2 ft (1.3 m)	9.6 ft (3.3 m)	1	58
Kupreanof	United States	Fish Tender	73 ft (22.2 m)	8.5 ft (2.6 m)	23 ft (7.0 m)	4	48
Lucia	United States	Towing Vessel	127 ft (38.7 m)	16.6 ft (5.1 m)	38 ft (11.6 m)	10	26
Margaret	United States	Barge	180 ft (54.9 m)	12 ft (3.7 m)	64 ft (19.5 m)	0	50
Margaret Ann	United States	Towing Vessel	105.6 ft (32.2 m)	10.2 ft (3.1 m)	32 ft (9.7 m)	6	34
Miss Eva	United States	Fishing Vessel	86.5 ft (26.4 m)	12.5 ft (3.8 m)	25 ft (7.6 m)	4	40
Miss Natalie	United States	Towing Vessel	59.1 ft (18 m)	7.6 ft (2.3 m)	28.5 ft (8.7 m)	5	28
Monte Alegre	Germany	Containership	892.4 ft (272 m)	36 ft (10.9 m)	131.2 ft (40 m)	25	16
Northern Pride	United States	Fish Tender	82.4 ft (25.1 m)	9 ft (2.7 m)	26.8 ft (8.2 m)	3	42
P. B. Shah	United States	Towing Vessel	167 ft (51 m)	9.2 ft (2.8 m)	47 ft (14.3 m)	9	20
Privocean	Malta	Bulk Carrier	751.3 ft (229 m)	47.5 ft (14.5 m)	105.7 ft (32.2 m)	21	30
San Gabriel	United States	Towing Vessel	75 ft (22.9 m)	10 ft (3 m)	30 ft (9.1 m)	4	44
Sea Shepherd	United States	Fishing Vessel	42.3 ft (12.7 m)	2.6 ft (0.8 m)	13 ft (3.9 m)	2	24
SeaHawk No. 68	Taiwan	Fishing Vessel	85 ft (25.9 m)	7.2 ft (2.2 m)	18 ft (5.5 m)	22	56
Simone	United States	Tugboat	120 ft (31.6 m)	13.5 ft (4.1 m)	31 ft (9.4 m)	5	10
St. Louis Express	United States	Containership	798.4 ft (243.4 m)	36.2 ft (11 m)	105.7 ft (32.2 m)	23	32
Texas	United States	Tugboat	106 ft (35.3 m)	13 ft (4.3 m)	25 ft (8.3 m)	4	30
William E Strait	United States	Towing Vessel	185.4 ft (56.2 m)	11.7 ft (3.6 m)	45.1 ft (13.7 m)	9	34
William S	United States	Tugboat	96 ft (29.3 m)	16.5 ft (5.1 m)	38 ft (11.6 m)	4	26

Accident Locations

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			Page Number
Allision	Offshore Supply Vessel <i>Connor Bordelon</i>	Gulf of Mexico	6
	Fishing Vessel <i>Ferrigno Boy</i>	Ventura Harbor, California	8
	Barge <i>Gayle Force</i> / Tugboat <i>Simone</i>	Chesapeake, Virginia	10
Capsizing	Fishing Vessel <i>Hawaii Five-1</i>	Gulf of Mexico	12
Collision	Towing Vessel <i>Capt. Shorty C</i> / Towing Vessel <i>Jackie</i>	Port Bolivar, Texas	14
	Tanker <i>Chembulk Houston</i> / Container Ship <i>Monte Alegre</i>	Houston, Texas	16
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	Passenger Vessel <i>Diamond Edge</i> / Liftboat <i>B.W. Haley</i>	Gulf of Mexico	22
	Cutter <i>Key Largo</i> / Fishing Vessel <i>Sea Shepherd</i>	Vieques Island, Puerto Rico	24
	Articulated Tug and Barge <i>Lucia/Caribbean</i> / Tugboat <i>William S</i>	Gretna, Louisiana	26
	Towing Vessel <i>Miss Natalie</i>	Romeville, Louisiana	28
	Bulk Carrier <i>Privocean</i> / Tanker <i>Bravo</i> / Tugboat <i>Texas</i>	Convent, Louisiana	30
	Containership <i>St. Louis Express</i> / Containership <i>Hammersmith Bridge</i>	Hansweert, Netherlands	32
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	Barge <i>Margaret</i>	Convent, Louisiana	50
Grounding	Fishing Vessel <i>Day Island</i>	Ventura Beach, California	52
	Fish-processing Vessel <i>Gordon Jensen</i>	Bella Bella, British Columbia, Canada	54
	Fishing Vessel <i>SeaHawk No. 68</i>	Pago Pago, American Samoa	56
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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

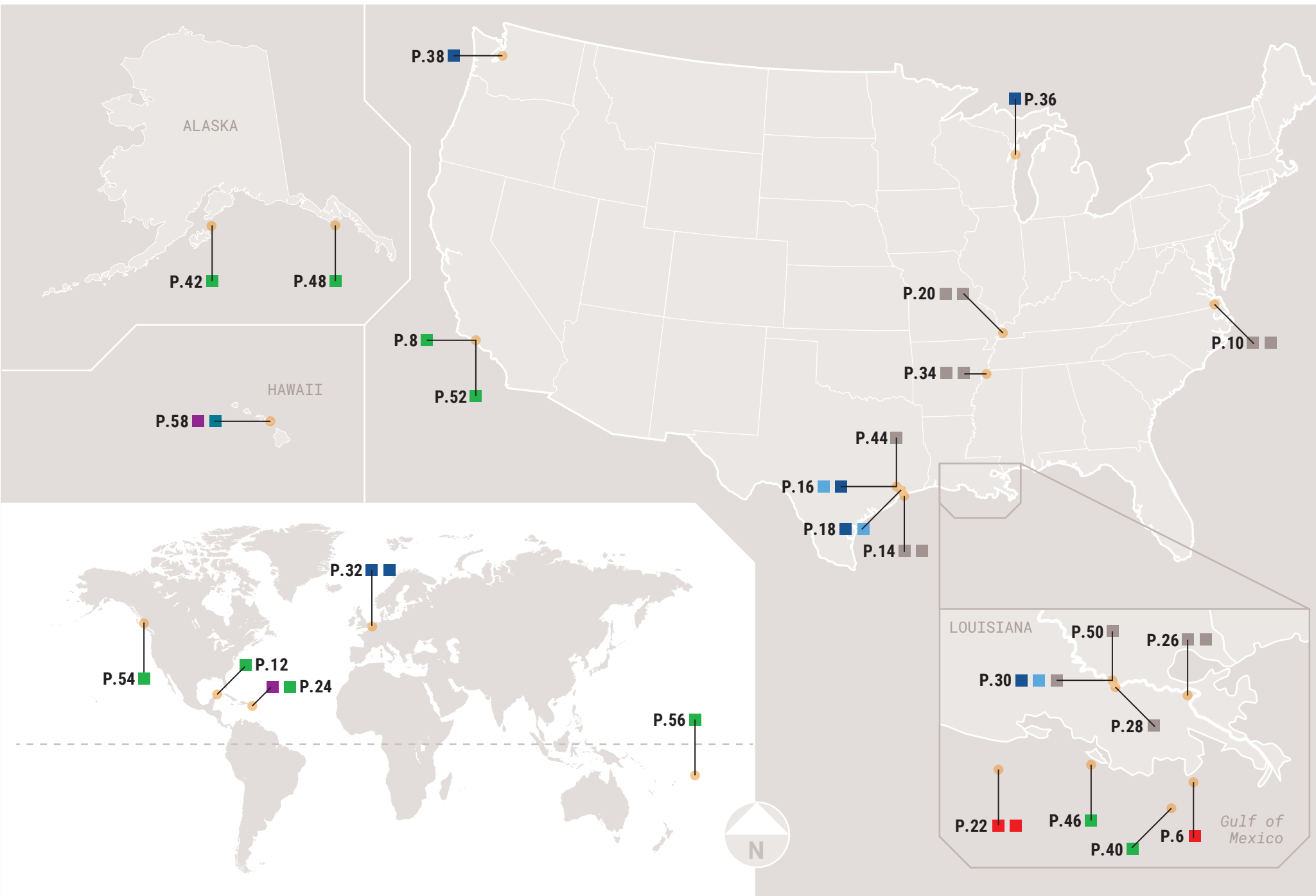
Sailing Vessel

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:

ACCIDENT	COAST GUARD UNIT
<i>Alpena</i>	Marine Safety Detachment Sturgeon Bay
<i>Capt. Richie Rich</i>	Marine Safety Unit Morgan City
<i>Capt. Shorty C / Jackie</i>	Marine Safety Unit Texas City
<i>Chembulk Houston / Monte Alegre</i>	Sector Houston/Galveston and Marine Safety Unit Texas City
<i>Connor Bordelon</i>	Marine Safety Unit Morgan City
<i>Conti Peridot / Carla Maersk</i>	Sector Houston/Galveston
<i>Day Island</i>	Marine Safety Detachment Santa Barbara
<i>Diamond Edge / B.W. Haley</i>	Marine Safety Unit Morgan City
<i>Ferrigno Boy</i>	Marine Safety Detachment Santa Barbara
<i>Gayle Force / Simone</i>	Sector Hampton Roads
<i>Gordon Jensen</i>	Marine Safety Detachment Ketchikan
<i>Gunde Maersk</i>	Sector Puget Sound
<i>Hawaii Five-1</i>	Sector Mobile
<i>Key Largo / Sea Shepherd</i>	Sector San Juan
<i>Kolina / Kiska</i>	Sector Honolulu, District 14, and Marine Safety Team Kailua-Kona
<i>Kupreanof</i>	Marine Safety Detachment Sitka
<i>Lucia/Caribbean / William S</i>	Sector New Orleans
<i>Margaret</i>	Sector New Orleans
<i>Miss Eva</i>	Marine Safety Unit Morgan City
<i>Miss Natalie</i>	Sector New Orleans
<i>Northern Pride</i>	Marine Safety Detachment Kodiak
<i>P. B. Shaw / Dewey R</i>	Marine Safety Unit Paducah
<i>Privocean / Bravo / Texas</i>	Sector New Orleans
<i>San Gabriel</i>	Sector Houston/Galveston
<i>SeaHawk No. 68</i>	Investigations National Center of Expertise
<i>St. Louis Express / Hammersmith Bridge</i>	Activities Europe
<i>William E. Strait / Margaret Ann</i>	Sector Lower Mississippi River

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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