

Allision of Bahamas-Registered Tankship
M/V *Kition* with Interstate Highway 10 Bridge Pier
Baton Rouge, Louisiana
February 10, 2007



ACCIDENT REPORT

NTSB/MAR-08/03
PB2008-916403



**National
Transportation
Safety Board**

Marine Accident Report

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490 L'Enfant Plaza, S.W.
Washington, D.C. 20594

National Transportation Safety Board. 2008. *Allision of Bahamas-Registered Tankship M/V Kition with Interstate Highway 10 Bridge Pier, Baton Rouge, Louisiana, February 10, 2007. Marine Accident Report NTSB/MAR-08/03. Washington, DC.*

Abstract: This report discusses the February 10, 2007, accident in which the nearly 800-foot-long tankship M/V *Kition* struck a pier on the Interstate Highway 10 bridge over the Mississippi River at Baton Rouge while the Louisiana state pilot was attempting to turn the vessel immediately above the bridge. The vessel's bow knocked a 2- to 3-foot section of concrete out of the bridge pier, causing an estimated \$8 million in damage to the bridge and \$726,500 in damage to the ship. No injuries or pollution resulted from the accident.

The Safety Board's investigation identified the following safety issues: pilot's actions, pilotage oversight, and postaccident alcohol testing.

On the basis of its findings, the Safety Board made recommendations to the U.S. Coast Guard and to the Board of New Orleans-Baton Rouge Steamship Pilot Examiners for the Mississippi River.

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ACRONYMS AND ABBREVIATIONS

AIS	automated identification system
ALDIST	all-district message
CFR	<i>Code of Federal Regulations</i>
COTP	captain of the port
I-10	Interstate Highway 10
LMR	lower Mississippi River
NOBRA	New Orleans–Baton Rouge Steamship Pilots Association
OCMI	officer in charge, marine inspection
SOLAS	International Convention for the Safety of Life at Sea
S-VDR	simplified voyage data recorder
VDR	voyage data recorder
VHF	very high frequency

EXECUTIVE SUMMARY

About 0730 on February 10, 2007, the Bahamas-registered tankship M/V *Kition*, carrying a load of carbon black (a petroleum product), moved away from its berth at the Apex Oil terminal on the right descending (west) bank of the Mississippi River just upriver of the Interstate Highway 10 bridge at Baton Rouge. A Louisiana state pilot was navigating. The pilot used three tugs, one pulling on the bow and two pushing on the stern, to turn the vessel from the dock for a planned trip downriver.

When the nearly 800-foot-long vessel was approximately parallel to the bridge, the second officer on the bow warned that the bow appeared about to hit the bridge pier. The master and pilot both ordered the engine to full astern, but about 3 minutes later, the *Kition's* underwater hull (bulbous bow) struck the fender system around the pier. The fender system began to collapse, and the tug at the bow let go of its line and backed clear. Moments later, the bulwark on the starboard bow of the *Kition* struck the bridge pier, knocking out a 2- to 3-foot section of concrete. The accident caused an estimated \$8 million in damage to the bridge. The *Kition* sustained hull damage estimated at \$726,500. No one was injured and there was no pollution.

The National Transportation Safety Board determines that the probable cause of the *Kition's* allision with the Interstate Highway 10 bridge at Baton Rouge, Louisiana, was the pilot's attempt to execute the high-risk maneuver of turning at the dock immediately above the bridge rather than moving the vessel downriver through the bridge before turning or taking it well upriver, then turning.

The safety issues identified in the investigation are as follows:

- Pilot's actions
- Pilotage oversight
- Postaccident alcohol testing

As a result of its investigation, the National Transportation Safety Board makes recommendations to the U.S. Coast Guard and to the Board of New Orleans-Baton Rouge Steamship Pilot Examiners for the Mississippi River.

FACTUAL INFORMATION

Accident No.: DCA07FM013

Vessel: Bahamas-registered motor tankship *Kition*, 798 feet (243.3 meters) long, 137 feet (41.8 meters) wide, 53,829 gross tons, ON 8000683, IMO No. 9074561, steel double-hull construction, built in 1994

Accident Type: Allision with Interstate Highway 10 bridge pier, Mississippi River, mile 229.3 lower Mississippi River (LMR)¹

Location: Baton Rouge, Louisiana

Date: February 10, 2007

Time: 0738 central standard time²

Owner: Kition Shipping Co. Ltd., Monrovia, Liberia

Operator: V.Ships USA/V.Ships Switzerland, Geneva, Switzerland

Property Damage: Bridge, \$8 million; ship, \$726,500³

Complement: 23

Injuries: None

Accident Narrative

On February 7, 2007, the 798-foot-long Bahamian tankship M/V *Kition* (figure 1) arrived at dock No. 2 of the Apex Oil Company terminal in Port Allen, Louisiana, opposite Baton Rouge, to load a cargo of carbon black.⁴ The dock is on the right descending (west) bank of the Mississippi River immediately upriver of the Interstate Highway 10 (I-10) bridge. The vessel moored port side to the dock with its bow pointed upriver, as was the normal practice.

Under Louisiana state law, the *Kition*, as a vessel in foreign trade, was required to employ a state-licensed pilot. The cargo was expected to be loaded by the early morning of February 10, and arrangements had been made for a pilot

¹ LMR mileposts are measured in statute miles above Head of Passes, an intersection of the various passes or channels connecting the Mississippi River to the Gulf of Mexico.

² Times in this report are central standard time according to the 24-hour clock.

³ The shipping company also sustained nearly \$1 million (\$997,800) in costs for storing cargo during vessel repairs plus the costs of fuel and crew.

⁴ Carbon black is a petroleum product that is produced in the refining process and is used in the production of such materials as asphalt, rubber, and dye. Material safety data sheet EJ-471 gives product data.

and three tugs. The *Peggy H* (3,000 horsepower), *Gladys B* (2,400 horsepower), and *Margaret F. Cooper* (3,500 horsepower) arrived alongside the *Kition* about 0545 on February 10. A state-licensed pilot boarded the vessel at 0548. Speaking by very-high-frequency (VHF)/FM radio channel 77 (the pilot working channel) with the tugmasters, the pilot instructed the tug *Peggy H* to take a position on the bow and send a line to the vessel, the *Gladys B* to take a position amidships, and the *Margaret F. Cooper* to take a position at the stern.⁵ The *Gladys B* and *Margaret F. Cooper* were not connected to the *Kition* by lines.



Figure 1. *Kition* docked downriver of the I-10 bridge after the accident. The vessel's draft (freshwater) on the day of the accident was 44 feet 7 inches.

About 0630, the third mate began testing the various equipment (primary and secondary steering, main engine ahead and astern, emergency lighting, communications) pursuant to U.S. Coast Guard regulations at Title 33 *Code of Federal Regulations* (CFR) section 164.25. All equipment and machinery tested satisfactory. The *Kition* was not equipped with a voyage data recorder (VDR).⁶

The chief officer arrived on the bridge about 0645. Shortly before 0700, the second officer and three crewmembers went to the bow to take in the forward mooring lines. The third officer and three crewmembers went to the stern to take in the stern mooring lines. The weather was clear and sunny, with light winds.

⁵ All three tugs were regularly used to dock and undock large vessels.

⁶ VDRs are similar to the flight data recorders carried on aircraft. Regulation 20 of the International Convention for the Safety of Life at Sea (SOLAS), chapter V, contains a phase-in requirement for the carriage of a simplified VDR (S-VDR) on existing cargo ships of 3,000 gross tons and upward. Although the S-VDR is not required to store the same level of detailed data as a standard VDR, it should store retrievable information on vessel position, movement, physical status, and command and control both before and after an incident. Cargo ships of 20,000 gross tons or more constructed before July 1, 2002, are required to be fitted with a VDR or S-VDR at the first scheduled dry-docking after July 1, 2006, but not later than July 1, 2009. The 53,829-gross-ton *Kition* was constructed in 1994.

Master-Pilot Conference

The pilot met the master on the bridge. According to the master, the pilot told him that he planned to turn the vessel's bow downriver at the dock. The master told investigators that he objected to turning from the dock because of the vessel's size and the highway bridge's proximity, and that he urged the pilot to proceed upriver before attempting the turn. The pilot, according to the master, said that the vessel could not be taken upriver because of its deep draft, and he assured the master that turning vessels at that location was standard procedure.

The pilot told investigators that he met with the master and presented him with a master-pilot's exchange card issued by the New Orleans-Baton Rouge Steamship Pilots Association (NOBRA). NOBRA pilots navigate vessels in foreign commerce from mile 88 LMR in the New Orleans area to mile 235 LMR in the Baton Rouge area. The card was a pamphlet giving information on the waterway and procedures.⁷ Both the master and pilot signed the master-pilot exchange of information record, a form that was part of the *Kition's* safety management system⁸ and indicated that a master-pilot conference had taken place. The pilot also reviewed the vessel's pilot card, which provided information about the vessel.⁹

The pilot said that his conversation with the master concerned taking in the mooring lines rather than maneuvering away from the dock. Moreover, the pilot stated that he did not discuss his plans for maneuvering vessels with the masters "unless they ask." The pilot said that it was difficult to understand the master.¹⁰

Getting Under Way

For getting under way, the vessel's navigation watch consisted of the master, the chief officer, and a helmsman. The state pilot was directing the movements of the vessel and issuing all orders to the navigation watch and the tugs. At 0700, the bridge notified the engine room to "stand by engines." At 0705, again using VHF/FM radio channel 77, the pilot ordered the three tugs standing by to come ahead "hard," that is, to push against the vessel at full power to hold it alongside the dock so the mooring lines could be taken in. The pilot and the tugmasters stated that radio communications were clear and readily understood.

⁷ NOBRA provides a pamphlet to ships with information on pilot embarkation requirements, requirements for vessel readiness, communications, bridge locations and clearances, and a table showing the location of some 150 facilities, wharfs, and anchorages, most of which are along the NOBRA route.

⁸ The International Maritime Organization, a specialized agency of the United Nations, established an International Safety Management Code (the full name of the code is International Management Code for the Safe Operation of Ships and for Pollution Prevention) that requires vessels of 300 gross tons and greater on international voyages to have a safety management system.

⁹ Federal regulations at 33 CFR 164.11(k) require that pilots be "informed of the draft, maneuvering characteristics, and peculiarities of the vessel and of any abnormal circumstances on the vessel that may affect its safe navigation."

¹⁰ The master was Croatian and spoke with a strong accent, but his speech was understandable to Safety Board investigators.

Taking in Mooring Lines

Shortly after 0717, while the crew was taking in the lines, the pilot advised the operator of a northbound towboat over VHF channel 67¹¹ (recorded by the Coast Guard's vessel traffic service) to "stay over by the center pier or east side of center pier," adding, "I will be crossways at the bridge."

While the crew took in the forward bow lines, one of the lines leading from the starboard bow dropped into the water near the *Peggy H*. The tugmaster told investigators that to prevent the line from fouling the tug's propellers, he moved aft 5 to 10 feet, and in 30 seconds or less, the line was clear of the water.¹² The tugmaster stated that when he resumed pushing at full power, the bow of the *Kition* still appeared to be against the dock. The pilot estimated that the tug did not push for 1 to 2 minutes.

Swinging Away From Dock

Video recordings from the terminal security cameras show the bow start to swing away from the dock to the right about 0726. At that time, the pilot (whose NOBRA pilot's number was 38)¹³ broadcast the following on VHF channel 67: "Thirty-eight coming off the dock at Baton Rouge I-10 bridge turning south." The pilot told investigators that the *Kition's* bow began to swing away from the dock while the *Peggy H* was not pushing, and that the swing led him to believe that he would not be able to straighten the ship. He said that he therefore abandoned his original plan of turning below the bridge and decided to turn the vessel from the dock.

About 0727, the pilot ordered the vessel dead slow ahead so that the aft spring lines – which ran from a chock near the deckhouse forward to a cleat on the dock, about midships – could be taken in.¹⁴ The pilot told investigators that one of the lines got caught under the dock, causing a brief delay. The pilot ordered all the tugs to stop,¹⁵ and the video shows the stern starting to move away from the dock about 0729. The last line was clear of the dock by 0730.

After the stern swung away, the pilot ordered the *Peggy H* to back half astern, which the tugmaster told investigators was probably to move the bow away from the dock. The video record shows the vessel approximately parallel to the dock

¹¹ Channel 67 is the designated bridge-to-bridge radiotelephone channel for the lower Mississippi River as far as Baton Rouge. Channel 13 is used in other U.S. ports.

¹² Two days after the accident, the tug company had a diver check the propellers on the *Peggy H* for any indication that the line had fouled the propellers. The diver found no indication of fouling.

¹³ Each NOBRA pilot is assigned a number.

¹⁴ Speed changes are from the *Kition* bell log, a record, kept by the chief officer, of engine commands and events associated with undocking.

¹⁵ The video shows the midships tug proceeding aft about 0730, indicating that it had already stopped pushing.

from shortly after 0729 until 0731, when the bow began to swing right (figure 2).¹⁶ At that point, the pilot ordered the engine speed increased to slow ahead and the rudder increased to hard port, which he told investigators was to control the bow swing. As the vessel swung right, its stern moved slowly away from the dock in response to the slow ahead and port rudder orders.



Figure 2. Diagram of *Kition* moving from the Apex No. 2 dock to its collision with the I-10 bridge pier.

¹⁶ The master estimated that the *Kition* was 5 to 10 meters (16.4 to 32.8 feet) from the dock when it began to turn. The chief officer and third officer estimated that the vessel remained approximately parallel to the dock until it was about 10 meters away. The video recordings show that the vessel moved away from the dock and remained approximately parallel to it for about 2 minutes.

According to the tugmasters, soon after the *Peggy H* began backing at half speed, the pilot ordered the *Peggy H* to “back hard” astern and the other two tugs to move aft and push hard (full power) on the stern. The third officer recalled looking over the starboard quarter and seeing two tugs pushing on the stern as the vessel’s bow swung to the right (figure 2). About that time, the pilot ordered the rudder to hard starboard.

The *Peggy H* tugmaster told investigators that he had assisted in numerous dockings and undockings at the Apex terminal.¹⁷ He estimated that 90 percent of the large vessels departing the dock are moved downriver through the bridge and then turned, and that the others are taken either to an old ferry landing about a mile upriver or to a terminal about 3 miles upriver and then turned. The *United States Coast Pilot* cautions mariners against the following dangers in the area of the Apex No. 2 dock:¹⁸

Mariners departing Greater Baton Rouge Port Commission Dock No. 2 are advised to use extreme caution when turning vessels downstream. Strong currents associated with high water have caused vessels departing this facility to be set down upon the fender system of the Interstate Route 10 fixed highway bridge causing extensive damages. The New Orleans–Baton Rouge Steamship Pilots report that currents in excess of 7 knots have been observed. Mariners should consider moving vessels well above or below the bridge before turning downstream.

The *Peggy H* tugmaster told investigators that he assumed the pilot would move the *Kition* downriver through the bridge and then turn it. He said that the first indication that the pilot intended to turn at the dock was when the pilot ordered him to back hard and for the other two tugs to push hard on the stern. He said that the *Kition* started turning as soon as he began backing hard, and that he recognized that the pilot was attempting to turn the vessel around from the dock.

The pilot told investigators that he had intended to move the vessel downriver through the bridge and then turn it. However, he said the forward tug could not exert enough power to hold the bow alongside the dock. The pilot said that he tried to turn the vessel from the dock because he thought that he would not be able to straighten it after the bow swung right and was struck by the current, which he estimated at 3 knots. The pilot said that he did not consider going upriver to turn the vessel because of a wrecked barge on the west bank upriver of the Apex dock, where a deep-draft vessel such as the *Kition* would have to be turned. The pilot could not pinpoint the location of the wrecked barge or describe how he had learned about the wreck. He said that he had taken other vessels to and from a terminal about 3 miles upriver of the bridge and that the wrecked barge posed no

¹⁷ The tugmaster said that he had 25 years of experience on tugs assisting in the docking and undocking of ships. He estimated that he had assisted vessels at the Apex dock about 200 times and that probably half those instances were undockings.

¹⁸ National Oceanic and Atmospheric Administration, National Ocean Service, *United States Coast Pilot*, vol. 5 (Gulf of Mexico, Puerto Rico, and Virgin Islands), 2004 mid-year update, p. 441.

threat to passing vessels. No wreck was shown on the chart,¹⁹ and the Coast Guard had no information about such an obstruction in the river.

At 0733:30, the pilot reduced speed to dead slow ahead and then ordered the engine stopped. At 0735, he ordered the engine to dead slow astern, quickly followed by slow astern and half astern. As the vessel's bow continued to swing to the right, it appeared to the second officer on the bow that the bow might strike the bridge pier, and he informed the master. The master and the pilot both immediately ordered the engine to full astern. Moments later, the second officer reported that the bow would strike the bridge pier, and he urged the master to back the vessel. The engine was already at full astern, and the rudder was at hard starboard. The master stated that the vessel did not appear to gain sternway.

Striking the Bridge Pier

About 0738, about 3 minutes after the master and pilot ordered the engine full astern, the vessel's underwater hull (the bulbous bow) hit the bridge's fender system. The fender system began to collapse, and a section fell on the aft starboard side of the *Peggy H*, causing the tug to heel briefly.²⁰ The tug let its line go and backed clear. Moments later, the *Kition's* starboard bulwark near the bow struck the pier, knocking out a 2- to 3-foot section of concrete (figure 3).²¹ The vessel's starboard bulwark was dented (figure 4), and the forepeak tank was holed and began flooding. It was later determined that the bulbous bow had sustained most of the damage and was holed near the stem of the vessel below the waterline (figure 5).

The *Peggy H* tugmaster estimated that the *Kition* was approximately parallel to the bridge at the time of the allision but that the vessel's stern may have drifted slightly under the bridge. The contact with the bridge pier halted the vessel's right swing. The stern then drifted downriver, causing the vessel to swing left. The pilot ordered the two tugs at the stern to station themselves on either side of the bow to control the vessel.

¹⁹ *Mississippi River, New Orleans to Baton Rouge, Louisiana*, chart 11370, National Ocean Survey (Washington, DC: U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service, 2006).

²⁰ After the accident, the *Peggy H* tugmaster took his vessel to a dock to inspect for possible damage. The only damage was to the paint on the aft starboard bulwark, which the fender system had struck.

²¹ The bridge was inspected by Louisiana Department of Transportation bridge inspectors and found to be safe for use. The estimated cost of reconstructing the fendering system was \$8 million.



Figure 3. Damage to the I-10 bridge fender system and pier.



Figure 4. Damage to the bulwark on the *Kition's* starboard bow.



Figure 5. Holed forepeak tank and other damage to the *Kition's* bulbous bow, shown after the bow was raised out of the water by removing cargo and ballasting the aft tanks.

Anchoring

Using the vessel's engine and rudder and assisted by the two tugs, the pilot controlled the left swing and maneuvered the *Kition* into the anchorage in the river immediately below the bridge. At 1000, another pilot, NOBRA 67, boarded the *Kition* and relieved pilot NOBRA 38, who left the vessel at that point. A Coast Guard investigator boarded the vessel at 1030. When another anchorage farther downriver became free, the pilot moved the *Kition* there.

The Coast Guard investigator departed at 1330. Efforts to obtain a secure anchorage, which involved moving the anchors, continued until 1448, when the crew dropped the anchors for the final time. The pilot and crew continued to monitor the vessel's position until after 1700. When satisfied that the vessel was secure in its anchorage, the relief pilot departed the vessel at 1735.

Waterway Information

The Mississippi River from just below New Orleans north to Baton Rouge has numerous bends, and the navigation channel shifts from one bank to the other. The channel is deep and clear for the most part, according to the *Coast Pilot*, but sections called "crossings" have been dredged at 13 locations to accommodate deep-draft vessels.²² At the time of the accident, the river height was 26 feet on the Baton Rouge gauge and decreasing (high water is 28 feet, low water is 10 feet

²² *Coast Pilot*, vol. 5, pp. 435-436.

or less). Based on the river height, the Coast Guard Marine Safety Office in Baton Rouge estimated the river current at 3 to 4 knots at the time of the accident. The *Coast Pilot* gives currents for Baton Rouge as 3.3 knots at high water flow, 2.3 knots at medium flow, and 1.1 knots at low water.

The route between New Orleans and Baton Rouge is characterized by high ship and barge traffic serving numerous terminals, which include docks for shipment of petroleum products, minerals, grain, steel, and general cargo. Ferries cross the river at six locations between New Orleans and Baton Rouge. Four bridges cross the river above New Orleans, including the I-10 bridge at Baton Rouge. The river is about 2,400 feet wide at that point, and the navigation channel is about 1,500 feet wide.

Personnel Information

Master

The master, age 60, stated that he had been a third mate for about 2 years, second mate for about 2 years, chief mate for about 10 years, and master for about 13 years. He was a 1970 graduate of the Dubrovnik Nautical College (*Visa Pomorska Skola*) in what was then Yugoslavia. He had been in command of the *Kition* for about 2 days when the accident occurred. He had 7 years of experience as master on ships of that size and type and another 5 years' experience on such ships as chief officer. He had been to destinations in the Mississippi River on at least 10 other occasions and had been to the Apex dock on another vessel about 5 years earlier, but he had never departed from the dock before.

The master stated that he left Dubrovnik, Croatia, on February 6, 2007, by commercial aircraft and arrived on board the *Kition* in Baton Rouge late on February 7. He took command of the vessel around 1800 or 1900 on February 9. He stated that he was in good health and was not taking any medication.

Pilot

The pilot, age 48, had been a pilot with NOBRA for 5 years. After high school, the pilot had worked in the offshore oil industry on small vessels and tugs for about 3 years. He held various jobs ashore until 1985, when he became a police officer in Slidell, Louisiana. In 1996, he returned to the marine industry on towing vessels and acquired a Coast Guard towing vessel license. In 2001, he was accepted into the pilot apprentice program for NOBRA.

NOBRA requires each applicant for the apprentice program to hold a Federal pilot's license²³ for the NOBRA route. The 1-year apprentice program includes piloting experience on 300 vessel turns (pilotage assignments) under various NOBRA pilots. The *Kition* pilot also received ship-handling training on a simulator and training in bridge resource management (classroom and simulator) at the Paul Hall Center for Maritime Training and Education at Piney Point, Maryland.²⁴ In addition, he trained in the use of marine radars, obtaining a Coast Guard radar observer certification, and in basic and advanced ship firefighting.

In May 2002, the pilot received a Louisiana state pilot's commission authorizing him to pilot small vessels over the NOBRA route. The pilot described small vessels as those 400 to 450 feet long and of 8,000 to 10,000 gross tons. He progressed in 8-month intervals to pilot larger vessels. After 2 years of successful piloting, he was certified to pilot all classes of vessels over the route between New Orleans and Baton Rouge. The pilot said that the largest vessels he had piloted were in the 900-foot-long range and that he preferred to pilot larger vessels, often volunteering for assignments on such vessels. The pilot did not recall previously piloting a vessel from the Apex No. 2 dock, and his records did not indicate any previous experience departing from that terminal. He stated that he had piloted many large vessels to and from a terminal a few miles above the I-10 bridge and that he considered it difficult to get under way from the Apex dock.

The pilot told investigators that he had been involved in one previous marine accident, in 2005. He had boarded a ship at the White Castle anchorage on the Mississippi. The master wanted to heave the anchor, and the pilot had agreed for the master to do so while he was checking bridge clearances and talking with the Coast Guard's vessel traffic service. As the anchor was being heaved, the ship gained headway (forward movement) and collided with another vessel anchored farther upriver. The Coast Guard report did not cite a reason for the accident or assign blame.

The pilot was in good health, had sufficient rest, and said that he felt fine. He was controlling high blood pressure, high cholesterol, and excessive stomach acid with prescribed medications taken each morning.

Pilotage Oversight

Louisiana has three state pilot associations serving the Mississippi River, each with a board of examiners appointed by the governor and comprising three

²³ Nearly all state pilots hold a Federal pilot's license, issued by the Coast Guard and covering their respective pilotage routes, which authorizes them to pilot U.S. vessels in domestic commerce, for example, coastwise vessels. Coast Guard requirements for a pilot's license are found at 46 CFR 10.701–10.713 (subpart G).

²⁴ Seafarers Harry Lundeberg School of Seamanship operated by the Seafarers International Union, a maritime union representing unlicensed U.S. merchant mariners.

senior pilots from the respective pilot association.²⁵ The boards of examiners are responsible for approving the acceptance, training, and eventual commissioning of apprentice pilots and for overseeing pilot performance, which includes investigating accidents involving pilots. According to a representative of the Board of New Orleans–Baton Rouge Steamship Pilot Examiners for the Mississippi River (NOBRA board of examiners), during the 5 years preceding the accident, the board had rewritten the state regulations governing pilotage for NOBRA and had inaugurated changes to improve the quality of pilotage – adding educational requirements in technology and bridge resource management and requiring annual physical examinations, mandatory rest between pilotage assignments, and random drug tests.

The NOBRA board of examiners administers, through a contractor, postaccident alcohol and drug testing as well as random testing for drugs in the workplace. The board of examiners requires each pilot to provide a sample of hair for drug testing twice a year, and to inform the board of any prescribed medications that may adversely affect performance. If random tests or physical examinations reveal medications that could be harmful to pilot performance, pilots must obtain a clearance from a doctor specializing in occupational medicine before they are allowed to continue piloting. The board of examiners requires pilots to submit a copy of the annual physical examination required by the Coast Guard, which the board sends to the Coast Guard annually. The NOBRA board of examiners also requires pilots to take training in bridge resource management at least every 5 years. An integral part of bridge resource management is the master-pilot exchange of information.

When an accident occurs that can be attributed to a pilot, the board of examiners investigates whether the pilot was at fault. If so, the board of examiners may, in serious circumstances, recommend revoking or suspending the pilot's state commission or prescribe another punitive or remedial action.²⁶ Normally, remedial training is recommended rather than punitive action. The NOBRA board of examiners employs an attorney to investigate accidents involving NOBRA pilots. The investigator conducts interviews, collects documents, and presents the evidence to the board, which reviews the material and then interviews the pilot and determines what action to take. For a serious accident, the pilot interview may be public. Some accidents may be recreated on a simulator to ascertain how they occurred and to identify steps for preventing a recurrence.

Oversight of the four boards of examiners is in the hands of the Board of Louisiana River Pilots Review and Oversight (board of review), established during the 2004 state legislative session. The board of review comprises three retired

²⁵ A fourth pilot association, the Lake Charles Pilot Association, serves the Calcasieu River, which runs west of the Mississippi River past Lake Charles, into Calcasieu Lake, and finally into the Gulf of Mexico. The association's board of examiners consists of one pilot, one local businessman, and the president of the port board for Lake Charles.

²⁶ The governor must approve recommendations for punitive action such as revoking or suspending a pilot's state commission.

judges, four industry representatives, and four pilots drawn from the four state pilot groups (boards of examiners). One of the judges is named chairman. The board was appointed in October 2006 but was not funded until July 2008.

The board of review was charged with receiving records of the investigations and recommendations of the four boards of examiners and then concurring with the results or remanding cases for further investigation or reconsideration. The board of review was also given the authority to conduct its own investigation. Pilots were given the right to appeal to the board of review any disciplinary action imposed by any board of examiners. The board of review was charged with compiling the records of actions taken against pilots by the boards of examiners into an annual report and sending it to the Louisiana Department of Transportation. The review board had submitted no reports as of the date of this report.

Toxicological Testing

Coast Guard regulations at 46 CFR 4.06 require that alcohol tests be conducted within 2 hours and that drug tests be conducted within 32 hours of a serious marine incident “unless precluded by safety concerns directly related to the incident.”²⁷ The regulations state that if safety concerns prevent the tests from being conducted within the stipulated time, they should be done “as soon as the safety concerns are addressed.” Alcohol testing is not required more than 8 hours after a serious marine incident.

Between 1030 and about 1200 on February 10, the masters and crewmembers of the tugs were tested for alcohol and the five illicit drugs for which the regulations require screening.²⁸ When the management of the tug company, E. N. Bisso and Son, learned of the accident, the tugmasters were instructed to conduct alcohol testing using the saliva test kits carried on board the tugs. The results of the tests were negative. The tug company dispatched its contractor to the area, and when the *Kition* was anchored securely, the contractor boarded the tugs about 1530 to collect urine specimens for drug testing and to administer his own tests for alcohol. The test results were negative for both alcohol and drugs.

The contractor also served NOBRA pilots. The *Kition* pilot arranged with the contractor to be tested, and about 1156 on February 10, the contractor tested him for alcohol and collected a urine specimen to test for drugs. The pilot’s test results were negative for both alcohol and drugs.

²⁷ A serious marine incident is defined at 46 CFR 4.03-2 as (a) a marine casualty or accident that results in any of the following: (1) one or more deaths, (2) injury that requires medical treatment beyond first aid and renders the individual unfit to perform routine duties, (3) property damage exceeding \$100,000, (4) actual or constructive total loss of an inspected vessel, or (5) actual or constructive total loss of any uninspected vessel that exceeds 100 gross tons; (b) discharge of 10,000 or more gallons of oil into U.S. waters; or (c) the release of a reportable substance into the environment of the United States.

²⁸ Regulations at 46 CFR 16.113 specify testing for marijuana, cocaine, opiates, phencyclidine, and amphetamines.

The master, three deck officers, and the deck crewmembers of the *Kition* were tested for alcohol and drugs. All the drug tests were negative. However, because testing for alcohol was not conducted until after more than 15 hours had elapsed,²⁹ the results were invalid. The Coast Guard investigator who boarded the *Kition* about 1030 told investigators that he informed the bridge officers that postaccident testing for alcohol and drugs was required. A representative of the owner stated that the vessel carried kits for collecting urine specimens for drug testing and saliva kits for alcohol testing. However, he said that because the company was concerned that the postaccident testing be conducted properly, for example, that an accurate chain-of-custody be maintained, he contracted with a professional company to conduct the testing. He stated that he informed the Coast Guard investigator that an outside company would be conducting the postaccident testing.

The Coast Guard investigator recalled being informed about the testing company but not that the *Kition* had saliva test kits on board. The investigator had a breath-testing device³⁰ with him but no saliva kits. He told investigators that he did not insist on alcohol testing because the crew was busy trying to get the ship safely anchored, and that some crewmembers were assessing the damage to the vessel. As noted earlier, the Coast Guard investigator departed the vessel at 1330, and the crew dropped the anchor for the final time at 1448 but continued monitoring the vessel until after 1700. The relief pilot stayed on board until 1735.

Other Information

Previous Safety Board Action Regarding Postaccident Testing for Alcohol

On May 19, 1998, the Safety Board issued a special investigation report on postaccident testing for alcohol and other drugs.³¹ The study was issued in conjunction with the Board's report on an accident in which the tankship *Julie N* collided with a bridge pier in Portland, Maine, after which the pilot was not tested for alcohol. As a result of that investigation, the Safety Board made a number of recommendations to the Coast Guard regarding postaccident alcohol and drug testing.³²

Of particular relevance to the *Kition* accident is the following safety recommendation:

²⁹ According to records, the alcohol tests were administered between 2309 and 2351 on February 10.

³⁰ The device was a breathalyzer, which is a portable machine for measuring blood alcohol content in a breath sample.

³¹ *Postaccident Testing for Alcohol and Other Drugs in the Marine Industry and the Ramming of the Portland-South Portland (Million Dollar) Bridge at Portland, Maine, by the Liberian Tankship Julie N on September 27, 1996*, Special Investigation Report NTSB/SIR-98-02 (Washington, DC: NTSB, 1998).

³² Safety Recommendations M-98-71 through -81, all of which have been closed.

M-98-73

Implement a procedure for USCG [Coast Guard] personnel to conduct breath testing of mariners who are involved in a serious marine incident, as defined by 46 CFR 4.03-2, when testing by the marine employer will not or can not take place within 2 hours of the accident.

The Coast Guard responded on November 2, 1998, that it concurred with the intent of the recommendation, citing all-district message (ALDIST) 174/97, which directed that each officer in charge, marine inspection (OCMI), and each captain of the port (COTP)

must ensure that alcohol testing is completed in a proper and timely manner, whether by the marine employer, a local law enforcement officer, or Coast Guard MSO [marine safety office], COTP, or group personnel, and should conduct alcohol breath tests anytime there is concern that proper alcohol testing would not otherwise be accomplished.

In February 1999, Coast Guard headquarters issued a policy letter instructing that “each OCMI/COTP should conduct alcohol breath tests anytime there is concern that proper alcohol testing would not otherwise be accomplished.”³³ According to the Coast Guard, ALDIST 174/97 and the 1999 policy letter are both still in force.

On February 28, 2003, the Coast Guard issued a notice of proposed rulemaking requiring that alcohol testing be conducted within 2 hours of a serious marine incident and that commercial vessels have alcohol-testing devices on board, as well as authorizing saliva as an acceptable specimen for alcohol testing. A 32-hour time limit was proposed for collecting specimens for drug testing. The Coast Guard’s final rule, issued on December 22, 2005,³⁴ contained the following provision at 46 CFR 4.06-3(a)(4) regarding alcohol testing:

The marine employer may use alcohol-testing results from tests conducted by Coast Guard or local law enforcement personnel to satisfy the alcohol testing requirements of this part only if the alcohol testing meets all of the requirements of this part.

On March 29, 2006, the Safety Board classified Safety Recommendation M-98-73 as “Closed—Acceptable Action,” citing the provision quoted above and noting that the Board “understood from previous correspondence” that the provision was “intended to supplement the policy in ALDIST 174/97.” In its action, the Board also noted that the Coast Guard had “affirmed” that it would incorporate ALDIST 174/97 in the next revision of volume 5 of the *Marine Safety Manual*. The Coast Guard’s new regulations for postaccident alcohol and drug testing went into effect on June 20, 2006.

³³ Commandant (G-MOA) policy letter 1-99, “Post Casualty Chemical Testing Following a Serious Marine Incident,” February 11, 1999.

³⁴ *Federal Register*, vol. 70, no. 245, pp. 75954-75961.

Apex Oil Terminal

According to statistics from the Port Authority of Baton Rouge, about 14 vessels dock at the Apex terminal each year. The director of operations of the Port Authority, who had been employed at the Apex terminal for 20 years at the time of the accident, stated that he had never seen a large vessel (650 to 700 feet long) turn from the Apex No. 2 dock. He said that large vessels normally move downriver of the I-10 bridge and then turn, but that vessels are also taken upriver and turned.

The Apex terminal manager, also the Gulf Coast area manager for Apex Oil, stated that he had worked at the Apex terminal since 1981 and had observed numerous vessels arrive at and depart from the terminal. He stated that large ships are taken either upriver or downriver and then turned, but that large ships do not turn from the dock.

Video Coverage

Video footage was obtained from four security cameras, placed by the Port Authority of Baton Rouge, that covered the *Kition's* dock. The video images show the *Kition's* bow coming away from the dock at a small angle and then the stern moving away from the dock until the vessel is nearly parallel with the dock. A minute or more later, the vessel starts turning to the right and continues turning until the allision. One camera downriver shows a significant distance between the stern of the vessel and the dock when the vessel is approximately crossways to the river. Analysis of the video found that the stern was 315 to 325 feet from the dock, and that the vessel was approximately parallel to the bridge at the time of the accident. According to the video record, the vessel struck the bridge pier at 0737:40.

Course Recorder

The *Kition's* course recorder³⁵ shows it on a steady heading of 259.5° until 0726:30, when the trace shows a right heading change to 002°. About 0725, the recorder shows a heading change to the left to about 000°. About 0728, the recorder shows the heading moving to the right, which continues until the allision is recorded at 0734:30.

The course recorder time appeared to be about 2 to 3 minutes slower than the times recorded by the onsite videocameras and the Coast Guard's vessel traffic service using data from the automated identification system (AIS).³⁶ The times were reconciled by comparing the video images of the vessel moving away from the dock with the headings recorded by the course recorder. The heading change

³⁵ A course recorder automatically and continuously records a vessel's gyrocompass heading on a strip of paper that is passed beneath one or more pens.

³⁶ All ships of 300 gross tons or more engaged on international voyages are required by SOLAS to be fitted with an AIS—a shipboard broadcast system, operating in the VHF maritime band, that can send and receive ship information such as identity, position, course, and speed.

to 002° and the left course change to 000° probably occurred when the bow and then the stern swung away from the dock.

American Pilots Association Policy on Master-Pilot Information Exchange

NOBRA is a member of the American Pilots Association. On October 8, 1997, the Board of Trustees of the association adopted the following policy:

Master Pilot conference:

- Each pilotage assignment should begin with a conference between the pilot and the master.
- The initial conference is an opportunity not only to exchange information that the pilot and master each needs, but also for the pilot and the master to establish an appropriate working relationship.
- The conference should convey, and be consistent with, the principle that the pilot and the master/bridge crew each has an important role in the navigation of the vessel.
- The amount and subject matter of the information to be exchanged in the initial conference should be determined by the specific navigation demands of the pilotage operation.
- For some vessel movements, particularly those involving a long run or difficult maneuvers at the beginning of the movement, not all relevant information must, or should, be exchanged in the initial conference; additional information can be exchanged as the movement proceeds.

Postaccident Action

On September 26, 2007, the NOBRA board of examiners conducted a hearing in connection with the *Kition* accident (appendix B). The board found that the following contributed to the accident:

an incomplete and ineffective Master Pilot Exchange; ineffective communication between the pilot and the tug captains; the strong current³⁷ and directional flow of the current in that area of the River; and the pilot exhibiting a lack of situational awareness, failing to make timely and prudent decision, and failing to readjust his actions as needed.

The board of examiners prescribed 4 to 6 weeks of supplemental training for the pilot. It also recommended that no state pilots “attempt to turn any vessel above the bridge when sailing from the Apex or general cargo docks.”

³⁷ The board of examiners’ report estimated the river current at 4.6 knots.

ANALYSIS

Exclusions

At the time of the accident, visibility was good and winds were light. The river current was strong at 3 to 4 knots as reported by the Coast Guard, but such currents are not unusual on the Mississippi River, and pilots are accustomed to compensating for them. Communications between the pilot and ship's navigation watch were heard clearly and carried out, and radio communication between the pilot and tugmasters was clear and reliable. The *Kition's* engine and steering were operating satisfactorily, and the tugs had adequate horsepower for undocking the *Kition* and for controlling the vessel as it moved either downriver or upriver to be turned. The Safety Board therefore concludes that the following were not causal to the accident: river current, weather, communication problems, mechanical problems, or tug horsepower.

Pilot's Actions

An important element of bridge resource management is the exchange of information between master and pilot regarding the vessel (for example, unusual ship-handling characteristics) and the planned voyage (number of tugs, route, weather, hazards, and so forth). The pilot had received training in bridge resource management, and both the pilot and the master signed a master-pilot conference form indicating that they had exchanged information in accordance with international safety management system requirements. The pilot told investigators that he did not discuss with the master how he planned to turn the vessel around before heading downriver, and that he normally did not inform masters of his plans unless they asked. Both statements are inconsistent with good bridge resource management and are also contrary to the policy of the American Pilots Association, of which NOBRA is a member. The Safety Board therefore concludes that the pilot's stated practice of not informing masters of his navigation plans unless they asked is contrary to the principles of good bridge resource management.

According to the master, the pilot told him that it was standard procedure to turn at the dock. The master said that when the pilot informed him that he intended to turn the vessel at the dock, he (the master) urged the pilot to take the vessel upriver to turn it. The master stated that the pilot replied that turning upriver was not an option because of the vessel's draft. The pilot told investigators that going upriver was not an option because of a wrecked barge that would make it unsafe to turn a deep-draft vessel such as the *Kition*. The Safety Board found no evidence

of a wrecked barge. Further, before getting under way, the pilot informed other mariners in the area by radio that he planned to maneuver the *Kition* crossways in the channel at the bridge. The Safety Board therefore concludes that the pilot's plan was to turn the vessel from the dock, and that his actions were consistent with that plan.

The pilot told investigators that when the tug at the bow failed to push with adequate force, the *Kition's* bow swung right to such an extent that he believed he could not straighten the ship. That event, he stated, caused him to abandon his original plan of turning below the bridge and instead attempt to turn the vessel from the dock. The video record shows the bow of the *Kition* swinging slightly away from the dock about 0726, confirmed by the course recorder printout, which shows a right heading change of about 2°. The vessel appears to have been approximately parallel to the dock from shortly after 0729 until 0731, indicating that there were no problems of vessel control at that time.

At 0731, the pilot ordered the engine speed increased to slow ahead and the rudder increased to hard port. The pilot stated that his orders were an attempt to control the vessel's swing to the right. However, slow ahead and hard port would also have been logical orders for moving the stern away from the dock while the tug *Peggy H* pulled on the bow. The course recorder shows the vessel steadying on a heading of approximately 000° for about 2 minutes until the start of the 90° heading change that culminated in the allision. The Safety Board therefore concludes that despite what the pilot said about losing control of the *Kition*, the evidence shows that the vessel did not experience an uncontrolled swing that compelled the pilot to turn at the dock.

The pilot told investigators that a wreck upriver caused him to rule out taking the vessel upriver to turn it. Even if such a wreck had existed (as noted earlier, investigators found no evidence of a wreck), other upriver locations were available for turning. For example, the pilot said that he had taken large ships to and from a terminal about 3 miles upriver of the bridge, and that the wreckage was not a threat to ships in the shipping channel to and from that terminal. The *Peggy H* tugmaster estimated that 90 percent of large vessels departing the dock are moved downriver through the bridge and then turned. The director of operations of the Port Authority of Baton Rouge told investigators that large vessels normally move downriver of the I-10 bridge and then turn, although they also go upriver before turning. The Apex terminal manager stated that large ships are taken either upriver or downriver and turned, but that they do not turn from the dock. The Safety Board therefore concludes that attempting to turn the vessel from the dock was an unusual, unsafe course of action that demonstrated poor judgment on the pilot's part.

The *Kition* was nearly 800 feet long. The bridge's navigation span offered about 1,100 feet of horizontal clearance. Thus, the margin of error was only about 300 feet, apportioned between the vessel's bow and stern. In executing any maneuver with a limited margin for error, a mechanical failure, an unexpected

current, or a misjudgment can quickly create a perilous situation. In the case of the *Kition*, turning the vessel from the dock exposed it to two grave risks: first, that the bow would allide with the bridge pier, and second, that the stern would strike the dock.

Once the *Kition* pilot was committed to turning at the dock, it was critical for him to control any headway that would bring the bow close to the bridge pier. Although the pilot reduced engine speed and reversed the engine, his actions did not bring the vessel's forward motion under control, and the *Kition* continued to move slowly across the river. In addition, according to the video recording, the vessel's stern was more than 300 feet from the dock at the time of the accident. That distance should have alerted the pilot that the bow was perilously close to the bridge pier. The Safety Board therefore concludes that the pilot failed to recognize the risk of an allision and did not exhibit the ship-handling skills necessary to avoid the accident.

Pilotage Oversight

The NOBRA route between Baton Rouge and just below New Orleans has numerous facilities and docks. Some berths pose challenges for docking or undocking because of the shape of the river, the flow of the current, varying river stages, or the proximity of piers or bridges. The *Kition* pilot stated that he regarded the Apex dock as difficult to depart from, and the *Coast Pilot* specifically warns about the danger of striking the I-10 bridge pier when leaving the Apex dock. The accepted departure maneuver is to move the vessel away from the dock and either drop downriver below the bridge and turn or proceed upriver and turn around. A pilot departing from this dock should be familiar with the *Coast Pilot* warning and should know that turning below the bridge or well upriver are the acceptable methods of safely turning around. The *Kition* pilot had not departed from the Apex dock before. The Safety Board therefore concludes that the *Kition* pilot's inexperience in piloting a ship away from the Apex dock adversely affected his judgment about how to safely maneuver the vessel in that challenging area.

A NOBRA pilot could pilot ships for many years and still not dock or undock a large oceangoing ship at every dock or anchorage on the NOBRA route. It is therefore possible that some of the other NOBRA pilots may also lack knowledge about undocking at the Apex dock or at others that pose challenges for a large vessel. The NOBRA board of examiners required additional training for the pilot involved in the *Kition* accident and recommended that state pilots not turn vessels above the I-10 bridge. The Safety Board therefore believes that the NOBRA board of examiners should verify that the pilots assigned to challenging locations such as the Apex dock have received adequate training in docking and undocking large vessels at such locations.

Postaccident Alcohol Testing

The pilot of the *Kition* and the masters and crews of the three tugboats were tested for alcohol and drugs within 5 hours of the accident. All results were negative. The master, three deck officers, and deck crewmembers of the *Kition* were tested for both alcohol and drugs. The drug tests were negative. The alcohol tests for the *Kition* crew were invalid because when the samples were taken, more than 15 hours had elapsed since the accident. The Coast Guard investigator who boarded the vessel 3 hours after the accident said that he observed the crew's performance and saw no indication of alcohol impairment. The Safety Board therefore concludes that although the *Kition* crewmembers were not tested for alcohol in a timely manner, there is no evidence that alcohol played a role in the accident.

After the accident, the *Kition* crewmembers were involved in maneuvering the damaged vessel to a safe anchorage. The Coast Guard investigator told the Safety Board that he had felt it would not be prudent to conduct alcohol testing until the vessel was secure.³⁸ His decision not to interrupt the crew while they were anchoring the vessel gave priority to safety. Coast Guard regulations allow postaccident drug and alcohol testing to be deferred if mariners are involved in safety concerns directly related to the accident. However, if everyone on the *Kition* had understood that alcohol testing was required, it probably could have been accomplished between anchorings. The critical *Kition* personnel to be tested were the master, the chief officer, and the helmsman. The Coast Guard investigator could have witnessed the testing and verified it. The Safety Board therefore concludes that the *Kition* crewmembers could have been tested for alcohol during breaks in the anchoring operation if those involved had understood that it was necessary.

New postaccident testing regulations became effective on June 22, 2006. Before the regulations changed, the special Safety Board investigation discussed earlier³⁹ found that postaccident testing was accomplished in less than half the cases studied. The changes that went into effect in 2006 have clarified the postaccident testing regulations, and guidance on the revised regulations has been made available. Nevertheless, the Coast Guard investigator who boarded the *Kition* after the accident did not insist on alcohol testing, even though he carried a breath-testing device. He also did not ascertain whether the vessel carried saliva kits for alcohol testing.

As discussed earlier, the Coast Guard concurred with the Safety Board's earlier recommendation (Safety Recommendation M-98-73) that Coast Guard personnel should conduct alcohol testing when the marine employer cannot do so. Furthermore, Coast Guard headquarters has issued both an instruction to all

³⁸ Anchoring operations were completed about 1448, and crewmembers monitored the vessel in the anchorage until 1735.

³⁹ *Postaccident Testing for Alcohol and Other Drugs in the Marine Industry and the Ramming of the Portland-South Portland (Million Dollar) Bridge at Portland, Maine, by the Liberian Tankship Julie N on September 27, 1996.*

districts (ALDIST 174/97) and a policy letter directing Coast Guard personnel to conduct alcohol testing whenever it might otherwise not be done.⁴⁰ Thus, according to Coast Guard policy, the investigator should have pressed for more timely alcohol testing or conducted the tests himself. The Safety Board therefore concludes that Coast Guard policy regarding timely postaccident alcohol testing by Coast Guard personnel was not followed. Consequently, the Safety Board believes that the Coast Guard should retrain its investigating officers in the policy set forth in ALDIST 174/97 regarding postaccident alcohol testing by Coast Guard personnel.

Because of the newness of the postaccident alcohol-testing regulations, little information is available on the extent to which they are, or are not, being followed. The Safety Board therefore concludes that an assessment of the effectiveness of alcohol testing after serious marine incidents would help verify whether the alcohol-testing regulations are effective and whether they are being followed, and would provide the basis for taking corrective action if necessary. Therefore, the Safety Board believes that the Coast Guard should verify whether the regulations for alcohol testing after serious marine incidents are being followed, and if not, identify corrective measures.

⁴⁰ The instructions specify breath testing. However, as noted in the section "Previous Safety Board Action Regarding Postaccident Testing for Alcohol," the new Coast Guard regulations authorize saliva as an acceptable specimen for alcohol testing.

CONCLUSIONS

Findings

1. The following were not causal to the accident: river current, weather, communication problems, mechanical problems, or tug horsepower.
2. The pilot's stated practice of not informing masters of his navigation plans unless they asked is contrary to the principles of good bridge resource management.
3. The pilot's plan was to turn the vessel from the dock, and his actions were consistent with that plan.
4. Despite what the pilot said about losing control of the *Kition*, the evidence shows that the vessel did not experience an uncontrolled swing that compelled the pilot to turn at the dock.
5. Attempting to turn the vessel from the dock was an unusual, unsafe course of action that demonstrated poor judgment on the pilot's part.
6. The pilot failed to recognize the risk of an allision and did not exhibit the ship-handling skills necessary to avoid the accident.
7. The *Kition* pilot's inexperience in piloting a ship away from the Apex dock adversely affected his judgment about how to safely maneuver the vessel in that challenging area.
8. Although the *Kition* crewmembers were not tested for alcohol in a timely manner, there is no evidence that alcohol played a role in the accident.
9. The *Kition* crewmembers could have been tested for alcohol during breaks in the anchoring operation if those involved had understood that it was necessary.
10. Coast Guard policy regarding timely postaccident alcohol testing by Coast Guard personnel was not followed.
11. An assessment of the effectiveness of alcohol testing after serious marine incidents would help verify whether the alcohol-testing regulations are effective and whether they are being followed, and would provide the basis for taking corrective action if necessary.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the *Kition's* allision with the Interstate Highway 10 bridge at Baton Rouge, Louisiana, was the pilot's attempt to execute the high-risk maneuver of turning at the dock immediately above the bridge rather than moving the vessel downriver through the bridge before turning or taking it well upriver, then turning.

RECOMMENDATIONS

As a result of its investigation of the *Kition* accident, the National Transportation Safety Board makes the following recommendations.

To the U.S. Coast Guard:

Retrain your investigating officers in the policy set forth in ALDIST 174/97 regarding postaccident alcohol testing by Coast Guard personnel. (M-08-8)

Verify whether the regulations for alcohol testing after serious marine incidents are being followed, and if not, identify corrective measures. (M-08-9)

To the Board of New Orleans–Baton Rouge Steamship Pilot Examiners for the Mississippi River:

Verify that the pilots assigned to challenging locations such as the Apex dock have received adequate training in docking and undocking large vessels at such locations. (M-08-10)

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

Mark V. Rosenker
Acting Chairman

Robert L. Sumwalt
Member

Deborah A. P. Hersman
Member

Kathryn O’Leary Higgins
Member

Steven R. Chealander
Member

Adopted: August 12, 2008

APPENDIX A

Investigation

The Safety Board was notified of the *Kition* accident at 1500 on February 10, 2007, by the command center at U.S. Coast Guard headquarters. A four-person investigative team traveled to the site, consisting of three investigators from the Office of Marine Safety and one from the Office of Highway Safety. Three team members arrived on February 11, while the fourth arrived on February 12. The investigators interviewed the officers, helmsman, and pilot of the *Kition*, the three tugboat masters, port and terminal officials, and representatives of the Board of Examiners of the New Orleans-Baton Rouge Steamship Pilot Association. The on-scene investigation was completed on February 18.

The Safety Board investigated the accident according to its rules under the authority of the Independent Safety Board Act of 1974. The designated parties to the investigation were the Coast Guard, the New Orleans-Baton Rouge Steamship Pilots Association, and E. N. Bisso and Son (the tugboat company).

APPENDIX B

Findings of NOBRA Board of Examiners

**Board of Examiners
New Orleans-Baton Rouge Steamship Pilots**

In re: Capt. [REDACTED] - M/V Kition

The Board of Examiners for the New Orleans - Baton Rouge Steamship Pilots conducted a hearing on September 26, 2007, following an investigation of the actions of NOBRA Pilot [REDACTED] in connection with the M/V Kition's allision with the I-10 bridge pier on February 10, 2007 in Port Allen, Louisiana.

Capt. [REDACTED] was represented at the hearing by counsel. The Board of Examiners has considered the sworn testimony of the witnesses and the exhibits which were introduced into the record, and now makes the following findings of fact:

FINDINGS OF FACT

1. The Board of Examiners for the New Orleans Baton Rouge Steamship Pilots is charged by Louisiana law with promoting and maintaining the safety of maritime commerce along the Mississippi River.
2. In recognition of this duty, the Board maintains a strong commitment to enhancing the safety and well-being of the citizens of Louisiana, preventing peril to public health, safety and welfare, and maintaining reliable and safe pilotage services. In furtherance of its commitment, the Board desires to identify and propose solutions to all factors that are detrimental to marine safety and the effectiveness of NOBRA pilots.
3. Capt. [REDACTED] has been a commissioned NOBRA pilot since May 1, 2002. Over the course of his career as a state-commissioned pilot, Capt. [REDACTED] has piloted in excess of seven hundred trips over the NOBRA route. During those assignments, he has never been involved in a collision or other incident involving pilot error.
4. On February 10, 2007, Capt. [REDACTED] received orders to pilot the M/V Kition from the Apex Dock (MM 229.5) downriver to the Point (MM 90.5). The Kition is a tanker 798 feet long and 137 feet wide. On February 10, 2007 it had a draft of 44'7". At the time of the incident at issue, the Baton Rouge gauge read 26', with winds from the north at about 10-15mph. The river current was estimated to be approximately 4.6 knots.

5. The Apex dock is located on the west bank of the Mississippi River, just upriver from the I-10 bridge in Baton Rouge Harbor. The bridge provides a horizontal clearance of about 1,100 feet.
6. Capt. ██████ boarded the vessel at approximately 0550, at which time the vessel was moored to the Apex 2 dock, port side to the berth with its bow pointing upriver.
- 7 The charterer's agent ordered three tug boats to assist in the unberthing of the vessel. The three tugs were the Peggy H, a twin-screw tug with 3,600 horsepower; the Gladys B, a single-screw tug with 2,400 horsepower; and, the Margaret F. Cooper, a single-screw tug with 3,500 horsepower.
8. Capt. ██████ testified that his plan was to hold the vessel against the dock with the assistance of the three tugs, release all lines, and then, with the continued assistance of the tugs, allow the vessel to float back under the I-10 bridge, and ultimately turn the ship once there was sufficient room downriver from the bridge.
9. The vessel was held in its berth with four bow lines, two forward breast lines, two forward spring lines, four stern lines, two after breast lines and two aft spring lines. Capt. ██████ planned to release most mooring lines using standard procedure, except that the aft spring lines would be released last.
10. Capt. ██████ instructed the Peggy H to take a position on the bow and to send a line up to the vessel. He instructed the Gladys B to take a position amidships and the Margaret F. Cooper to take a position at the stern. At 0705, Capt. ██████ ordered the three tugs standing by to come ahead hard in order to hold the vessel alongside the dock so that the mooring lines could be taken in.
11. When the forward bow lines were being taken in, one of the lines leading from the starboard bow dropped into the water near the Peggy H. The tug's master had to stop pushing so that he could move his vessel in order to prevent the possibility of the mooring line fouling one of his propellers. Capt. ██████ estimated that the Peggy H was not able to push for one to two minutes and it was during this time that the vessel's bow began to move away from the dock toward midstream.

12. Recognizing that the vessel's bow was moving away from the dock, and that the aft spring line had not yet been cleared, Capt. [REDACTED] ordered "port rudder" and "dead slow ahead," and then "slow ahead" to allow the linesmen to let go the aft spring lines so that he could attempt to bring the bow closer to the dock. Capt. [REDACTED] further testified that despite the Peggy H resuming its position and pushing on the vessel, the bow of the Kition continued to come away from the dock, toward midstream, due to the strong current of the river in that location.
13. Based on the vessel's continued swing toward mid-river, Capt. [REDACTED] decided that, rather than backing the vessel under the bridge and turning it once he was some distance below the bridge, he would have to turn the vessel right then. He ordered the Peggy H to go back hard and the other two tugs to push hard in an attempt to turn the vessel. The vessel, however, had drifted too far toward midstream due to the strong current. As Capt. [REDACTED] tried to turn the vessel, the vessel's underwater hull, the bulbous bow, made contact with the bridge's fender system. Moments later, the Kition's starboard bulwark near the bow struck the bridge pier.
14. The Board recognizes that there is some conflict between Capt. [REDACTED] testimony and that of Capt. [REDACTED] the master of the Peggy H. That is, Capt. [REDACTED] testified that he was pushing against the ship when the two starboard lines were let go. The lines typically drop into the water and, because of their weight, sink out of sight. On this day, however, these two lines did not stay submerged; they floated and gradually came back toward the Peggy H. Capt. [REDACTED] was concerned that these lines may become entangled in his propeller so he slowed down his port engine and slid down the Kition, toward its stern, until he reached the end of his line. He then resumed pushing using both engines. Capt. [REDACTED] estimated that this maneuver took a matter of seconds.
15. Capt. [REDACTED] further testified that from his vantage point, the vessel appeared to stay alongside and parallel to the dock during the period that he had to reduce power and drop back. According to Capt. [REDACTED] Capt. [REDACTED] then ordered him to back half, and ordered the two other tugs to move to the stern of the vessel. Thereafter, Capt. [REDACTED] ordered Capt. [REDACTED] to go back hard and the two tugs at the stern to push hard.

16. Capt. ██████ testified that after the aft spring lines were released, they became entangled on the wood fender system along the dock. This condition occurred as the vessel's bow continued to move out away from the dock. At that time, he ordered dead slow ahead and then slow ahead on the ship's engine with hard to port rudder, rather than full-ahead, because he was concerned that full-ahead may cause the aft spring line to part, thereby resulting in potential injury to those nearby.
17. The Board recognizes the strong current in that location and has taken into account the difficulties posed by the starboard bow lines interfering with the operation of the Peggy H and aft spring lines becoming fouled on the fender system of the dock. The Board also recognizes that the Pilot on the bridge of the vessel has the best vantage point to judge the position of the vessel relative to the dock as well as the effect of the current on the vessel.
18. Capt. ██████ and Capt. ██████ both testified to the strength of the current at the Apex dock. That testimony is consistent with the experience of each member of this Board, which is that the river current is quite strong at that location. Moreover, an additional important fact is that the current there does not run perpendicular to the bridge nor does it run parallel to the Apex dock. The current crosses from the west bank as it approaches MM229.5 from upriver to the east bank below the I-10 bridge, creating a very strong offshore pressure for a vessel that is moored like the Kition was on February 10. This causes all vessels coming southbound through the bridge to be set toward the middle support pier.
19. Based on the testimony of Capt. ██████ and on our analysis of the video surveillance footage identified as Exhibit 5, the sworn statements of the captains of the three tugs, and the other documents introduced into evidence, the Board finds there were several contributing factors to this incident. They include an incomplete and ineffective Master Pilot Exchange; ineffective communication between the pilot and tug captains; the strong current and directional flow of the current in that area of the River, and the pilot exhibiting a lack of situational awareness, failing to make timely and prudent decisions, and failing to readjust his actions as needed.

The Board finds that once the aft spring lines were cleared, Capt. ██████ did not take adequate timely action to properly turn the vessel. Capt. ██████ testified that once the aft spring lines cleared, he ordered dead slow ahead and hard to port rudder. Other more appropriate alternative courses of action would have been to go full ahead with hard to port rudder immediately and if necessary let go one or both anchors to stop the set of the vessel; or, to stop

engines and go full astern in order to keep the vessel from setting across the river when it became apparent that he had to execute the turning maneuver. It appears that Capt. [REDACTED] did not timely appreciate the significance of the vessel's headway that was caused by the vessel's deep draft and close under keel clearance. Any actions taken to counteract this large amount of kinetic energy would have to be immediate and considerable, i.e. using full ahead or full astern engine orders.

20. The use of the danger signal, five or more short blasts on the whistle, is widely recognized as the proper way to alert others when the risk of collision or allision is imminent. The Board finds that, due to his lack of situational awareness, Capt. [REDACTED] did not timely realize the imminent risk of allision, and as such did not issue the danger signal at any time during the incident at issue.
21. The evidence produced in connection with this incident reveals several issues that the Board must address in furtherance of its mission of enhancing the safety and well-being of the citizens of Louisiana, preventing peril to public health, safety and welfare, and maintaining reliable and safe pilotage services.
22. The area of the Mississippi River at issue consists of a very narrow channel which restricts maneuverability and creates strong currents. Further, the Kition had a 44'7" draft, which further restricts maneuverability, especially once the bow moves out away from the dock and the current is predominantly acting on one side of the ship (port side) more than the other. Here, Capt. [REDACTED] had to unberth a vessel that was 800' long with a 44'7" draft, and he had the assistance of three tugs totaling only 9,500 horsepower. Two of these were single-screw tugs, which affects their maneuverability alongside when requested to move from one position to another. In the Board's estimation, these tugs offered insufficient capabilities for the safe unberthing of the Kition at that location and under the then-existing conditions.
23. Unberthing Procedure: The Board recognizes that holding the aft spring lines until last is a procedure widely used around the world. But, in this instance, the Board finds that this was an inappropriate procedure.
24. The Board recognizes that there have been very few vessels of the M/V Kition's size and draft unberthing at the APEX terminal. The Board recommends that all parties involved including pilots, owners, agents, and dock operators ensure that adequate and reliable equipment is made available for all vessels along the NOBRA route.

- 25 **The Master-Pilot Exchange: Effective communication among vessels operating on the Mississippi River is essential to the safety and welfare of mariners and industry along the River, and indeed it is essential to the safety and welfare of all citizens of this State. A complete Master-Pilot Exchange (MPX) is the starting point of the effective communication that must take place throughout a Pilot's voyage.**

Here, the Master stated to NTSB that the Pilot told him that he planned to turn the vessel from the Apex dock. Capt. ████████ denies this, but adds that it was difficult to communicate with the Master. Capt. ████████ recognized that his MPX in this instance was, in his own words, "terrible." Capt. ████████ further testified that after this incident and continuing to the present day, his Master Pilot Exchanges include making sure that the Master, and the tug captains, understand what the unberthing procedures will be, as well as what his "Plan B" is in case conditions on the river cause unexpected movement of the vessel or other unforeseen events during unberthing. Capt. ████████ considers the procedures he currently employs to be the types of procedures that allow for a safety factor in the event a Pilot encounters problems during a voyage.

26. This Board recognizes that a Pilot must also have clear and effective communication with the tug boats assisting with a vessel's berthing or unberthing. That is, the incident at issue demonstrates that comprehensive effective communication starts with a complete and clear MPX but does not end there. Effective communication also includes that communication between Pilot and tug captains, particularly in circumstances of high river, strong current and close proximity to bridges and other facilities.

Here, while the captain of the Margaret Cooper describes the communication with Capt. ████████ as "fine," and the captain of the Gladys B seems to have a similar view, it certainly appears that the communication between the Captain of the Peggy H and Capt. ████████ was less than optimal. This was likely magnified by the problems encountered with the starboard bow lines and aft spring lines.

27. The Board finds that proper situational awareness includes consideration of whether the tugs that have been ordered to assist with unberthing are sufficient under the particular circumstances presented by the location, the vessel and the conditions of the river.

28. Based on the evidence produced during this hearing, the Board takes this opportunity to recommend to NOBRA Pilots that no state-commissioned Pilot attempt to turn any vessel immediately above the bridge when sailing from the Apex or general cargo docks.
29. In accord with state law and the Rules of the Board of Examiners, Capt. [REDACTED] underwent alcohol and drug testing on February 10, 2007. The results of both tests showed that Capt. [REDACTED] was not under the influence of drugs or alcohol.
30. The Board recognizes that NOBRA pilots are frequently called upon to evaluate and timely react to a complex combination of factors that affect a safe voyage. Sudden changes in conditions resulting from the river's current, channel, and stage, the proximity of bridges and facilities along the river, and the size, draft and operational characteristics of a particular vessel, present distinct challenges that demand the immediate action and professional judgment of a well-trained and experienced pilot. Even momentary delays or lapses by the pilot can lead to disastrous results. Such is the heavy burden of those privileged to hold a commission as a NOBRA pilot.
31. Safety is the paramount concern of this Board and must be the paramount concern of every NOBRA Pilot. The Board of Examiners recognizes the limited effectiveness of punitive measures in correcting human factors associated with maritime casualties; therefore, the Board seeks to accomplish safety mitigation through remedial and continuing education measures first.
32. The Board of Examiner's goal is to maintain the safety of navigation on the Mississippi River and in the performance of this task we will institute an extensive and intensive four to six week supplemental training program for the pilot involved in the incident at issue. This program will consist of the following:
 - a. Over the course of a three week period, beginning October 4, 2007, Capt. [REDACTED] will begin a program to evaluate his close-quarters maneuvering skills for docking, undocking, anchoring, unanchoring and buoy system maneuvering. Capt. [REDACTED] will complete at least fourteen trips, to be taken with and under the supervision of senior pilots, who will evaluate the strengths and deficiencies of the pilot's knowledge, technique and proficiency as a NOBRA pilot. These senior pilots will be Instructor Pilots already involved in the continuing education program, and other pilots from within the ranks of NOBRA. Prior to the commencement of the check rides, these senior pilots will be briefed on the findings of the Board.

- b. At the completion of these check rides, the Board of Examiners will debrief these senior pilots. Based on this debriefing, the Board will formulate a supplemental classroom and ship-handling simulator training program for Capt. [REDACTED] that includes Bridge Resource Management, Emergency Ship Handling and Advanced Ship Handling. This supplemental training program and a summary of the debriefing shall be submitted to a third-party expert for review. This third-party expert must have extensive experience within confined waters of the United States and have a background with continuing education of merchant mariners. Capt. [REDACTED] will then undergo a one week reevaluation by taking check rides with members of the Board and/or the senior pilots conducting the initial evaluation. Capt. [REDACTED] will be placed on Commission business and out of rotation during the check rides and training program provided above. In addition to the twenty-four hours of continuing education required for the year 2008, Capt. [REDACTED] shall complete a course in Maritime Safety and Risk Assessment.

The Board of Examiners For The New
Orleans Baton Rouge Steamship Pilots

By: 

Capt. Henry G. Shows, Jr.
Chairman

Date: October 3, 2007.