

Log M-413

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National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: February 6, 1998

In reply refer to: M-98-1 through -4

Admiral Robert E. Kramek
Commandant
U.S. Coast Guard
Washington, D.C. 20593-0001

Shortly after 1400 on December 14, 1996, the fully loaded Liberian bulk carrier *Bright Field* temporarily lost propulsion power as the vessel was navigating outbound in the Lower Mississippi River at New Orleans, Louisiana. The vessel struck a wharf adjacent to a populated commercial area that included a shopping mall, a condominium parking garage, and a hotel. No fatalities resulted from the accident, and no one aboard the *Bright Field* was injured; however, 4 serious injuries and 58 minor injuries were sustained during evacuations of shore facilities, a gaming vessel, and an excursion vessel located near the impact area. Total property damages to the *Bright Field* and to shoreside facilities were estimated at about \$20 million.¹

The National Transportation Safety Board determined that the probable cause of this accident was the failure of Clearsky Shipping Company to adequately manage and oversee the maintenance of the engineering plant aboard the *Bright Field*, with the result that the vessel temporarily lost power while navigating a high-risk area of the Mississippi River. Contributing to the amount of property damage and the number and types of injuries sustained during the accident was the failure of the U.S. Coast Guard, the Board of Commissioners of the Port of New Orleans, and International RiverCenter, Inc., to adequately assess, manage, or mitigate the risks associated with locating unprotected commercial enterprises in areas vulnerable to vessel strikes.

This accident demonstrates that the many and diverse stakeholders in the area of the Port of New Orleans, including the Coast Guard, the State of Louisiana, the Board of Commissioners of the Port of New Orleans (the "Dock Board"), the pilot organizations, and the owners and operators of riverfront properties and nearby moored passenger ships, did not adequately prepare for or mitigate the risk of a marine casualty affecting people and property within the Port of New Orleans. Some of the stakeholders, most notably the Dock Board, had commissioned partial risk

¹For more detailed information, read Marine Accident Report—*Allision of the Liberian Freighter Bright Field with the Poydras Street Wharf, Riverwalk Marketplace, and New Orleans Hilton Hotel in New Orleans, Louisiana, December 14, 1996.* (NTSB/MAR-98/01).

assessment studies at various times for the assets in the harbor area. Despite their limitations (in either geography or scope), these studies did provide adequate information for the stakeholders to recognize the possibility of an accident similar to the one involving the *Bright Field*.

For example, risk assessment projects predicted an increase in accidents involving collisions, rammings, and groundings due to increased river traffic. The Louisiana State University risk assessment project, in 1994, concluded that no sections of the Port of New Orleans waterfront were free of ship allisions, including the area where the high-capacity passenger vessels, gaming vessels, and riverfront properties were located. Analysis of accident data for the Port of New Orleans from 1983 through 1993 (a total of 166 rammings along the left descending bank between miles 91 and 101 AHP) identified a mooring area for gaming vessels that had seen the fewest "historical allisions on the left bank." The study acknowledged, however, that no area of the left descending bank of the river had been completely free of vessel strikes during the 11-year period studied.

Despite this history of sensitivity to risk within the port area, the Riverwalk complex, including the condominium garage and the Hilton Hotel Riverside, were constructed on old warehouse piers on the river side of the levee. This location offered no "crush zone" that could absorb the impact of a marine ramming, and despite the fact that the piers themselves were not built to withstand being struck by a heavy vessel, no physical barriers were constructed outboard of the new buildings to offer them protection.

In contrast, the 1987 Audubon Institute-sponsored risk assessment similarly determined that there had been few allisions at the Bienville Street wharf and that because it is high up in the bend, it faced low risk of being struck by an outbound vessel. Nonetheless, recognizing low incidence, but a potential for high consequences, the Audubon Institute placed the Aquarium of the Americas behind the levee with a 100-foot buffer zone to protect the shoreside structure. No similar safety feature was considered or constructed for the Hilton Hotel or the Riverwalk Marketplace.

Several passenger vessels, including gaming, tour and cruise vessels, were allowed to dock along the left descending bank, the side of the river at highest risk. Had the *Bright Field* lost power some time later and the same accident scenario evolved, the ship would likely have rammed the gambling vessel, resulting in substantial loss of life. The cruise vessels, which had even less warning time, would quite likely also have sustained serious passenger injuries or loss of life.

While silting around the vessels' docking areas may offer some protection from ramming by deep-draft vessels at average river stages, the silt layer did not reduce water depth sufficiently to retard a runaway ship when the river was high, as it was on the day of the *Bright Field* accident. The property owners and other stakeholders within the Port of New Orleans clearly had the responsibility to establish and maintain a reasonable level of safety in the port area. The Safety Board concluded that the Coast Guard, the Dock Board, and the property owners did not adequately address the risks posed to moored vessels along the Erato, Julia, Poydras, and Canal Street wharves; as a result, under certain conditions, those vessels were vulnerable to ramming by other marine traffic.

Questionnaires were sent to 74 persons who had been either in or near the Riverwalk Marketplace when the accident occurred or who were among the passengers and crew of the *Queen of New Orleans* or *Creole Queen* at the time of the allision. A total of 12 responses were received from individuals who said they had been aboard the *Queen of New Orleans* when the *Bright Field* struck the wharf.

According to the *Queen of New Orleans' Emergency Evacuation Plan for Moored Conditions*, the vessel can be exited only from the bow section of the second deck. The plan states that to evacuate the vessel in an emergency, every passenger is to be directed to this gangway. The owner of the vessel noted that three portable emergency gangways, which are designed to be used in the event the main gangway is inoperable, are aboard the vessel. The vessel's emergency evacuation plan, however, does not refer to these portable gangways, or provide instructions on how to make them operable in an emergency, or give guidance for directing passengers to them. The evacuation plan also does not take into account the time needed to alert the crew to take action or for crewmembers to stage the portable gangways and assure their safe operation. Because the emergency gangways were not used during the *Bright Field* accident, the only exit available was the second deck bow gangway.

While the Safety Board recognizes that the number of questionnaire responses was small relative to the number of passengers aboard the vessel, the responses are nevertheless meaningful and illustrate the panic induced when the crowd was confronted with no means of escape from a vessel directly threatened by an oncoming freighter. Furthermore, had the vessel been filled to its capacity of 1,800 passengers and crewmembers, the number of persons unable to evacuate in time could have been significantly higher. The ensuing panic most likely would have been more hazardous, possibly resulting in a higher number of, and more severe, injuries. The Safety Board concluded that evacuation of the *Queen of New Orleans* was hampered, and passenger risk increased, by the fact that only one gangway was made available for passenger egress during the emergency.

The *Creole Queen*, a New Orleans Paddlewheels, Inc., excursion vessel with a capacity of 1,000 passengers and crew, was docked astern of the *Queen of New Orleans*. At the time of the accident, 190 passengers and crewmembers were aboard. Following the master's instructions to evacuate, passengers exited the vessel across a single dockside gangway. When the bow wave from the *Bright Field* passed the *Creole Queen*, the gangway dropped from the side of the vessel, and three passengers on the gangway fell into the river. One passenger was seriously injured; the other two sustained minor injuries. By this time, approximately one half of the *Creole Queen's* passengers had been evacuated. The remaining passengers could not exit the vessel until the gangway was repositioned.

The Safety Board concluded that New Orleans Paddlewheels, Inc., must make better provisions for all its vessels in the event of an impending allision or other emergency. Consequently, the Safety Board issued the following safety recommendations to New Orleans Paddlewheels, Inc., on September 5, 1997:

Work with the U.S. Coast Guard to review the *Emergency Evacuation Plan for Moored Conditions* of the *Queen of New Orleans* and amend it regarding current

evacuation procedures and the number of immediately accessible gangways and disembarkation locations, to ensure timely and orderly exiting of passengers in the event of emergency evacuation. (M-97-62)

Work with the U.S. Coast Guard to develop and implement procedures for evacuation under moored or docked conditions for all your excursion vessels to ensure that passengers can exit each vessel in a timely and orderly manner should an emergency evacuation be necessary. (M-97-63)

In a September 29, 1997, letter to the Safety Board, New Orleans Paddlewheels, Inc., replied that its emergency evacuation plan for the *Queen of New Orleans* in moored conditions

addresses the evacuation of all areas on board the vessel. We purposely did not include portable gangways because they are to be used only when the primary evacuation gangway is inoperable. Our deck crew is regularly trained and drilled on how to use these portable gangways in multiple locations.

The Safety Board is concerned that the evacuation plan for the *Queen of New Orleans* does not provide a readily available additional means of escape that does not require staging in an emergency. The Safety Board's intent in issuing Safety Recommendation M-97-62 was to prompt New Orleans Paddlewheels, Inc., to amend the *Queen of New Orleans's Evacuation Plan for Moored Conditions* not only to enhance evacuation procedures, but also to address the need to provide for more than one immediately accessible disembarkation location to ensure a timely and orderly exiting of passengers.

Further, although the September 29 letter states that the deck crew is trained and drilled on use of the portable gangways, the letter does not address the training of the nonoperating crewmembers, who are responsible for assisting passengers to the egress areas of the vessel during emergencies. The *Evacuation Plan for Moored Conditions* provides no guidance on the use of portable gangways to the numerous nonoperating crew on board the vessel who are responsible for directing passengers and assisting their escape. Moreover, the specific plan to which all crewmembers are to look for guidance in responding to emergency situations does not provide any information on these gangways or how to guide passengers to them. Based on the failure of New Orleans Paddlewheels, Inc., to effectively address these concerns, the Safety Board classifies Safety Recommendation M-97-62 "Closed--Unacceptable Action." New Orleans Paddlewheels, Inc., has not responded to Safety Recommendation M-97-63 concerning the development of evacuation procedures for moored or docked conditions for all its excursion vessels. Therefore, Safety Recommendation M-97-63 remains classified "Open--Await Response."

The Safety Board, also on September 5, 1997, issued the following safety recommendation to the Coast Guard:

Work with New Orleans Paddlewheels, Inc., to review and amend the *Emergency Evacuation Plan for Moored Conditions* of the *Queen of New Orleans* regarding current evacuation procedures and the number of immediately accessible

gangways and disembarkation locations, and to develop and implement procedures for evacuation under moored or docked conditions for all New Orleans Paddlewheels, Inc., excursion vessels to ensure that passengers can exit each vessel in a timely and orderly manner should an emergency evacuation be necessary. (M-97-59)

In a November 18, 1997, letter, the Coast Guard responded that the New Orleans captain of the port had already required a review of evacuation procedures for all high-capacity gaming vessels, but that the Coast Guard believes this safety recommendation should be expanded to cover all passenger vessels operating in the Mississippi River in the New Orleans area. The letter stated the Coast Guard's belief that,

It would be prudent to develop reasonable, practical and appropriate evacuation criteria for the different types of passenger vessels based upon their type, configuration, passenger and crew capacity, and the extent which passengers are normally aboard the vessel while dockside. To this end, we have discussed the expansion of this recommendation with Captain of the Port New Orleans and will require further review and development of this initiative.

The Safety Board is pleased that the Coast Guard has not only addressed the specific intent of Safety Recommendation M-97-59 regarding the *Queen of New Orleans*, but has also expanded the scope of the recommendation to cover all high-capacity passenger vessels operating within the Port of New Orleans. While the Coast Guard response does not specifically address evacuation plans for New Orleans Paddlewheels excursion vessels, the Safety Board notes that these vessels will be covered by the evacuation criteria the Coast Guard plans to develop for all passenger vessels operating in the New Orleans area of the Mississippi River. Pending further information from the Coast Guard regarding the proposed review of evacuation plans for such vessels, and specifically those vessels belonging to New Orleans Paddlewheels, Inc., the Safety Board classifies Safety Recommendation M-97-59 "Open--Acceptable Response."

Under River Front Alert Network procedures established after this accident, individual riverfront commercial properties were to make their own determinations about the proper actions to be taken after receiving notification of an emergency involving a vessel on the river. According to evacuation plans that were initially in effect for property tenants, a lengthy procedural chain of command was in place that could delay a decision to evacuate. In the view of the Safety Board, such a potential for delay could endanger the employees and patrons of riverfront properties. Therefore, on September 5, 1997, the Safety Board issued the following safety recommendation to the New Orleans Dock Board:

Develop, as part of the River Front Alert Network, an emergency evacuation announcement for broadcast by the harbor police department dispatcher using a public address system linked to river front properties that provides for a timely and efficient evacuation in the event of an impending collision or other emergency. (M-97-60)

Documentation received by the Safety Board on November 3, 1997, outlining the actions to be taken in the event of the activation of the River Front Alert Network appears to address the Safety Board concerns that prompted the issuance of Safety Recommendation M-97-60. Under the specific evacuation protocols developed for responding to the activation of the River Front Alert Network, the procedural chains of command within each property's evacuation plans have been eliminated, and property security officers have been given authority to initiate an evacuation immediately upon hearing a River Front Alert Network broadcast and assessing the danger. Because these revised evacuation plans meet the intent of the safety recommendation, the Safety Board classifies Safety Recommendation M-97-60 "Closed--Acceptable Action."

The River Front Alert Network system did not require that vessels docked or moored in its vicinity monitor the alert broadcast from the Coast Guard traffic light operator to the harbor police dispatcher indicating a vessel irregularity or loss of steering in the vicinity of the riverfront properties. The Safety Board was concerned that, unless these vessels monitored the network for emergency broadcasts, vessel occupants would be subject to delays in notification similar to those that occurred in this accident and that contributed to the disorderly evacuation and numerous injuries. Therefore, on September 5, 1997, the Safety Board issued the following safety recommendation to the New Orleans Dock Board:

Require all vessels which dock or moor in the area encompassed by the River Front Alert Network to monitor the River Front Alert Network radio for any emergency broadcast to provide maximum advance notice of an emergency.
(M-97-61)

In a September 15, 1997, reply to the Safety Board, the Dock Board said that the intent of this safety recommendation should be met by the postaccident COTP order requiring that all large passenger vessels docked in the area have a manned pilothouse and that they monitor all emergency and working marine channels. While agreeing that monitoring working and emergency radio channels should give moored passenger vessels advance warning of potentially hazardous situations on the river, the Safety Board notes that the COTP order requiring such monitoring was an interim, and possibly temporary, measure. The Coast Guard has since published an interim rule that, when issued as a final rule, will make permanent the COTP order. In anticipation that the interim rule regarding manned pilothouses and radio monitoring will become permanent as 33 CFR 165.810(e), the Safety Board classifies Safety Recommendation M-97-61 "Closed--No Longer Applicable."

Also on September 5, 1997, the Safety Board issued the following safety recommendation to the Coast Guard:

Require that all commercial vessels that operate within the River Front Alert Network zone participate in the network and notify the U.S. Coast Guard traffic light operator whenever they experience an irregularity or abnormality that could result in a safety risk to the Port of New Orleans area. (M-97-58)

In its November 18, 1997, letter to the Safety Board, the Coast Guard stated that existing regulations and local marine practice are now serving to meet the intent of this safety recommendation. The letter stated that,

3 CFR 160.215 requires vessels to immediately notify the nearest Marine Safety Office or Group of hazardous conditions aboard or caused by the vessel. Currently, the vessels in the vicinity of the traffic light notify the traffic light operator who is responsible to the Marine Safety Office. Through 33 CFR 26.03 or existing Captain of the Port orders, ALL vessels, including moored passenger vessels, must monitor Channel 67 VHF. Therefore, when a hazardous condition is reported to the traffic light operator, he activates the Riverfront Alert Network by calling the Harbor Police on the Network radio. The police then notify the impacted participating facilities and vessels. Between the Channel 67 notifications and subsequent Riverfront Alert Network radio calls, ALL vessels and facilities are notified.

Based on this response, the Safety Board classifies Safety Recommendation M-97-58 "Closed--Acceptable Action."

At the time the vessel lost propulsion, the *Bright Field* was operating at full speed in high-river and high-current conditions. In his testimony, the pilot claimed that it was necessary to operate the *Bright Field* at maximum speed to attain reasonable maneuverability of the vessel in the operating environment of high water, rapid current, and a heavily laden ship designed to be maneuverable at lower speeds.

Several days after the accident, Safety Board investigators boarded a fully loaded vessel of similar size, displacement, and power to the *Bright Field* that was operating downbound in similar high water conditions. During this transit, the pilot did not use full speed to maneuver the ship. Each ship handles differently, but the operation of the *Bright Field* at full speed left no margin for error. For example, the main engine tripped off line because of a temporary loss of lubricating oil pressure. The oil pressure and engine operation were restored within about 2 minutes, which is a reasonable amount of time. However, operating at full speed in high-river conditions, the ship had no room to maneuver out of the emergency. The Safety Board concluded that operating a vessel at full speed in the restricted waters of the Mississippi River may not allow sufficient time or distance to recover from an emergency.

High-river conditions are repeatedly cited as cause for concern. For example, various port risk assessments cite local experts, in interviews and in response to questionnaires, clearly expressing that high river stage is an important factor in river casualties. This opinion is strongly supported by available data. Eleven years of casualty data from the Port of New Orleans and the Coast Guard clearly show a seasonal trend to river casualties. The high-water months of February, March, April, and May experience two to three times the casualties that occur during the low-water months of July through October.

In addition, the studies point out that the Coast Guard acknowledges the fast Mississippi River current and low seasonal water temperatures as creating a very hostile environment. No

matter how many Coast Guard, State, local, and other resources respond to a casualty involving a large number of persons in the water, it would be difficult to rescue everyone. The Coast Guard 1994 search and rescue exercise lead to the conclusion that, under adverse conditions, the Coast Guard could expect to rescue and save only a small percentage of the people in the water. This finding should be unacceptable to the Coast Guard and the Port of New Orleans, and the two agencies should consider alternative means to deal with this emergency. For example, prior to the *Bright Field* accident, the Bonnet Carré Spillway had only been opened seven times to alleviate high-water conditions, apparently because of the cumbersome and lengthy tasks necessary to do so. Nonetheless, the risks associated with high water and rapid current were considered "unusual" enough that in March 1997, the spillway was opened for the eighth time. The Port of New Orleans, the Coast Guard, and the Corps of Engineers might consider more aggressive use of the Bonnet Carré Spillway to alleviate these high-water conditions and to deal with the safety issues created by them. Further, if the major impediment to opening the spillway is the time and effort it takes to do so, it may be appropriate for the Corps of Engineers to consider ways to make the spillway more usable and to employ it for risk mitigation as well as for flood control.

No practical physical barrier aboard ship exists that will safely stop a runaway vessel. In such an emergency, a safe outcome depends on the successful interaction of several physical and operational factors. For example, if main engine power is lost, adequate steering can usually be maintained until the ship slows enough for the anchors to be dropped. If a vessel loses its steering, engine power can be used to either slow the vessel (astern power) or, if it is a twin-screw vessel, to maneuver the ship.

Anchors are perceived as providing some level of protection by serving as "brakes" that will stop or at least slow a ship. But anchors are neither designed nor adequate for stopping a heavily loaded ship traveling at high speed. Had the *Bright Field's* anchors been released, the anchor chain would quite likely have payed out at a speed that could not be controlled by the windlass brake, and the chain would simply have continued to run out until it parted from the ship. In this accident, the dropping of the anchor and paying out of chain could not have been expected to significantly slow, let alone stop, the ship.

Since this accident, the Coast Guard has placed renewed emphasis on having anchors at the ready (backed out of the hawsepipe, disengaged from the windlass, and being held by the brake), with a two-person forecandle watch. While having the anchors manned and at the ready may prove beneficial in certain circumstances, it is unlikely to achieve anything meaningful aboard a heavy vessel operating at relatively high speeds in the Mississippi River. Further, "increased emphasis" on having the anchors at the ready may even provide a false sense of security without effectively addressing the dangers inherent in operating heavy vessels at high speed in proximity to shoreside businesses and other marine traffic.

The Coast Guard has overall responsibility for maintaining public safety in the Port of New Orleans area. Under the *Ports and Waterways Safety Act of 1972*, the Congress charged the Coast Guard with monitoring and managing risk in all U.S. ports and taking actions to maintain risk at an acceptable level. In carrying out this role, the Coast Guard must assess and manage the risk that is inherent in all commercial activities within U.S. ports. In fact, in its 1996

Performance Report, the Coast Guard's Office of Marine Safety and Environmental Protection asserts that managing risk is its primary mission. The Safety Board concurs with this assessment and notes that the Coast Guard has the authority, the responsibility, and the experience to direct a comprehensive assessment of risk in the Port of New Orleans.

Among the factors that must be considered are risks associated with relatively high-speed navigation of the river, high river stage and rapid river current, railroad and highway bridges spanning the waterway, and the carriage of cargoes such as bulk oil or other hazardous materials or chemicals that can cause pollution, fire, or explosion. The Safety Board notes that many of the risk factors associated with river commerce within the port area have already been identified in previous risk-assessment studies and, further, that these factors may be amenable to known risk-reduction or risk-mitigation initiatives. Such initiatives might include reducing vessel speed, opening the Bonnet Carré Spillway on a more regular basis, using tugboats either as escorts or as a "barrier" to protect marine assets, adequately assessing the protection afforded by silting-in of vulnerable areas, and moving the passenger vessels to a safer location.

As a result of its investigation of the *Bright Field* accident, the National Transportation Safety Board makes the following safety recommendations to the U.S. Coast Guard:

In cooperation with the Board of Commissioners of the Port of New Orleans, reassess the risk of locating passenger vessels along the left descending bank of the Mississippi River and determine whether to remove the vessels to a less vulnerable location or put in place procedural, operational, or physical barriers that will protect these vessels from ramming by riverborne traffic. (M-98-1)

Conduct, with the cooperation of all stakeholders, a comprehensive risk assessment that considers all activities, marine and shoreside, within the Port of New Orleans. (M-98-2)

Take the lead in working with the pilot associations serving the Port of New Orleans to evaluate the impact of operating vessels at full speed in the Mississippi River and incorporate that information in your risk-management and risk-reduction strategies for the port area. (M-98-3)

In cooperation with the appropriate stakeholders, including Federal, State, and local agencies; private commercial entities; shipowners; and pilot associations, implement risk-management and risk-mitigation initiatives that will ensure the safety of people and property within the Port of New Orleans. (M-98-4)

Also, the Safety Board issued Safety Recommendations M-98-5 and -6 to the U.S. Army Corps of Engineers; M-98-7 and -8 to the State of Louisiana; M-98-9 through -12 to the Board of Commissioners of the Port of New Orleans; M-98-13 through -15 to International RiverCenter; M-98-16 through -18 to Clearsky Shipping Company; M-98-19 through -23 to New Orleans Paddlewheels, Inc.; M-98-24 through -26 to the New Orleans Baton Rouge Steamship Pilots Association; M-98-27 and -28 to the Crescent River Port Pilots Association; and M-98-29 and -30 to Associated Federal Pilots and Docking Masters of Louisiana, Inc.

Please refer to Safety Recommendations M-98-1 through -4 in your reply. If you need additional information, you may call (202) 314-6450.

Chairman HALL, Vice Chairman FRANCIS, and Members HAMMERSCHMIDT, GOGLIA, and BLACK concurred in these recommendations.

By:

A handwritten signature in black ink, appearing to read "Jim Hall", is written over a circular stamp. The stamp is partially obscured by the signature and contains the text "Jim Hall" and "Chairman" below it.

Jim Hall
Chairman