



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: September 27, 2000

In reply refer to: M-00-20 through -24

Honorable Clarence Harmon
Mayor
City of St. Louis
City Hall
Tucker and Market Streets
St. Louis, Missouri 63103

The National Transportation Safety Board is an independent Federal agency charged by Congress with investigating transportation accidents, determining their probable cause, and making recommendations to prevent similar accidents from occurring. We are providing the following information to urge your organization to take action on the safety recommendations in this letter. The Safety Board is vitally interested in these recommendations because they are designed to prevent accidents and save lives.

These recommendations address the effectiveness of safety measures provided for the permanently moored vessel (PMV) *President Casino on the Admiral (Admiral)* and the adequacy of public safety for PMVs. The recommendations are derived from the Safety Board's investigation of the April 4, 1998, marine accident concerning the ramming of the Eads Bridge by barges in tow of the M/V *Anne Holly* with subsequent ramming and near breakaway of the *Admiral* in St. Louis Harbor, Missouri,¹ and are consistent with the evidence we found and the analysis we performed. As a result of this investigation, the Safety Board has issued 30 safety recommendations, 5 of which are addressed to the city of St. Louis. Information supporting the recommendations is discussed below. The Safety Board would appreciate a response from you within 90 days addressing the actions you have taken or intend to take to implement our recommendations.

About 1950 on April 4, 1998, a tow of the M/V *Anne Holly*, comprising 12 loaded and 2 empty barges, which was traveling northbound on the Mississippi River through the St. Louis Harbor, struck the Missouri-side pier of the center span of the Eads Bridge. Eight barges broke away from the tow and drifted back through the Missouri span. Three of these barges drifted toward the *Admiral*, a permanently moored gaming vessel below the bridge on the Missouri side of the river. The drifting barges struck the moored *Admiral*, causing 8 of its 10 mooring lines to

¹ For additional information, see forthcoming Marine Accident Report NTSB/MAR-00/01: *Ramming of the Eads Bridge by Barges in Tow of the M/V Anne Holly with Subsequent Ramming and Near Breakaway of the President Casino on the Admiral, St. Louis Harbor, Missouri, April 4, 1998*, (Washington, DC: National Transportation Safety Board, 2000).

break. The *Admiral* then rotated clockwise downriver, away from the Missouri riverbank. The captain of the *Anne Holly* disengaged his vessel from the six remaining barges in the tow and placed the *Anne Holly*'s bow against the *Admiral*'s bow to hold it against the bank. About the time the *Anne Holly* began pushing against the *Admiral*, the *Admiral*'s next-to-last mooring line parted. The *Anne Holly* and the single mooring wire that remained attached to the *Admiral*'s stern anchor held the *Admiral* near the Missouri bank. No deaths resulted from the accident; 50 people were examined for minor injuries. Of those examined, 16 were sent to local hospitals for further treatment. Damages were estimated at \$11 million.

The National Transportation Safety Board determined that the probable cause of the ramming of the Eads Bridge in St. Louis Harbor by barges in tow of the *Anne Holly* and the subsequent breakup of the tow was the poor decision-making of the captain of the *Anne Holly* in attempting to transit St. Louis Harbor with a large tow, in darkness, under high current and flood conditions, and the failure of the management of American Milling, L.P., to provide adequate policy and direction to ensure the safe operation of its towboats.

The National Transportation Safety Board also determined that the probable cause of the near breakaway of the *President Casino on the Admiral* was the failure of the owner, the local and State authorities, and the U.S. Coast Guard to adequately protect the permanently moored vessel from waterborne and current-related risks.

In the course of its investigation, the Safety Board reviewed the actions taken by *Admiral* personnel in response to the emergency. Although the *Admiral* security personnel were responsible for ensuring the safety of patrons in an emergency, they did not keep vessel patrons from becoming agitated and disorderly during the emergency response. Respondents to the Safety Board's postaccident questionnaire reported that some minor injuries and considerable anxiety resulted from people shoving them and crowds attempting to push through the single exit leading to the *Anne Holly*. Had the accident been more severe, this unruly conduct might have increased to the point of causing serious injuries or even deaths.

The fire drills held on the *Admiral* essentially addressed the procedures for securing the casino and evacuating a building-type structure, rather than for assembling and managing crowds to make an orderly evacuation. The drills did not provide alternative actions for personnel to take if the main avenues of egress were blocked or not available. Further, although the local fire prevention code required that fire drills be held every 90 days on the *Admiral*, the last such drill before the April 1998 accident was held in June 1997.

Clearly, local authorities did not provide adequate oversight of the company's responsibility to conduct periodic fire drills. Because the city of St. Louis did not require owners to keep records of drills that had been conducted, the city was unaware that the *Admiral* had gone almost 9 months between the last fire drill and the accident. In the Safety Board's opinion, frequent drills would have helped prepare the *Admiral*'s staff to deal with a real emergency. The Safety Board concluded that President Casino's failure to conduct fire drills and the city of St. Louis's failure to enforce fire drill requirements for the *Admiral* contributed to a lack of casino staff preparedness to deal with emergency situations. Therefore, the Safety Board believes that the city of St. Louis should establish and implement oversight procedures to ensure that owners

of operational PMVs accessible to the public in St. Louis Harbor conduct and document fire drills.

The *Admiral* often accommodates thousands of patrons and hundreds of staff members at a time. All would have to be evacuated safely in an emergency. Such evacuations are best conducted by trained personnel who are assigned, and trained in carrying out, specific responsibilities during an evacuation. As a result of its investigation of a 1994 fire aboard the *Argo Commodore*,² the Safety Board issued the following recommendation to the Passenger Vessel Association (PVA):

M-95-43

Develop and provide to your members crew drills for on-board crew emergency procedures/standards that include pre-incident planning for a variety of shipboard emergencies, including fires, and the deployment of crew resources for proper response to the emergency without compromising passenger safety.

The PVA developed a section for its *Training Manual for Passenger Vessel Safety* entitled “Non-marine Crew Training” that outlines a comprehensive training program for nonoperating crewmembers. The introduction to this section states that specialized safety training for nonoperating employees “makes sense when management realizes that, more often than not, [these employees] will be the first person[s] on the scene in any kind of emergency.” Based on the PVA’s support for comprehensive training for nonoperating employees and the organization’s development of the training manual, the Safety Board classified Safety Recommendation M-95-43 “Closed–Acceptable Action” on July 21, 1997.

As an operator of several passenger vessels on the Mississippi River, President Casinos, Inc., is a PVA member. Personnel on the PMV *Admiral* face many of the same emergency response challenges as crewmembers of other types of large passenger vessels.

The Safety Board understands that, since the accident, President Casinos has had three *Admiral* security employees trained in crowd management techniques. The Board considers that this effort, if continued, will improve the vessel’s on-board emergency response capability. To ensure the development of crowd management capabilities throughout the organization, the training should include all *Admiral* personnel. Such broad provision of training is prudent because even those vessel employees who do not have safety-related duties in an emergency can affect the response either positively or negatively. The Safety Board noted as a result of the *Bright Field* investigation³ that nonoperating crewmembers on both the *Queen of New Orleans* and the *Creole Queen* had not received training covering the full range of emergency scenarios and were unprepared to properly carry out their responsibilities.

² National Transportation Safety Board, *Fire Aboard U.S. Small Passenger Vessel Argo Commodore in San Francisco Bay, California, December 3, 1994*, Marine Accident Report NTSB/MAR-95/03. (Washington, DC: National Transportation Safety Board, 1995).

³ National Transportation Safety Board, *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*. Marine Accident Report NTSB/MAR-98/01. (Washington, DC: National Transportation Safety Board, 1998).

According to a comment made by a patron after the *Admiral* allision and near breakaway, some *Admiral* staff members “appeared to be just as confused as we were.” One cashier even shouted that the vessel was sinking. Staff confusion and inflammatory remarks can only increase the level of panic on board a vessel or a permanently moored casino during an emergency. Training in crowd management would help staff understand the importance of maintaining calm and order. The Safety Board concluded that *Admiral* security personnel and other staff members were not adequately trained and drilled in crowd management techniques and therefore were not successful in ensuring that the vessel’s patrons and staff behaved in a calm and orderly fashion in the aftermath of the April 4, 1998, accident. Therefore, the Safety Board has recommended that President Casinos require and document that all *Admiral* personnel receive formal training in crowd management techniques and conduct periodic drills to reinforce this training so that vessel staff can perform effectively in an emergency. Also, the Board has recommended that President Casinos amend the *Admiral’s Emergency Evacuation Procedures* to reflect crowd management techniques.

St. Louis Harbor contains three PMVs in addition to the *Admiral* (and its support barge)—the *McDonald’s* restaurant barge, the *Robert E. Lee* restaurant barge, and the Gateway Riverboat Cruises support barge. The *Robert E. Lee* is not operating, but the other two PMVs face some of the same safety challenges as the *Admiral*. Both are accessible to the public, so the personnel that staff them need the same type of crowd management training as *Admiral* personnel. The Safety Board concluded that formal training in crowd management techniques for staff on all operating PMVs that are accessible to the public would enhance safety on board PMVs. The city of St. Louis does not require crowd management training for the staff members of any PMVs within its jurisdiction. Because the city of St. Louis has primary enforcement responsibility for PMVs in St. Louis, it should ensure that all operating PMVs accessible to the public have staff trained in crowd management techniques. Therefore, the Safety Board believes that the city of St. Louis should take the following three actions: a) require that the owners of all operating PMVs that are accessible to the public in St. Louis Harbor provide and document formal training in crowd management techniques for all personnel on such vessels; b) require that periodic drills be conducted to reinforce the crowd management training; and c) require that the vessel owners amend their emergency plans to reflect crowd management techniques.

When the *Anne Holly* barges struck the *Admiral*, the standard gangways almost immediately dropped into the water. Together, the *Admiral* staff, the *Anne Holly* crew, and the Gateway Riverboat Cruises personnel improvised means to evacuate patrons and staff, but they were following no directions from President Casinos about how to do so. Also, the makeshift evacuation was a slow process, taking more than 3 hours to complete. Had the *Admiral* caught on fire or begun to sink, such a lengthy evacuation would have placed patrons and staff at considerable risk.

In addition to strikes by barges or vessels, other emergency situations, such as fires, floods, severe winds, etc., that might make the *Admiral’s* standard gangways dangerous or unavailable can easily be envisioned. Nevertheless, President Casinos did not have contingency plans for such events, and the company did not train or instruct its personnel in how to conduct an evacuation that would not involve use of the standard gangways. Therefore, the Safety Board concluded that the evacuation of the *Admiral* was jeopardized by the lack of contingency plans

for an emergency egress when the standard gangways were not available. The Safety Board has recommended that President Casinos develop and exercise contingency plans for emergency egress from the *Admiral* to ensure that occupants can exit the vessel in a timely and orderly manner when the standard means of egress become unusable and amend the *Admiral's Emergency Evacuation Procedures* to reflect the new procedures.

The Board's investigation also studied the effectiveness of the harbor emergency response to this accident. When the *Admiral's* gangways collapsed, St. Louis fire department rescue personnel could not immediately board the *Admiral*. The lack of available means of boarding and leaving the vessel delayed the evacuation of the *Admiral*, which ultimately took more than 3 hours to complete. Therefore, the Safety Board concluded that, although local emergency response agencies arrived on the scene in a timely manner, they were not prepared to rescue patrons and staff from the *Admiral* after the standard gangways to the vessel became unusable, which delayed the evacuation and could have put patrons and staff in jeopardy. Consequently, the Safety Board believes that the city of St. Louis should ensure that harbor emergency responders develop, in conjunction with local PMV owners, including President Casinos and the McDonald's Corporation, contingency plans for boarding and exiting the vessels when the standard means of egress become unusable and amend the St. Louis Harbor Emergency Response Plan to reflect the new procedures.

The Coast Guard coordinated the development of the St. Louis Harbor Emergency Response Plan in cooperation with State and local fire and rescue services and the local marine industry. The intent of the plan was to allow the emergency response agencies, the industry, and the Coast Guard to achieve coordinated and effective use of public and private response resources during an emergency. Although the Coast Guard has Federal responsibility for the overall safety of the port during an emergency, the responsibility for emergency response rests with local fire and rescue services and State response services. While, as a policy matter, the Coast Guard responds to emergencies to the extent that its resources allow, it does not have primary search and rescue responsibility in inland areas, such as St. Louis Harbor. The Coast Guard does not have firefighting or search and rescue capabilities in St. Louis Harbor, yet its personnel helped coordinate the plan, participated in drills, and provided information about marine risk mitigation measures to the incident commander. The Coast Guard Captain of the Port also assisted in crises by restricting vessel movements on the Mississippi River.

The Safety Board evaluated the St. Louis Harbor Emergency Response Plan and found that it adequately identified the agencies that would participate in marine emergency responses in St. Louis Harbor and provided a comprehensive contact listing for critical responders. The plan further identified the interagency command and control responsibilities of the various agencies and designated the radio frequencies to be used during responses.

The response plan, however, did not take into account the various types of accidents that might occur in the harbor. For instance, the plan did not anticipate an accident similar to that involving the *Admiral* on April 4, 1998—the breakaway or near breakaway of a high-capacity PMV. The possibility of such an accident, especially during a period of high water, was reasonably foreseeable. The St. Louis Harbor Emergency Response Plan did not identify all foreseeable emergencies or create strategies to deal with them. Without identifying the types and

magnitudes of the possible emergencies for which St. Louis Harbor authorities would have to be prepared, response planners could not determine the amounts, types, and sources of emergency equipment and other resources that would be needed to conduct a successful response.

A 1994 search and rescue exercise sponsored by the Coast Guard in New Orleans, Louisiana, revealed that local contingency plans and responses for the New Orleans area were inadequate for rescuing large numbers of people from the Mississippi River. The exercise illustrated that responding to emergencies requiring the rescue of large numbers of people from the Mississippi River can overwhelm local resources, even in municipalities that may have greater marine resources than St. Louis.

It is conceivable that, had the *Anne Holly* not held the *Admiral* against the riverbank on April 4, 1998, the *Admiral* might have broken free of its last mooring wire and floated downriver, possibly causing collisions and sinking or capsizing under one of the lower bridges. The risk to the *Admiral* and its more than 2,000 occupants would have been high in such a scenario because the *Admiral* did not have means of propulsion or navigational control, marine lifesaving equipment (such as life floats or personal flotation devices), or an experienced marine crew.

Therefore, the Safety Board concluded that the St. Louis Harbor Emergency Response Plan did not sufficiently prepare emergency response agencies to deal with an emergency involving the rescue of a large number of people on or in the Mississippi River. The Safety Board believes that the Coast Guard should conduct, in cooperation with the States of Missouri and Illinois and the cities of St. Louis and East St. Louis, regular drills to exercise the contingency plans for a variety of different marine scenarios, such as stopping breakaway vessels or rescuing large numbers of people from the Mississippi River.

The Safety Board's investigation of this accident showed that local and State jurisdictional authorities for St. Louis Harbor did not provide adequate marine safety oversight of the owners' responsibility to assess and mitigate waterborne and current-related risks to the local PMVs and all people on board them. At the time of the *Admiral* accident, local jurisdictional authorities, such as the city's public safety and fire departments, had immediate oversight responsibility for the PMVs in St. Louis Harbor. The local authorities provided the first level of regulatory oversight for PMV owners and the first safety net under PMV operations. The St. Louis Department of Public Safety believed that it had met its obligation to ensure public safety by reviewing the *Admiral's* design plans to ensure that the PMV met the applicable building codes for certain aspects of building structures, such as fire safety, electrical, mechanical, and plumbing requirements.

The St. Louis Department of Public Safety also approved the *Admiral's* design and evacuation plan for compliance with requirements for emergency exits, emergency lighting, and fire sprinklers, as they would apply to buildings. However, the department did not require the equivalent of below-ground structural elements, such as would be required of a land-based structure, or any additional structural elements to protect the *Admiral* from the risk of collision. Buildings, when they are designed for public occupancy, are required to have fixed fire exits with clear access to areas of safety. The city required no added features to ensure the long-term

integrity of the *Admiral*'s fire exits. According to its representative, the St. Louis Department of Public Safety was not required to address the siting of the *Admiral* or marine safety aspects, such as the possibility of the PMV's breaking away or sinking or whether it might require flooding alarms or emergency pumps and generators. Nor did the city consider the need for lifesaving equipment, because such aspects are not considered during the approval processes for buildings.

After the Coast Guard designated the *Admiral* as a PMV, the city of St. Louis assumed responsibility for its safety. In the absence of Coast Guard involvement, the city had general oversight responsibility for public safety for the entire operation. Yet city authorities did not have a mechanism for regulating the marine safety aspects of the operation of PMVs located in St. Louis Harbor. Local building and safety codes did not address the waterborne and current-related risks and risk reduction measures associated with PMVs in the harbor. The Safety Board therefore concluded that the city of St. Louis did not exercise effective marine safety oversight for the *Admiral* because the city treated the *Admiral* as a commercial building on land.

The State of Missouri Gaming Commission also placed safety requirements on the operation of the *Admiral*. In a July 9, 1998, letter to the Safety Board, the Commission stated that it requires its licensees to meet the minimum standards for safety and environment established by the Coast Guard, the U.S. Army Corps of Engineers, and the Environmental Protection Agency. It also requires that licensed casino PMVs meet Missouri's fire safety standards, the National Fire Protection Association's (NFPA's) fire safety standards for the construction and fire protection of marine structures, and the NFPA Life Safety Code.

In addition, the Commission requires that the vessel comply with all local fire and safety codes. However, because the Coast Guard did not impose any safety requirements beyond "secure and substantial mooring" of the vessel and because none of the other authorities or standards addressed all the waterborne and current-related risks to which the *Admiral* was exposed, the Commission's actions fell short of its intended purpose.

The Commission also said in the July 1998 letter that it does not employ safety experts but relies on government agencies with safety standard and inspection expertise. The Commission recognized that it does not possess the requisite expertise to establish safety standards or to provide safety oversight of the *Admiral*'s operations.

Although the State Gaming Commission required the owner to contract with the American Bureau of Shipping Marine Services to assess the stability of the *Admiral* and to periodically inspect its hull and watertight closures to ensure their integrity, the American Bureau of Shipping Marine Services did not, nor was it requested to, assess the adequacy of the mooring design, fire safety, lifesaving, or any other marine safety systems related to the *Admiral*'s operation. The Safety Board therefore concluded that the oversight provided by the State of Missouri, as represented by the State Gaming Commission, did not address marine safety systems, such as the PMV's mooring design, fire safety, and lifesaving capabilities, and did not protect the safety of people on board the *Admiral*.

In the Safety Board's opinion, city and State authorities should recognize their limitations in marine safety expertise. The Coast Guard is the primary recognized marine safety regulatory

authority and should regulate the operation of floating casinos exposed to waterborne and current-related risks. The Safety Board therefore believes that the Coast Guard, the city of St. Louis, and the State of Missouri should either require owners of PMVs to protect their vessels from waterborne and current-related risks so that their PMVs are, in fact, equivalent to buildings, or require that the owners obtain Coast Guard certificates of inspection for their PMVs.

Therefore, the National Transportation Safety Board makes the following safety recommendations to the city of St. Louis:

Establish and implement oversight procedures to ensure that owners of operational permanently moored vessels that are accessible to the public in St. Louis Harbor conduct and document fire drills. (M-00-20)

Take the following three actions: a) require that the owners of all operating permanently moored vessels that are accessible to the public in St. Louis Harbor provide and document formal training in crowd management techniques for all personnel on such vessels; b) require that periodic drills be conducted to reinforce the crowd management training; and c) require that the vessel owners amend their emergency plans to reflect crowd management techniques. (M-00-21)

Ensure that harbor emergency responders develop, in conjunction with local permanently moored vessel owners, including President Casinos, Inc., and the McDonald's Corporation, contingency plans for boarding and exiting the vessels when the standard means of egress become unusable, and amend the St. Louis Harbor Emergency Response Plan to reflect the new procedures. (M-00-22)

Conduct, in cooperation with the U.S. Coast Guard, the States of Missouri and Illinois, and the city of East St. Louis, regular drills to exercise the contingency plans for a variety of different marine scenarios, such as stopping breakaway vessels or rescuing large numbers of people from the Mississippi River. (M-00-23)

Either require owners of permanently moored vessels to protect their vessels from waterborne and current-related risks so that their permanently moored vessels are, in fact, equivalent to buildings or require that the owners obtain U.S. Coast Guard certificates of inspection for their permanently moored vessels. (M-00-24)

The Safety Board also issued safety recommendations to U.S. Coast Guard, the Research and Special Programs Administration, the States of Missouri and Illinois, the city of East St. Louis, the National League of Cities, the American Association of Port Authorities, the American Gas Association, the American Public Gas Association, President Casinos, Inc., Laclede Gas Company, and American Milling, L.P. In your response to the recommendations in this letter, please refer to Safety Recommendations M-00-20 through -24. If you need additional information, you may call (202) 314-6170.

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

By: Jim Hall
Chairman