



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: September 9, 2004

In reply refer to: M-04-3

Admiral Thomas H. Collins
Commandant
U.S. Coast Guard
2100 Second Street, S.W.
Washington, D.C. 20593

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 agency to take action on the safety recommendation in this letter. The Safety Board is vitally interested in this recommendation because it is designed to prevent accidents and save lives.

This recommendation, which addresses wheelhouse alerter systems, is derived from the Safety Board's investigation of the May 26, 2002, allision between the towboat *Robert Y. Love* and the Interstate 40 highway bridge (I-40 bridge)¹ and is consistent with the evidence we found and the analysis we performed. As a result of this investigation, the Safety Board has issued four new safety recommendations, one of which is addressed to the U.S. Coast Guard. Information supporting this recommendation 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 recommendation.

About 0745, on May 26, 2002, the towboat *Robert Y. Love*, pushing two empty asphalt tank barges, was traveling northbound on the McClellan-Kerr Arkansas River Navigation System (M-KARNS) near Webbers Falls, Oklahoma. As the tow approached the I-40 bridge at mile 360.3, it veered off course and rammed a pier 201 feet west of (outside) the navigation channel. The impact collapsed a 503-foot section of the bridge, which fell into the river and onto the barges below. According to witnesses, highway traffic continued to drive into the void in the bridge created by the collapsed spans. When traffic stopped, eight passenger vehicles and three truck tractor-semitrailer combinations had fallen into the river or onto the collapsed portions of the bridge. The accident resulted in 14 fatalities and 5 injuries and caused an estimated \$30.1 million in damage to the bridge, including the operation of detours, and \$276,000 in damage to the barges.

¹ For more information, read National Transportation Safety Board, *U.S. Towboat Robert Y. Love Allision With Interstate 40 Highway Bridge Near Webbers Falls, Oklahoma, May 26, 2002*, Highway Accident Report NTSB/HAR-04/05 (Washington, DC: NTSB, 2004).

The National Transportation Safety Board determined that the probable cause of the *Robert Y. Love's* allision with the Interstate 40 highway bridge and its subsequent collapse was the captain's loss of consciousness, possibly as the result of an unforeseeable abnormal heart rhythm. Contributing to the loss of life was the inability of motorists to detect the collapsed bridge in time to stop their vehicles.

When the *Robert Y. Love* struck the I-40 bridge, it was traveling on the M-KARNS waterway to Catoosa, Oklahoma, with two empty barges. The captain told investigators that the last thing he remembered before becoming unconscious was passing the buoy to port and using "a few degrees" of left rudder to align his tow through the main navigation span of the bridge. The captain was alone in the wheelhouse at that time, a not atypical condition aboard U.S. inland towing vessels. The deckhand on duty had just departed the wheelhouse and gone below deck to awaken the mate for duty and to perform routine maintenance tasks. At the time of the accident, the mate had just been awakened, and the engineer was making his rounds of the engineroom. Thus, although three other crewmembers were awake and moving about the vessel in the minutes before the accident, none of them were in the wheelhouse when the captain lost consciousness. The Safety Board estimates the captain became incapacitated about 4 minutes before the impact with the bridge.² Had a method been available to alert crewmembers to the problem in the wheelhouse, they could have investigated and possibly taken action that might have prevented the accident.

Since this accident, segments of the marine inland towing industry have been evaluating wheelhouse alerter systems for use on inland towing vessels. These systems, which have already been installed on some towing vessels, are designed to sound an alarm should the vessel operator either fail to move the rudder or fail to physically move for a predetermined period of time. The lack of such movements would indicate the strong possibility that the operator is, for some reason, incapable of making them and would summon assistance to the wheelhouse to investigate the cause.

If the *Robert Y. Love* had been equipped with such a system on the day of the accident, other crewmembers on board the vessel may have been alerted to a problem in the wheelhouse and may have been able to prevent this accident. Therefore, the Safety Board concluded that the presence of either another crewmember in the wheelhouse or a wheelhouse alerter system might have resulted in timely action that could have prevented the accident.

Although the number of reported incapacitation accidents is small, the consequences can be catastrophic. The Safety Board considers alerter systems to be a promising safety improvement and concluded that wheelhouse alerter systems may provide an effective means of preventing operator incapacitation and operator fatigue accidents in the future.

The Safety Board is aware of three companies that are, independently of one another, evaluating the effectiveness of these devices. The American River Transportation Company has installed rudder monitoring systems on 60 of its vessels and Magnolia Marine Transportation Company has installed the system on its entire fleet of 16 towboats. Further, Kirby Corporation

² The captain told investigators that the last thing he remembered was being abreast of the buoy and lining up for the bridge. At 6.7 mph, the Safety Board estimated the transit time from the buoy to the bridge to be about 4 minutes.

has installed a motion detection system on some of its towboats. Although the Board recognizes industry's initiative in developing and evaluating these devices, a coordinated effort inclusive of all aspects of the industry would provide the degree of uniformity needed to ensure a comprehensive evaluation. The U.S. Coast Guard Research and Development Center has the technical staff and experience to evaluate these systems. In light of the Coast Guard's responsibility for safety on the navigable waters of the United States, the ongoing safety partnership between the Coast Guard and the towing industry, and the possible safety improvement that these alerter systems offer, the National Transportation Safety Board recommends that the U.S. Coast Guard:

Direct the U.S. Coast Guard Research and Development Center to evaluate the utility and effectiveness of wheelhouse alerter systems on inland towing vessels for preventing accidents. (M-04-3)

The Safety Board hopes that the Coast Guard will work with the towing industry in implementing this recommendation.

The Safety Board also issued safety recommendations to the Federal Highway Administration and the American Association of State Highway and Transportation Officials. Please refer to Safety Recommendation M-04-3 in your reply. If you need additional information, you may call (202) 314-6177.

Chairman ENGLEMAN CONNERS, Vice Chairman ROSENKER, and Members CARMODY, HEALING, and HERSMAN concurred in this recommendation.

By: Ellen Engleman Connors
Chairman