



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: May 19, 1998

In reply refer to: M-98-82

Mr. John G. Melrose
Commissioner
Maine Department of Transportation
16 State House Station
Augusta, Maine 04333-0016

The 560-foot-long Liberian tankship *Julie N*, carrying a cargo of heating oil, collided with the south bascule pier of the Portland-South Portland (Million Dollar) Bridge in Portland, Maine, about 1105 on September 27, 1996. The vessel had passed between the piers of the new Portland-South Portland bridge (Casco Bay Bridge) and was en route to the Rolling Mills terminal about 1.2 miles beyond the Million Dollar Bridge. The vessel was under the direction of a State-licensed docking master (pilot). After the collision, the pilot stated that as the vessel approached the bridge, he had issued three orders for port rudder to swing the bow to the left and then intended to order the rudder to hard starboard and to increase the engine speed from slow to half ahead to stop the swing and align the vessel for passage through the drawspan. However, the pilot inadvertently ordered the rudder to hard port instead of hard starboard. He recognized his error within seconds and ordered the rudder to hard starboard; given the narrowness of the bridge span, however, the shifting of the rudder occurred too late to avoid the collision.¹

There were no injuries, but the collision resulted in a 30-foot-long hole in the vessel's hull beneath the waterline. About 4,000 barrels of oil spilled into the harbor. The vessel sustained about \$660,000 in damage, and the cost for cleanup of the oil was approximately \$43 million. Repairs to the Million Dollar Bridge were about \$232,000.

The National Transportation Safety Board determines that the probable cause of the collision with the Portland-South Portland (Million Dollar) Bridge was the pilot's inadvertent order to port (left) rudder instead of starboard (right) rudder. Contributing to the accident was the narrow horizontal clearance of the bridge drawspan, which afforded little leeway for human error. Contributing to the severity of the damage to the vessel and to the amount of oil spilled was a corner of the bridge pier that was not adequately shielded by the timber fender system.

¹For additional information, refer to Marine Special Investigation Report—*Postaccident Testing for Alcohol and 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* (NTSB/SIR-98/02)

Improving the chances of successfully navigating the bridge would require altering the procedures, vessels, or environment so that the job is made easier. The Casco Bay Bridge, completed in 1997, accomplished this by doubling the width of the opening for vessel traffic from 98 to 196 feet, which should reduce the number of bridge contacts by relaxing tolerances for passage and allowing pilots to recover from minor errors during lineup. This added space will give pilots a considerably larger margin for correcting an improper lineup.

Also, it is possible to design systems that are more error-tolerant. For example, fender systems can be designed to offer protection to the vessel as well as the bridge in case of an error in lineup or in conning the vessel. The much improved fender system at the new bridge is far more capable of buffering contact than the former timber fender system. The Safety Board concludes that the increased horizontal clearance and the improved fender system at the new bridge have greatly improved safety for the class of vessels that normally would have transited the old bridge and should reduce the likelihood of the bridge being struck by similar class vessels.

Since any navigational improvement, such as a wider bridge opening, can result in increased vessel traffic, often by larger and different types of vessels, new safety problems are likely to be encountered in the accident area. As the character of marine traffic changes over time, the margin of safety initially attributable to the greater clearance of the new bridge may decrease as increasingly larger vessels transit the bridge. Larger tankships are already operating and could start to call in Portland. Also, land area is available upstream of the bridge; therefore, port development (such as container ship operations) above the bridge is possible. Container ships with extensive sail areas may introduce problems in piloting and ship control that differ significantly from any associated with piloting tankships of the size that have historically called at Portland. Thus, the introduction of the different classes of vessels that can now transit the new bridge may require changes in the piloting methods used to conn some vessels through the bridge. Also, new operational guidelines may be needed to meet changes in the character of navigation.

The Port Safety Forum, by bringing together those having various interests in the port, appears to offer an appropriate means of assessing the needs of navigation safety on a continuing basis and to aid in developing operational guidance for vessels. In Portland, any future operational guidance for vessels would likely involve guidance on how and when to transit the new bridge. To ensure that the Port Safety Forum is regularly apprised of any problems associated with navigation through the bridge or with the bridge itself, including observations by the bridge tenders, the Safety Board concludes that participation in the Port Safety Forum by a representative of the MDOT who is familiar with bridge design or bridge maintenance would apprise the Port Safety Forum of problems involving the Casco Bay Bridge. Therefore, the National Transportation Safety Board recommends that the Maine Department of Transportation:

Nominate a representative familiar with bridge design or bridge maintenance to participate on the Portland Port Safety Forum. (M-98-82)

Also, the Safety Board issued Safety Recommendations M-98-69 through -81 to the U.S. Coast Guard, M-98-83 to the Federal Highway Administration, and M-98-84 to the American Association of State Highway and Transportation Officials.

The National Transportation Safety Board is an independent Federal agency with the statutory responsibility "to promote transportation safety by conducting independent accident investigations and by formulating safety improvement recommendations" (Public Law 93-633). The Safety Board is vitally interested in any action taken as a result of its safety recommendations. Therefore, it would appreciate a response from you regarding action taken or contemplated with respect to the recommendation in this letter. Please refer to Safety Recommendation M-98-82 in your reply. If you need additional information, you may call (202) 314-6457.

Chairman HALL, Vice Chairman FRANCIS, and Members HAMMERSCHMIDT, GOGLIA, and BLACK concurred in this recommendation.

By:


Jim Hall
Chairman