



National Transportation Safety Board

Washington, D. C. 20594

Safety Recommendation

Date: April 26, 1988

In reply refer to: M-88-18 through -23

Admiral Paul A. Yost, Jr.
 Commandant
 U.S. Coast Guard
 Washington, D.C. 20593-0001

About 0112 on May 3, 1987, the 607-foot-long Polish bulk carrier ZIEMIA BIALOSTOCKA rammed the Sidney Lanier highway bridge in Brunswick, Georgia. At the time of the accident, the outbound vessel was under the control of a Georgia State pilot; the master was in the wheelhouse. There were no injuries or deaths. As a result of the accident, the ZIEMIA BIALOSTOCKA sustained minor damage. Damage to the Sidney Lanier Bridge has been estimated at \$1.4 million. The highway bridge did not reopen for vehicular traffic until September 6, 1987, at an estimated cost to the public of \$7.9 million. ^{1/}

The pilot of the ZIEMIA BIALOSTOCKA stated that the ZIEMIA BIALOSTOCKA was "handling to me like any other ship" until the port turn from the East River to the Turtle River approach channel to the Sidney Lanier Bridge when the vessel did not respond as he had expected. However, based on the maneuvering information on board the vessel and the 1981 U.S. Coast Guard report comparing the tactical diameters of over 600 vessels, ^{2/} the Safety Board determined that the ZIEMIA BIALOSTOCKA had a turning track significantly larger than the turning track of most other vessels of similar size. The pilot stated that he did not read or request maneuvering information regarding turning tracks and stopping distances from the master because he could determine the maneuvering characteristics of a vessel by handling the vessel "in just a matter of a few minutes."

If the pilot of the ZIEMIA BIALOSTOCKA had read the maneuvering information on the vessels he previously had piloted and compared the maneuvering information with their actual turning tracks in shallow water, he may have been able to determine from the maneuvering information on board the ZIEMIA BIALOSTOCKA that the vessel had a larger turning track than most vessels and that some special precautions were needed in making the approach to the Sidney Lanier Bridge. However, even if he had not done so, he should have been able to determine

^{1/} For more detailed information, read Marine Accident Report--"Ramming of the Sidney Lanier Bridge by the Polish Bulk Carrier ZIEMIA BIALOSTOCKA, Brunswick, Georgia, May 3, 1987" NTSB/MAR-88/03).

^{2/} U.S. Coast Guard Report No. CG-M-8-81, "Technical Basis for Maneuvering Performance Standards," December 1981.

from the vessel maneuvering information that the ZIEMIA BIALOSTOCKA's turning track was greater than the distance he normally allowed for the turn from the East River to the Turtle River.

The pilot's testimony indicated that he did not have knowledge of the technical parameters affecting the maneuvering characteristics of a vessel and that his practical knowledge of some vessel maneuvering characteristics was incorrect. The pilot was not familiar with standard marine terminology of "advance" and "transfer" for describing a vessel turning track. He stated that the vessel's 11-foot stern trim versus a normal stern trim of about 6 feet would decrease the ZIEMIA BIALOSTOCKA turning track; the increased stern trim actually would have increased the vessel turning track. He also stated that the ZIEMIA BIALOSTOCKA was not in shallow water during the port turn, when, in fact, there was about 40 feet of water in the channels and the vessel mean draft was about 27 feet 7 inches, or a ratio of water depth to draft of about 1.4. Coast Guard regulations define shallow water as a ratio of less than 2 for assessing maneuvering characteristics. Recent studies show that the turning tracks of a vessel can be increased from 50 to 100 percent in shallow water. Thus, although the pilot was experienced and was aware of the effects of shallow water on the turning track of a vessel, he apparently was unaware at what water depth these effects occur.

At the time the pilot obtained his Federal and State pilot licenses, he was not required to pass an examination on the technical parameters affecting vessel maneuvering or the use of maneuvering information posted on the bridges of vessels. Although the Coast Guard required pilots to pass an examination on shiphandling, these examinations were not standardized throughout the country and normally did not require a pilot to have knowledge of the technical parameters affecting vessel maneuvering or the use of various systems of measurement, such as the metric system. Since the pilot was licensed before the enactment of the Coast Guard regulations regarding maneuvering information, the pilot has never had to prove knowledge of these Coast Guard regulations. The Saint Simons and Saint Andrews Bars Board of Commissioners only required the pilot to pass the Coast Guard examination.

New Coast Guard licensing regulations, which were effective on December 1, 1987, will require all pilots to pass an examination on certain ship maneuvering and handling subjects but will not require pilots to have knowledge of the technical parameters affecting vessel maneuvering or the use of the maneuvering information currently required aboard vessels. The new regulations will require masters and mates, but not pilots, to prove knowledge of these subjects. The Safety Board believes that these subjects are just as important for pilots as masters and mates. To effectively use the maneuvering information required on vessels over 1,600 gross tons in U.S. waters, pilots must understand the parameters that affect the maneuverability of a vessel and how to interpret and use the posted maneuvering information. Pilots also need a working knowledge of various systems of measurement, including the international metric system, to interpret maneuvering information on vessels. Foreign vessels normally show maneuvering information in the metric system, and most vessels entering U.S. ports are foreign vessels. The pilot stated that 99 percent of the large vessels entering Brunswick Harbor are foreign vessels. The Safety Board believes that the maneuvering information required on large U.S. and foreign vessels can be an effective tool in preventing accidents in harbors if pilots use the information. Therefore, the Safety Board believes that before issuing pilot licenses, the Coast Guard should require applicants to pass an examination on the technical parameters affecting vessel maneuvering and on how to

interpret the maneuvering information available on vessels, including the use of various systems of measurement. Also, before renewing existing pilot licenses, the Coast Guard should require pilots to pass a one-time examination on the above topics. In addition, the Coast Guard should publicize to pilots through Coast Guard or maritime industry publications the technical parameters that can affect the maneuvering characteristics of a vessel and the usefulness of the maneuvering information available on both U.S. and foreign vessels over 1,600 gross tons entering U.S. ports.

The master of the ZIEMIA BIALOSTOCKA was familiar with the maneuvering characteristics of his vessel, the maneuvering information posted in the navigation bridge, and the technical parameters affecting maneuverability; however, he had never navigated in Brunswick Harbor. For the outbound voyage, the master relied on the pilot's previous experience of maneuvering vessels in Brunswick Harbor, the pilot's knowledge of the waterway, and his observation of the ability of the pilot during the inbound voyage. Because it was his first voyage to Brunswick and because he was not familiar with the locations of aids to navigation in the harbor or the exact configuration of the channel, the master relied on the pilot and National Oceanic and Atmospheric Administration navigation chart No. 11506, which did not show the East River channel widener nor identify the two lights marking the western edge of the widener as range lights.

Since the pilot had not discussed the widener or his intended maneuvers with the master and since he had not expressed any concern to the master that the vessel was not turning properly, the master did not realize that the ZIEMIA BIALOSTOCKA was off the pilot's intended course until the pilot ordered full astern. The Safety Board believes that it was reasonable for the master to rely on the pilot to safely navigate the vessel through the bridge because of the pilot's experience and the master's limited knowledge of Brunswick Harbor; however, the master should have informed the pilot of all the maneuvering information posted in the wheelhouse of the ZIEMIA BIALOSTOCKA as required by Coast Guard regulations (33 CFR 164.11(k)). If the master and pilot had discussed the ZIEMIA BIALOSTOCKA's turning track, the pilot may have realized that the vessel turning track was larger than the distance that he normally allowed for the turn from the East River into the Turtle River, and it may have prompted the pilot to maneuver the vessel differently. Also, the pilot should have informed the master of the widener, the purpose of the widener, and his intended maneuvers using the widener. Such a discussion may have prompted the master to inform the pilot of the vessel's turning track and may have caused the pilot to maneuver the vessel differently during the turn from the East River to the Turtle River.

The Safety Board has addressed the need for the master and pilot to share pertinent information about the vessel and the waterway in several other accident reports. 3/ As a result of its investigation of the collision between the U.S. tankship

3/ Marine Casualty Reports--"SS AFRICAN NEPTUNE: Collision with the Sidney Lanier Bridge at Brunswick, Georgia, on 7 November 1972 with Loss of Life" (USCG/NTSB-74-4); and "SS EDGAR M. QUEENY-S/T CORINTHOS: Collision at Marcus Hook, Pennsylvania, on 31 January 1975 with Loss of Life" (USCG/NTSB-77-2); and Marine Accident Report--"Collision of Greek Bulk Carrier M/V IRENE S. LEMOS and Panamanian Bulk Carrier M/V MARITIME JUSTICE, Lower Mississippi River, near New Orleans, Louisiana, November 9, 1978" (NTSB-MAR-80-4).

EDGAR M. QUEENY and the Liberian tankship CORINTHOS at Marcus Hook, Pennsylvania, on January 31, 1975, the Safety Board recommended on November 10, 1977, that the Coast Guard:

M-77-33

Amend 33 CFR 164.11(k) to require that masters and pilots discuss beforehand and agree to the essential features and relevant checkpoints of maneuvers expected to be undertaken.

On September 4, 1980, the Coast Guard responded:

In our previous response to this safety recommendation dated 13 April 1978, we stated that requirements for a master/pilot conference were being drafted for publication as a Notice of Proposed Rulemaking (NPRM). As a preliminary step in this project, similar casualties were reviewed to determine the need for regulation. As a result of the review, and in keeping with the Administration's goal of reducing Federal regulations, the Coast Guard finds that it cannot justify, at present, further regulation of the master/pilot working relationship.

The ship's master is currently required to inform the pilot of various characteristics of the vessel. A pilot will ordinarily report to the master anything pertinent that is not obvious from charts and publications. However, the pilot cannot be expected to establish a "game plan" with the master when so many aspects of a passage cannot be predetermined. The Coast Guard believes there are sufficient Federal regulations and customary practices which apply in master/pilot relationships.

On July 10, 1981, the Safety Board classified Safety Recommendation M-77-33 as "Closed--Unacceptable Action." The Safety Board continues to believe that a formal, required master/pilot conference is the most effective way to bring about a sharing of information between master and pilot and urges the Coast Guard to reconsider its position.

The 1981 Coast Guard report comparing the maneuvering characteristics of over 600 vessels shows that the ZIEMIA BIALOSTOCKA has a larger turning track than most similar vessels. The pilot should have been able to determine from the ZIEMIA BIALOSTOCKA's maneuvering information that the vessel had a turning track greater than the distance he normally allowed for the turn from the East River to the Turtle River. However, neither the pilot nor the master would have been able to readily determine that the ZIEMIA BIALOSTOCKA had a larger turning track than most similar vessels from the posted maneuvering information on the ZIEMIA BIALOSTOCKA unless they compared the information with the maneuvering information on other vessels. The maneuvering information posted on the navigation bridges of U.S. vessels and foreign vessels entering U.S. waters does not give any relative maneuvering performance information. Neither the Coast Guard nor the International Maritime Organization (IMO) have established relative maneuvering performance standards although the 1981 Coast Guard report established a rational relative maneuvering performance standard for vessels similar to the ZIEMIA BIALOSTOCKA. For pilots unfamiliar with a particular vessel, relative maneuvering performance information would be useful because a pilot could then quickly determine how the unfamiliar vessel will perform in comparison with vessels more familiar to the pilot. The IMO will begin the lengthy

process of establishing relative maneuvering performance standards in 1988. In the meantime, the Coast Guard does not plan to establish U.S. relative maneuvering performance standards until the IMO work is completed. This process may take as long as 10 years. In the interim, both U.S. vessels and foreign vessels entering U.S. waters will not have relative performance standards posted. The Safety Board believes that the Coast Guard should establish relative maneuvering performance standards *without further delay and should require that all U.S. and foreign vessels entering U.S. waters have relative performance information available to U.S. pilots.* This information can later be modified when the IMO completes its work in the uncertain future.

Although the maneuvering information provided on the navigation bridge of the ZIEMIA BIALOSTOCKA met Coast Guard regulations, the information would have been more useful to pilots if it had been presented in a standardized format and if there had been information on shallow water maneuvers. The turning track of the ZIEMIA BIALOSTOCKA was depicted as a circle while its actual track was more like a spiral. IMO Resolution A.601(15), which was adopted November 19, 1987, standardizes the maneuvering information on all new U.S. and foreign vessels over 338 feet long. IMO Resolution A.601(15) recommends the addition of shallow water maneuvering information and that the vessel turning track be depicted realistically. However, Resolution A.601(15) is only a recommendation for governments to require the information on new vessels and to encourage the information on existing vessels. The Safety Board recognizes that not all provisions of Resolution A.601(15) may be accomplished for existing vessels, but every effort should be made to standardize the maneuvering information on all vessels and provide information for shallow water maneuvers so that U.S. pilots will have the best information possible to safely navigate large vessels in U.S. waters. Since the Coast Guard already requires maneuvering information on U.S. vessels and foreign vessels over 1,600 gross tons entering U.S. waters, the Safety Board believes that the Coast Guard should require the implementation of Resolution A.601(15) for both new and existing U.S. and foreign vessels over 1,600 gross tons entering U.S. waters.

The channel configuration in Brunswick does not permit a vessel to be aligned in the approach channel to the bridge within the normal stopping distance of large vessels if the vessel is departing from the East River at normal speeds. The Safety Board first addressed this safety consideration in its report of the ramming of the Sidney Lanier Bridge by the SS AFRICAN NEPTUNE on November 7, 1972. 4/

As a result of its investigation of the accident, the Safety Board recommended on July 22, 1974, that the Coast Guard:

M-74-14

Require that ocean-going vessels be alined with any channel bridge opening before the vessels reach a point equal to the ship's stopping distance from the bridge.

On February 26, 1975, the Coast Guard responded:

4/ Marine Casualty Report--"SS AFRICAN NEPTUNE."

While this recommendation has a great deal of merit with regard to safety, it would be effective only along a straight channel beneath a bridge. It would be impossible to abide by such a requirement in a channel which curved as it went under a bridge necessitating the vessel's head to be swinging as it progressed along the channel. The channel alignment criteria will be taken into consideration when evaluating the sites of construction for future bridges.

Based on the information from the Coast Guard that Safety Recommendation M-74-14 could not be made a national requirement because it is impossible for vessels to be aligned in channels which curve under bridges, the Safety Board on February 18, 1986, classified the recommendation as "Closed-Reconsidered." However, before the May 3, 1987, accident, the Coast Guard had taken no action to set operational safety requirements to have outbound vessels aligned in the straight Turtle River approach channel to the Sidney Lanier Bridge.

The U.S. Army Corps of Engineers' widening of the East River intersection with the approach channel to the Sidney Lanier Bridge after the 1972 ramming and the Brunswick pilots' policy to always use the widener for large outgoing vessels increased the distance from the bridge at which most large vessels were aligned in the approach channel. However, the space was insufficient for most large vessels to be aligned in the approach channel to the bridge before the vessels reached a point equal to their stopping distance when departing the East River. As a result of the 1987 ramming, the Coast Guard Captain of the Port for Brunswick established operational safety requirements which required large vessels to be aligned in the channel approximately 2,000 feet from the bridge. On December 28, 1987, these requirements were implemented as a permanent regulation by the Commander, Seventh Coast Guard District. This distance should be sufficient for large vessels exiting Brunswick to be able to stop if they are not aligned or have some steering problem. The operational safety requirements implemented by the Commander, Seventh Coast Guard District for aligning vessels in the approach channel to the Sidney Lanier Bridge show that the Coast Guard may be able to implement similar safety requirements in other U.S. harbors. Therefore, the Safety Board believes that the Coast Guard should review the navigational channel configurations in all other U.S. harbors and make similar requirements where possible.

Therefore, as a result of its investigation, the National Transportation Safety Board recommends that the U.S. Coast Guard:

Require, before issuing and at the next renewal of pilot licenses, that all applicants pass a one-time examination on the technical parameters affecting vessel maneuvering and the use of maneuvering information, including the use of various systems of measurement, currently required aboard U.S. vessels and foreign vessels over 1,600 gross tons entering U.S. ports. (Class II, Priority Action) (M-88-18)

Publicize to pilots, through Coast Guard and maritime industry publications, the technical parameters that can affect the maneuvering characteristics of a vessel and the usefulness of maneuvering information posted on U.S. vessels and foreign vessels over 1,600 gross tons entering U.S. ports. (Class II, Priority Action) (M-88-19)

Amend 33 CFR 164.11(k) to require that masters and pilots discuss and agree beforehand to the essential features and relevant checkpoints of maneuvers expected to be undertaken. (Class II, Priority Action) (M-88-20)

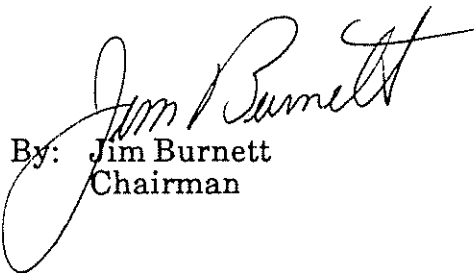
Establish maneuvering performance standards and require that vessel relative maneuvering performance information be posted on the navigation bridge of all U.S. vessels and foreign vessels over 1,600 gross tons entering U.S. waters without waiting for action by the International Maritime Organization. (Class II, Priority Action) (M-88-21)

Require new and existing U.S. and foreign vessels over 1,600 gross tons entering U.S. waters to meet the requirements of International Maritime Organization Resolution A.601(15). (Class II, Priority Action) (M-88-22)

Review the navigational channel configurations in U.S. harbors and require, where possible, that large vessels be aligned with any channel bridge opening before the vessels reach a point equal to their stopping distance from the bridge. (Class II, Priority Action) (M-88-23)

Also, the Safety Board issued Safety Recommendations M-88-24 through -26 to the State of Georgia; M-88-27 and -28 to the American Pilots Association; and M-88-29 to the National Oceanic and Atmospheric Administration.

BURNETT, Chairman, and LAUBER, NALL, and KOLSTAD, Members, concurred in these recommendations.


By: Jim Burnett
Chairman