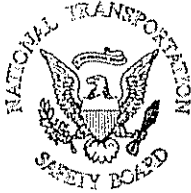


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NATIONAL TRANSPORTATION SAFETY BOARD

Washington, D.C. 20594

Safety Recommendation



Date: September 30, 1994

In Reply Refer To: M-94-42 through -45

Mr. Andy R. Harris
General Manager
Warrior & Gulf Navigation Company
50 Viaduct Road
Chickasaw, Alabama 36611

On September 22, 1993, about 2:45 a.m., barges that were being pushed by the towboat MAUVILLA in dense fog struck and displaced the Big Bayou Canot railroad bridge near Mobile, Alabama.¹ (When the towboat struck the bridge, the pilot, who was on the Big Bayou Canot, thought he was on the Mobile River.) About 2:53 a.m., National Railroad Passenger Corporation (Amtrak) train 2, the Sunset Limited, en route from Los Angeles, California, to Miami, Florida, with 220 persons on board, struck the displaced bridge and derailed. The three locomotive units, the baggage and dormitory cars, and two of the six passenger cars fell into the water. The fuel tanks on the locomotive units ruptured, and the locomotive units and the baggage and dormitory cars caught fire. Forty-two passengers and 5 crewmembers were killed; 103 passengers were injured. The towboat's four crewmembers were not injured.

Although Warrior & Gulf Navigation Company (W&GN) operations complied with Coast Guard licensed operator manning regulations, the company did not ensure that the pilot of the MAUVILLA was adequately trained in the use of radar. Had the pilot been adequately trained to use radar, he should have recognized the juncture of the Big Bayou Canot and the Mobile River on the radarscope. When he inadvertently departed from his course, he should have been able to interpret his position on the radar and respond to the change in course appropriately. To locate a suitable place to secure their tows and wait for visibility to improve, towboat operators need to be trained in use of radar to navigate. The Safety Board found that W&GN

¹For more information, read Railroad-Marine Accident Report--*Derailed Amtrak Train No. 2 on the CSXT Big Bayou Canot Bridge Near Mobile, Alabama, September 22, 1993* (NTSB/RAR-94/01).

did not provide the pilot with radar training beyond the rudimentary experience gained on the job (OJT).

The pilot probably received adequate OJT in towboat and barge maneuvering and was quite likely qualified to operate vessels under most conditions. Nonetheless, he did not use his radar properly on the night of the accident and certainly was not using it to determine his position on the river. The Safety Board concludes that W&GN did not adequately train the pilot to navigate by radar. If the pilot had received formal radar training, he might have known how to use the radar when visibility began to deteriorate. Considering that W&GN had equipped all its towboats with radar before September 22, 1993, the argument for radar training is compelling. The Safety Board believes that a structured radar training program enhances an operator's ability not only to determine his position but also to navigate his towboat to a safe mooring location and that this training should be required of all operators of radar-equipped towboats.

The Coast Guard licensing test cannot assess the extent to which an applicant has the vessel-handling and equipment-use skills needed to operate a vessel under varying conditions of visibility, current flow, tow size, and so forth. Therefore, employers have the responsibility to train and evaluate their operators before placing them in charge of a navigation watch. The Safety Board believes that the industry, including W&GN, should provide operators with the radar skills necessary to navigate radar-equipped towboats safely in poor visibility.

The Safety Board also believes that systematic, written evaluations of an individual's performance are essential because they allow the organization to continually assess those skills and abilities critical to a position. In addition, written evaluations can highlight deficiencies, thereby serving as a valuable tool for effecting changes in work habits. Such evaluations indicate whether an individual is meeting the employer's stated goals. By providing documented, periodic feedback concerning skills and abilities, they also give employees information that can be used to improve their performance.

W&GN's evaluation form is a check-off sheet rather than an in-depth assessment form for assessing an operator's skills and abilities. Whether management, using this form, could accurately evaluate an individual's abilities is questionable. The criteria for the four rating levels are not listed on the form, and the six areas of performance evaluated are too general to allow meaningful assessment of an operator's skills. For example, "knowledge of position" is not defined. The Safety Board concludes that operators should be evaluated on their proficiency in use of wheelhouse equipment such as radar (under various visibility conditions and circumstances, including finding a suitable place to tie off), the swing meter, and rudders (including backing rudders) and engines in high water and high current conditions. The Safety Board also concludes that W&GN's written evaluation form did not fully identify and assess those skills critical to vessel operation, thereby limiting its value as a management tool for ensuring safe vessel operations.

The MAUVILLA, an uninspected towboat of less than 1,600 tons, was not required to be fitted with a radar, charts, or compass.

Nonetheless, like almost all uninspected towing vessels,² the MAUVILLA did have a radar, which is an important navigation aid widely used to detect the presence or movement of objects in a waterway. Operators trained in radar observation are more likely to use radar and to know how to use it properly. They are also less likely to become disoriented in fog. Proper use of radar by the MAUVILLA's pilot could have prevented this accident. The Safety Board believes that the Coast Guard should require that towing vessels be equipped with radars and that towing vessel operators be trained in its use for navigation.

Graphic representations of the geographic features of a waterway, or charts, are another aid to safe navigation. They depict landmarks, hazards to navigation, bridges, and other features an operator may need to be aware of to safely guide the vessel. Many towboat operators carry their own charts, known as "bar books" or "bar charts," which are generally U.S. Army Corps of Engineers waterway charts annotated by the operators to assist them in navigating a waterway. On the night of the accident, the MAUVILLA had no charts on board, and the pilot did not have his personal set with him. W&GN's general manager testified that "charts are not required as standard operating equipment on Warrior & Gulf vessels or any other towboats or vessels under 1,600 gross tons." He said company "policy is to encourage our pilot trainees or anyone else who wishes to use a chart to do so, if it will help them to familiarize themselves with the river system."

Had the pilot, mistakenly thinking he was on the river rather than the bayou, consulted a chart as he approached the Big Bayou Canot bridge, the chart alone would not have helped him. But if he had used a chart, in conjunction with radar, to track his progress as soon as visibility began to decrease, he could have avoided making a wrong turn into the bayou and thus prevented the accident. Most towboat operators who operate frequently over the same route become very familiar with that waterway. During clear visibility, especially in the daytime, they have no need to refer to charts and generally do not do so. But when towboat operators are in unfamiliar waters or when visibility is low, whether due to fog, rain, sleet, snow or other cause, charts are important reference tools. Because visibility can deteriorate rapidly and with little notice, charts should be available in the pilothouse at all times.

Most inland river towing vessels do not have a compass on board, nor do they usually need one to navigate rivers safely. Nonetheless, a compass can be a useful, inexpensive navigation aid that allows an operator to determine the vessel's heading and to verify information obtained from the radar. Used in conjunction with charts and radar, a compass can enable an operator to determine his heading without having to rely on visual cues. It can indicate the amount of heading change, a particularly important feature when no visual cues are available, as is the case during dense fog, for example.

²The most common exceptions are tugs and towboats that operate in limited confines such as fleeting areas or shipyards.

If the MAUVILLA had been equipped with a suitable compass and if the pilot had been trained to read one, he would have been able to determine the amount of heading change between the Mobile River and the Big Bayou Canot, and this cue alone may have alerted him to the fact that he was in the wrong waterway. The difference in compass headings between the two bodies of water is about 95 degrees.

Neither alcohol nor illicit drug use appears to have been a factor in the accident. Safety Board tests on samples taken from the MAUVILLA's captain, however, revealed the presence of norpropoxyphene, caffeine, nicotine, cotinine, ibuprofen, and acetaminophen. Norpropoxyphene is the metabolite of propoxyphene, a mild narcotic analgesic drug found in Darvon, a prescription drug for the alleviation of pain. The captain stated that he took Darvocet N 100, as necessary, for pain from an old shoulder injury. Possible side effects of Darvocet include dizziness and drowsiness.

Although the captain was not on watch at the time of the accident, the Safety Board is concerned about the possible effects of medication on performance. Unsupervised use of medication, both prescribed and over-the-counter, by operators in the transportation industry has been an issue in previous accidents.³ Operators may not understand the potential dangers of many medications, including their effect on performance, and therefore may use them inappropriately. Consequently, the Safety Board concludes that companies such as W&GN should establish procedures that encourage towboat operators to inform management when they are taking medication, determine whether such medication may affect their performance of duties, and arrange for a qualified relief, if necessary.

Therefore, the National Transportation Safety Board recommends that the Warrior & Gulf Navigation Company:

Require that company towboat operators complete a recognized training course on river radar navigation after the curriculum for such a course has been developed. (Class II, Priority Action)
(M-94-42)

Establish a training protocol that requires company towboat operators to demonstrate proficiency in use of radar, compasses, and charts and incorporate into towboat operator evaluations a practical method of assessing proficiency in river navigation techniques, including use of radar. (Class II, Priority Action)
(M-94-43)

³See, for example, Marine Accident Report--*Grounding of the Panamanian-Flag Passenger Carferry M/V A. REGINA, Mona Island, Puerto Rico, February 15, 1985* (NTSB/MAR-86/02) and Railroad Accident Report--*Deraiment of Amtrak Train 87, Silver Meteor, in Palatka, Florida, December 17, 1991* (NTSB/RAR-93/02/SUM).

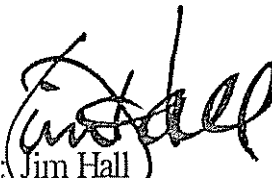
Equip all company towboats with a suitable compass, a complete, up-to-date set of navigation charts for the waters over which the vessel is intended to operate, and other appropriate navigational devices. (Class II, Priority Action) (M-94-44)

Establish procedures that encourage towboat operators to inform management when they are taking medication, to determine whether such medication may affect performance of their duties, and to arrange for a qualified relief, if necessary. (Class II, Priority Action) (M-94-45)

Also, the Safety Board issued Safety Recommendations I-94-3 through -6 to the U.S. Department of Transportation; I-94-7 and M-94-30 to the U.S. Army Corps of Engineers; M-94-31 through -38 to the U.S. Coast Guard; R-94-6 through -8 to the National Railroad Passenger Corporation (Amtrak); I-94-8 to the Federal Emergency Management Agency; M-94-39 through -41 to The American Waterways Operators, Inc.; R-94-9 and -10 to the Association of American Railroads; and R-94-11 and -12 to the American Short Line Railroad Association.

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 recommendations in this letter. Please refer to Safety Recommendations M-94-42 through -45 in your reply. If you need additional information, you may call (202) 382-6860.

Acting Chairman HALL and Members LAUBER, HAMMERSCHMIDT, and VOGT concurred in these recommendations.


By: Jim Hall
Acting Chairman