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NATIONAL TRANSPORTATION SAFETY BOARD

Washington, D.C. 20594

Safety Recommendation



Date: September 30, 1994

In Reply Refer To: M-94-39 through -41

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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 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.

Title 46 CFR Parts 24 through 28 set forth equipment requirements for uninspected vessels. The regulations do not cover navigation equipment. Thus, the MAUVILLA, an uninspected towboat of less than 1,600 tons, was not required to be fitted with a radar, charts, or compass.

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).

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 concludes that all uninspected towing vessels, except those operating in very limited areas, should be required to have a radar installed. 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. Many river towboat operators carry their own charts, known as "bar books" or "bar charts," which are generally U.S. Army Corps of Engineers (USACE) waterway charts that have been 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. The general manager of Warrior & Gulf Navigation Company (W&GN), which owned the MAUVILLA, testified that "charts are not required as standard operating equipment on W&GN 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, looked at 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. The Safety Board concludes that the Coast Guard should require that all uninspected towing vessels have charts on board appropriate for the vessels' route. In addition, the Safety Board believes that The American Waterways Operators, Inc., should urge member companies to equip their towing vessels with appropriate charts and to implement a method of assessing their vessel operators' navigation skills, including use of radar.

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

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

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.

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.

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

Like the MAUVILLA's pilot, operators of uninspected towing vessels (OUTVs) typically learn to use radar through OJT. The knowledge imparted and skills learned through OJT vary, and a formal written examination is rarely given. The accident involving the MAUVILLA illustrates the shortcomings of such an approach to acquiring radar skills. Had the pilot received formal training in and been tested for radar skills, he should have been able to navigate his vessel properly without becoming lost. If the pilot had known how to navigate using radar, the MAUVILLA could have proceeded when the fog developed until the pilot was able to safely stop the tow. Operators need radar navigational skills because tows are not always in locations suitable for stopping when fog occurs. While the prudent course of action is to stop the tow until visibility improves, pilots must continue to operate until they find a safe place to stop.

Deck officers licensed to stand watch on radar-equipped, inspected vessels of 300 gross tons or more must successfully complete a Coast Guard-approved radar observer course to obtain their original license (have "radar observer" endorsed on the license with the date of completion) and must successfully complete a refresher course every 5 years thereafter. In the case of OUTVs, only those holding a license for ocean waters are required to have a radar observer endorsement. As this accident demonstrates, radar observer training should be required of all OUTV licenseholders. Inland Navigation Rule 7(b), which applies to OUTVs, states: "Proper use shall be made of radar equipment if fitted and operational." Safe operation of a vessel includes proper use of radar, and only if a person successfully completes radar observer training at approved facilities can minimum proficiency in radar use be ensured.

The formal radar observer training currently available focuses on navigation of vessels offshore and in harbors. It emphasizes skills such as plotting of courses and collision avoidance maneuvers between vessels, which are useful on offshore waters and in harbors. This training is not directed at inland river navigation. The Coast Guard should develop radar observer course standards that, in addition to collision avoidance, teach navigation skills necessary for safe river operations. The Safety Board believes that current minimum licensing requirements are insufficient and that maritime safety would be enhanced by requiring that OUTVs be trained to use radar properly in a Coast Guard-approved radar observer course.

The pilot of the MAUVILLA had received 16 written evaluations between January 25 and September 30, 1991, while he was in training, and subsequently received written evaluations on April 5, April 12, and August 30, 1993. All rated him either "good" or "excellent"³ in every area of performance—"safety consciousness, respects authority, ability to get along with other crewmembers, knowledge of position, quality of work, and aptitude for learning." W&GN was unable to locate any written evaluations for the pilot for the period from September 30, 1991, to April 5, 1993.

The Safety Board 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.

Therefore, the National Transportation Safety Board recommends that The American Waterways Operators, Inc:

³The four rating levels for each category were "poor," "fair," "good," and "excellent."

Recommend that member companies equip their tugs and towboats with suitable navigation devices, including charts. (Class II, Priority Action) (M-94-39)

Assist the Coast Guard in developing a curriculum for a training course on river radar navigation. (Class II, Priority Action) (M-94-40)

Recommend that member companies incorporate into towboat operator evaluations a practical method of assessing proficiency in navigation, including the use of radar. (Class II, Priority Action) (M-94-41)

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-94-42 through -45 to the Warrior & Gulf Navigation Company; 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-94-39 through -41 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