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Log M-280

NATIONAL TRANSPORTATION SAFETY BOARD  
WASHINGTON, D.C.

ISSUED: July 2, 1985

Forwarded to:

Mr. Michael Sciulla, Editor  
BOAT US REPORTS  
Boat Owners Association of  
the United States  
880 South Pickett St.  
Alexandria, VA 22304

SAFETY RECOMMENDATION(S)  
M-85-49

About 1130, on July 7, 1984, the uninspected excursion vessel M/V SCITANIC was down bound on the Tennessee River, near Huntsville, Alabama, when strong winds generated by severe thunderstorm activity caused the vessel to capsize. Of the 15 passengers and 3 crewmen aboard the vessel, the crew and 4 passengers were able to escape from the capsized vessel; 11 passengers were trapped inside the vessel and drowned. The damage to the SCITANIC was estimated to be about \$65,000. 1/

When the SCITANIC got underway, there were no observable signs of inclement weather. The 1000 weather forecast obtained by the captain before he departed the vessel's berth had indicated that thunderstorms could be expected in the afternoon. There were no indications in the weather forecast up to the time the vessel got underway which would have alerted a mariner to the probability of severe thunderstorm activity in the area within the hour. However, the use of one of the two portable radios located in the pilothouse to monitor the latest National Oceanic and Atmospheric Administration (NOAA) weather forecasts would appear to be a reasonable precaution for a vessel carrying passengers in an area of frequent thunderstorm activity, and where thunderstorms can build up quickly. If the captain had been monitoring the weather broadcasts, he could have learned as early as 1050 that thunderstorms could be affecting the area during the next hour. At 1050, it would have been possible for the vessel to return to its berth before the storm broke.

By the time the captain and first mate recognized that the SCITANIC would encounter a thunderstorm, the vessel was about 1.3 miles from its berth at Ditto Landing and the closest refuge. To continue to proceed down the river toward the marina would have resulted in exposing the vessel's port side with its extensive sail area to the increasingly strong westerly winds generated by the approaching thunderstorms. The captain reacted by turning the vessel to head into the wind--a maneuver which had been used successfully on several past occasions when the vessel encountered passing thunderstorms. Turning the vessel into the wind probably would have been successful on the day of the accident except for the occurrence of four microbursts, one about 1/4 mile away, which produced a sudden wind shift with exceptionally strong winds.

1/ For more detailed information, read Marine Accident Report--"Capsizing of the Excursion Vessel M/V SCITANIC on the Tennessee River, near Huntsville, Alabama, July 7, 1984" (NTSB/MAR-85/05).

The microburst phenomenon first was identified as a cause for some types of wind shear in 1976. It involves a narrow downward moving column of air generally less than 2 1/2 miles (4 km) in diameter associated with the rain shower developed by a thunderstorm. In some microbursts, known as dry microbursts, the shower evaporates before reaching the ground. The column of air is generated by the rapid evaporation of water droplets or rain within the thunderstorm. In some microbursts, known as dry microbursts, the shower evaporates before reaching the ground. The evaporative cooling causes the density of air to increase and causes the column to accelerate downward. When a microburst reaches the ground, it spreads out beneath and beyond the thunderstorm cell, causing high and often damaging winds to flow radially from the thunderstorm cell. The horizontal surface winds radiating from a thunderstorm are a vector combination of the outflow of the microburst and the motion of the thunderstorm. Consequently, the strongest winds are usually in the direction of the thunderstorm movement. Microburst winds have been estimated in some instances to exceed 100 knots.

Most operators of recreational vessels probably are aware that weather information is readily available by listening to the NOAA weather broadcast, which may be received on either a marine radio or a weather radio. Inexpensive, battery powered weather radios are available to the boating public and are used by many operators of recreational vessels. Also, many operators of recreational vessels have some knowledge of the hazards posed by thunderstorms, such as high winds, hail, and lightning; however, very few mariners, including operators of recreational vessels, are knowledgeable about microbursts, which were not identified as a distinctive phenomenon until about 1976 when a microburst was identified as a causal factor in a 1975 commercial air accident, <sup>2/</sup> and know that such a phenomenon may be generated by thunderstorms, or know that microbursts can result in winds exceeding 100 knots. The capsizing of the SCITANIC is the first accident investigated by the Safety Board where the occurrence of a microburst was identified to be a causal factor; however, it is probable that microbursts have caused other capsizings where strong wind forces were a factor. The exceptionally high velocity winds generated by microbursts can pose a severe threat to recreational vessels, especially those with marginal stability or those with extensive sail area. Since the survivability of any vessel caught in a thunderstorm may be dependent upon the adequacy of the vessel's stability, it is important that operators of recreational vessels be informed about factors affecting stability. Operators need to know the procedures to take to insure that their vessels have optimum stability; know the conditions to avoid, such as slack tanks and loading stores and equipment on upper decks; and know the alterations which may result in shifting the vessel's center of gravity.

The Safety Board believes that information about the SCITANIC's accident should be disseminated to the boating public to apprise operators of recreational vessels about the existence of the microburst phenomenon, the importance of listening to the NOAA weather broadcast, and the importance of understanding the stability characteristics of their vessels.

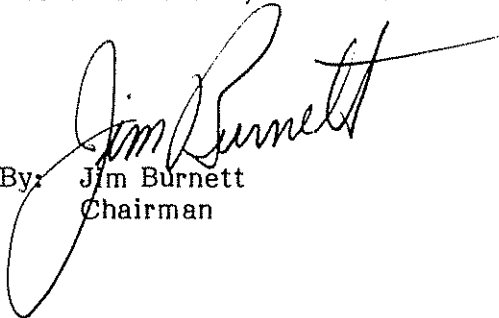
Therefore, as a result of its investigation, the National Transportation Safety Board recommends that the Boat Owners Association of the United States:

<sup>2/</sup> Aircraft Accident Report--"Eastern Airlines Inc. Boeing 727-225, N884E, John F. Kennedy International Airport, Jamaica, New York, June 24, 1975" (NTSB-AAR-76-08).

Publish information about the circumstances of the accident involving the SCITANIC, near Huntsville, Alabama, on July 7, 1984, in your magazine "BOAT/US REPORTS" to inform your members of the importance of listening to the National Oceanic and Atmospheric Administration weather radio channels, the dangers of microbursts that may be generated by thunderstorms, and the importance of adequate vessel stability to resist the force of high winds. (Class II, Priority Action) (M-85-49)

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 actions taken as a result of its safety recommendations and would appreciate a response from you regarding action taken or contemplated with respect to the recommendation in this letter.

BURNETT, Chairman, GOLDMAN, Vice Chairman, and BURSLEY, Member, concurred in this recommendation.

By:   
Jim Burnett  
Chairman