

# NATIONAL TRANSPORTATION SAFETY BOARD WASHINGTON, D.C.

ISSUED: June 3, 1980

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Forwarded to:

Honorable John M. Sullivan  
Administrator  
Federal Railroad Administration  
400 Seventh Street, S.W.  
Washington, D.C. 20590  
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SAFETY RECOMMENDATION(S)

R-80-26

About 6:10 a.m., on October 2, 1979, Amtrak passenger train No. 4, the Southwest Limited, derailed 3 locomotive units and 17 cars while moving through a 7° curve on the Atchison, Topeka and Santa Fe Railway Company's (AT&SF) tracks at Lawrence, Kansas. Of the 147 passengers and 30 crewmembers, 2 persons were killed and 69 persons were injured. Property damage was estimated to be \$4,634,330. 1/

The emergency lighting failed in some of the overturned cars, and passengers were hampered in escaping from the cars when they became disoriented in the dark. The d.c. electrical system could have been more resistant to failure when cars were overturned or just derailed. Adequate hazard analyses could have provided designers and engineers insight into how the system could fail and thus allow them design options on how to lower the probability of such failures. Reflective signs could have been used to identify exits both to passengers and to rescue workers. Emergency portable high-intensity lights could have been located in each car for use by traincrew and passengers.

As a result of its investigation of the derailment of an Amtrak passenger train on the AT&SF tracks at Melvern, Kansas, on July 5, 1974, 2/ the Safety Board recommended that the Federal Railroad Administration (FRA) promulgate regulations that all passenger cars be provided with emergency exits and emergency lights that will function when regular power is lost (recommendation R-75-3). The FRA replied that it was "conducting research that will be used as a basis for promulgating minimum safety standards for passenger cars. Standards for emergency lighting and emergency exits will be included in the rulemaking." The FRA later replied that the research was completed in 1978. The Safety Board is holding this recommendation "Open." In an effort to expedite the issuance

1/ For more detailed information read "Railroad Accident Report-1 Derailment of Amtrak Train No. 4, the Southwest Limited, on the Atchison, Topeka and Santa Fe Railway Company, Lawrence, Kansas, October 2, 1979 (NTSB-RAR-80-4).

2/ "Railroad Accident Report--Derailment of an Amtrak Train on the Tracks of the Atchison, Topeka and Santa Fe Railway Company, Melvern, Kansas, July 5, 1974" (NTSB-RAR-75-1).

of these minimum safety standards, the Safety Board in 1979, as a result of its investigation of a rear-end collision of Amtrak trains at Seabrook, Maryland, on June 8, 1978, <sup>3/</sup> recommended that the FRA: "Promulgate regulations to establish minimum standards for the design and construction of the interiors of passenger-carrying cars so that adequate crash-injury protection will be provided passengers. (R-79-38)" The FRA replied that it and the Urban Mass Transportation Administration are developing a comprehensive passenger safety program that includes all aspects of the problem. The program is scheduled for completion about the first quarter of 1981. The Safety Board cites the prolonged delay due to a continued study of obvious problems and is holding the recommendation "Open--Unacceptable Action."

Since the uninjured AT&SF traincrew had specific duties immediately following the accident, such as protecting the train from following trains and notifying the dispatcher, the burden fell upon Amtrak personnel to provide help to the injured. Because of injuries, only 10 of the 24 Amtrak employees were available to render first aid to the injured passengers. It is unknown how many did render aid but the effectiveness of the aid is in doubt because these personnel had no formal training in rudimentary first aid or rescue procedures. Additional work needs to be done to prepare traincrews, particularly Amtrak service employees, to act appropriately following an accident.

As a result of its investigation of an accident near Wilmington, Delaware, on October 17, 1975, <sup>4/</sup> the Safety Board recommended that the FRA:

Require carriers to train employees in emergency procedures to be used after an accident, to establish priorities for emergency action, and to conduct accident simulations to test the effectiveness of the program, inviting civic emergency personnel participation. (R-76-29)

The FRA replied that it is "analyzing carrier testing and training programs submitted under [49 CFR] Part 217--Railroad Operation Rules... and will determine what training and testing regulations are necessary to ensure adequate training programs..." The Safety Board is holding the recommendation "Open--Acceptable Action."

In its investigation of the accident at Seabrook, Maryland, the Safety Board recommended that the FRA: "Promulgate regulations establishing minimum standards for the training of traincrews in the safe operation of trains and in emergency procedures. (R-79-40)" The FRA replied that it does not intend to promulgate regulations in the area of training and that it can "best serve the training needs of the industry through research projects" to improve railroad employee training. The Safety Board, however, believes that such research does not guarantee improved action or adoption of standards by the railroad industry and is holding the recommendation "Open--Unacceptable Action."

<sup>3/</sup> "Railroad Accident Report--Rear-End Collision of Conrail Commuter Train No. 400 and Amtrak Passenger Train No. 60, Seabrook, Maryland, June 9, 1978" (NTSB-RAR-79-3).

<sup>4/</sup> "Railroad Accident Report--Collision of Penn Central Transportation Company-Operated Passenger Trains Nos. 132, 944, and 939, near Wilmington, Delaware, October 17, 1975" (NTSB-RAR-76-7).

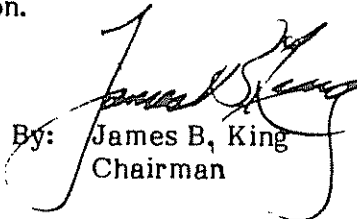
Investigation of the accident at Lawrence disclosed that the automatic train stop (ATS) equipment on the locomotive did not apply the brakes automatically when the engineer did not press the acknowledgment button while passing over an inert inductor in the track about 1 mile west of the 7<sup>o</sup> curve at Lawrence. Several postaccident tests of ATS equipment on other Amtrak locomotives disclosed that the equipment sometimes did not apply the brakes automatically when passing over inductors at restricted signals and inert inductors before several curves. The ATS equipment used in these tests had been tested before departure, and the trains were dispatched from the initial terminal with what was thought to be functioning ATS equipment.

Examination of the ATS equipment disclosed that on one unit the ATS selector switch was defective and would break electrical continuity intermittently. On the other unit the laminations on the receiver coils were damaged, thus affecting the magnetic field of the receiver. The various test procedures employed by Amtrak and the AT&SF using portable test equipment, a steel bar, measuring the height of the receiver above the top of rail, and preacknowledging inert inductors failed to disclose the malfunctioning or inoperable conditions of the ATS equipment.

Therefore, the National Transportation Safety Board recommends that the Federal Railroad Administration:

Determine and advise if test procedures being employed by the Atchison, Topeka and Santa Fe Railway Company at all locations are sufficient to determine if automatic train stop apparatus is functioning properly for in-service operation. (Class II, Priority Action) (R-80-26)

KING, Chairman, DRIVER, Vice Chairman, McADAMS, GOLDMAN, and BURSLEY, Members, concurred in this recommendation.

  
By: James B. King  
Chairman