



Log R-593B

National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: February 8, 1988

In reply refer to: R-87-67 through -70

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Chairman and President
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On October 9, 1986, eastbound National Railroad Passenger Corporation (Amtrak) passenger train 8 derailed in Fall River, Wisconsin. Each of the freight trains preceding train 8 received information that prepared them either to cross over at Fall River or to stop at Fall River for instructions. However, the engineer of train 8 did not have any advance notification or train order to indicate that they were to cross over from the eastward to the westward track in Fall River. As a result, train 8 entered the crossover at 70 mph and the locomotive units overturned. The authorized speed for the crossover was 10 mph. Two locomotive units and 10 passenger cars derailed; the fireman was killed, two crewmembers were injured seriously, and two received moderate injuries. Of the 215 passengers on board, 26 were injured. 1/

The National Transportation Safety Board is concerned that Amtrak is not making sufficient safety checks of trains operated by contract railroads. Amtrak should not allow high-speed passenger trains to operate in areas where switches are not electrically locked unless the speed of the train is reduced so engineers can stop the train safely if those switches are not properly lined. In Harvey, Illinois, on October 12, 1979, 2/ a head-end collision occurred when an Amtrak passenger train, diverted to a side track, collided with a freight train that was waiting to enter the main track after the passenger train passed. In that accident, a switchtender had mistakenly operated the switch moments before the passenger train arrived at that point and after the passenger train had passed the last signal.

The Safety Board is also concerned about the procedure of allowing passenger train 8 to pass the signals on green (clear) indications and then operating the switch. When the Federal Railroad Administration's (FRA) special study on the Northeast Corridor 3/ illustrated the danger of this procedure, Amtrak should have reviewed every route to ascertain if this dangerous procedure was being performed elsewhere.

1/ For more detailed information, read Railroad Accident Report--"Derailment of Amtrak Passenger Train 8 Operating on the Soo Line Railroad at Fall River, Wisconsin, October 9, 1986" (NTSB/RAR-87/6).

2/ Railroad Accident Report--"Head-end Collision of Amtrak train No. 392 and ICG Train No. 51 at Harvey, Illinois, on October 12, 1979" (NTSB-RAR-80-03).

3/ Federal Railroad Administration, Safety Assessment, National Railroad Passenger Corporation, Northeast Corridor, 1984.

The issue of Amtrak monitoring the operations of its contract railroads to determine adherence to safe practices and compliance with operating rules has been addressed in previous Safety Board reports of accident investigations in terms of crew performance. As a result of its investigation of an Amtrak train derailment on the Illinois Central Gulf Railroad (ICG) at Springfield, Illinois, on October 30, 1980, ^{4/} the Safety Board recommended that Amtrak "in cooperation with the Illinois Central Gulf Railroad, develop a program of close surveillance of the operation of its trains on ICG's Alton District which includes the compliance of traincrews with speed restrictions and signal aspects, as well as the monitoring of locomotive speed recorder tapes." In response, Amtrak informed the Safety Board that it had an on-going coordinated program with ICG to monitor locomotive speed and event recorder tapes and enginecrew performance for Amtrak trains operating between Chicago, Illinois, and St. Louis, Missouri.

The Safety Board again addressed this topic in Safety Recommendation R-84-43, which was issued to Amtrak as a result of the Board's investigation of the collision of an Amtrak train with a delivery truck in Wilmington, Illinois, on July 28, 1983. ^{5/} That recommendation called for Amtrak to improve the cooperative program with the ICG for monitoring enginecrew performance and enginecrew compliance with operating rules. Amtrak again informed the Safety Board that it had discussed this issue with the ICG and that, as a result, a program has been placed in effect involving radar monitoring of Amtrak trains by Amtrak and ICG supervisory personnel. Amtrak also indicated that it had planned to add two additional transportation supervisor positions in St. Louis that would result in increased on-board monitoring of both train and enginecrew personnel.

The Safety Board is concerned that although Amtrak supervises its train crewmembers, it does not have sufficient control over how the trains will be directed or how the Soo Line Railroad will route trains on its railroad. It is not enough that Amtrak supervises the operating employees on the train. The Safety Board believes Amtrak must assume an oversight role in the operation of their trains to detect dangerous procedures and correct any unsafe practice involving their trains. The Safety Board further believes that Amtrak should review and amend or renegotiate its contracts to include the right to conduct audits or to review all practices and operations of its contract railroads, not just crew performance, to eliminate unsafe practices.

The Safety Board is also concerned with the absence of an electric switch lock on a mainline crossover. The switchtender received his authority to operate the switch directing the train from the eastward track to the westward, but the method of operation used circumvented the safeguards inherent in the signal system. A system that allows a switch to be operated regardless of the location of a train has the concomitant risk that it can be operated immediately in front of any train. One system that prevents the operation of the switch when a train is closely approaching is a switch that is electrically locked at the time a train passes the signal preceding the switch. The Fall River crossover had never been equipped with electric locks. If the railroad had equipped the crossover switches with electric locks, the dispatcher would have had to arrange for the switch to be unlocked so that it could be operated manually by the switchtender. An unlocked situation could not be arranged if a train was in the affected signal block that would change the indication provided by the last signal the traincrew received. If electric locks had been provided on the crossover switches, this accident would not have occurred.

^{4/} Railroad Accident Report—"Derailment of Amtrak Passenger Train No. 21 on the Illinois Central Gulf Railroad, Springfield, Illinois, October 30, 1980" (NTSB/RAR-81/05).

^{5/} Railroad/Highway Accident Report—"Collision of Amtrak Passenger Train No. 301 on Illinois Central Gulf Railroad with Marquette Motor Service Terminals, Inc., Delivery Truck, Wilmington, Illinois, July 28, 1983" (NTSB/RHR-84/02).

Rule 517 in the General Code of Operating Rules states that radio tests must consist of an exchange of voice transmissions with another radio and the quality and readability of its transmission must be ascertained. There is no requirement by carrier rules or Federal regulation establishing a minimum distance between radios for the transmission test. The Soo Line Railroad management stated it would be permissible for an engineer to test the locomotive radio by making a transmission test with the conductor using a portable radio standing beside the locomotive. While Soo believes that it is in accordance with its rules that a voice test of the radio can be made between the conductor and engineer even if the conductor is standing beside the locomotive, the Safety Board does not believe that this test is valid. The proper preparation and the transmission and understanding of train orders are mandatory for the safe operation of trains. While long-distance transmission testing is not required by the operating rules or by Title 49 Code of Federal Regulations Part 220, the Safety Board believes that the Federal Railroad Administration (FRA) should take action to require the long-distance testing of radios used in train service.

The two portable radios that the crewmembers had been using on board train 8 were tested following the accident. Both radios tested and functioned as designed. However, one of the radios had 1.25 inches broken off the antenna. Presently, there are neither carrier operating rules nor regulations in 49 CFR Part 220 that require the testing of radio antennas. The locomotive in this accident had been in the heavy overhaul program less than a month before the accident, but because Amtrak does not test radio antennas unless they fail in service, it is most likely the locomotive left the shop with the antenna problems that were discovered at the Safety Board laboratory. When the antenna was tested at the Safety Board, the transmissions were weak, intermittent, or nonexistent. The faulty antenna was the reason the locomotive engineer was unable to communicate with the operator at Portage. Therefore, the FRA should establish requirements for the testing of the entire radio system on all locomotives, including the antenna.

Although the crossover procedure was understood by most of the individuals involved in this accident, it was a dangerous procedure. Expediting the movement of trains by eliminating the protection of the signal system is, in the Safety Board's view, an abdication of safe operating practices. If the switches of the crossover had been lined for the crossover before the arrival of train 8, the engineer would have been required to slow the train and comply with the signal indications. This would have further delayed train 8, which was already late leaving Portage by 8 minutes. Because of the published schedule, the engineer had said it was difficult to make up time lost east of Portage. Due to the track work being performed on the eastward track, the trains were required to run on the westward track causing additional delays. Because this procedure was understood and condoned by Soo management and by failing to take action to prohibit its use, it was an implicit endorsement of the method.

The Safety Board believes that Soo management should have recognized the danger of this crossover procedure and should have taken action to prohibit its use. However, the procedure did expedite the movement of trains and Amtrak's incentive for on-time performance of trains may have been the factor that caused Soo management to accept this method of operation. Soo Line management officials stated that although they wanted to make as much as possible from the on-time incentive payments, they did not want to forsake safety to keep Amtrak trains on schedule. Since train 8 was only 8 minutes late leaving Portage, Soo employees may have believed that train 8 could still be qualified as on time when it arrived in Chicago, thereby qualifying for the on-time incentive. The engineer of train 8 understood that management wanted to expedite train 8 and that Soo collected "considerable money" for on-time performance. The train dispatcher indicated he also understood the railroad wanted to keep Amtrak train 8 on

schedule. It is possible that the implied emphasis by Soo management to keep train 8 on schedule affected the performance of the individuals involved in the movement of the train, and this impression led them to believe that on-time performance was the most important factor.

Following its investigation of the Amtrak passenger train collision and derailment at Wilmington, Illinois, on July 28, 1983, the Safety Board issued a recommendation to Amtrak:

R-84-37

Review the possible contribution of the on-time incentive program in encouraging contractor railroads operating practices which may cause a degradation of safety, and modify the program as appropriate.

Amtrak responded that there was no evidence or indication that the carriers violated safe operating practices to enhance their on-time performance. The Safety Board classified the recommendation as "Closed--Unacceptable Action" when it became apparent that Amtrak was not going to take any positive action to determine why speed violations, that had been documented in Safety Board investigations, continued to occur. The Safety Board believes that the employees involved believed that the Soo received considerable money from the incentive program for on-time performance and that this belief had a direct influence on the decisions to allow this unsafe procedure to be used at Fall River.

Therefore, as a result of its investigation, the National Transportation Safety Board recommends that the National Railroad Passenger Corporation (Amtrak):

Review and amend or renegotiate its contracts to include the right to conduct audits or review all practices and operations of its contract railroads, not just crew performance, with the goal of eliminating unsafe practices. (Class II, Priority Action) (R-87-67)

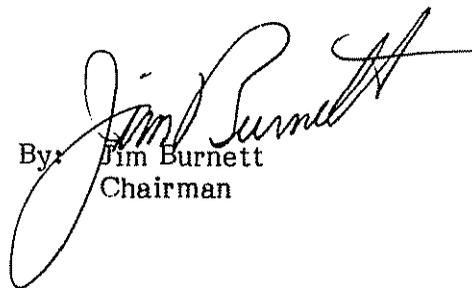
In cooperation with the railroads that operate Amtrak passenger trains, install electrically locked switches on the main line tracks that would prohibit the operation of the switch after a train has passed the last signal before the switch. (Class II, Priority Action) (R-87-68)

Establish a testing procedure at each periodic inspection, not to exceed 92 days, at an adequate facility for the complete radio system and antenna on Amtrak locomotives to include continuity and reflect levels. (Class II, Priority Action) (R-87-69)

Establish safeguards to prevent contract railroads from using unsafe practices to qualify for on-time incentive payment for on-time performance of Amtrak passenger trains. (Class II, Priority Action) (R-87-70)

Also as a result of its investigation, the Safety Board issued Safety Recommendations R-87-61 through -63 to the Soo Line Railroad and R-87-64 through -66 to the Federal Railroad Administration.

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


By: Jim Burnett
Chairman