

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: May 18, 1981

Forwarded to:

Honorable Robert W. Blanchette
Administrator
Federal Railroad Administration
Washington, D.C. 20590

SAFETY RECOMMENDATION(S)

R-81-52 and -53

About 4:12 p.m., on November 7, 1980, Conrail freight train OPSE-7 struck the head end of Amtrak train No. 74 while it was standing on track No. 2 at Dobbs Ferry, New York. The lead locomotive unit of train OPSE-7 overrode and destroyed the operating cab of the power car of train No. 74. Of the estimated 234 persons aboard the trains, 75 passengers and 9 crewmembers were injured. Damage to the equipment was estimated at \$915,000. 1/

The dispatcher had decided to run train OPSE-7 against the current of traffic. The primary safeguard, placing a blocking device on the signal lever, and the primary redundant feature, displaying the train order signal, were ignored by the OW operator. Additionally, the dispatcher failed to comply with the instruction governing "J" holding orders which required him to assure that the train order signal was displayed.

The action of the OW operator in displaying a clear signal for train No. 74 to proceed onto a segment of track in conflict with an opposing train which had been given absolute rights by a train order is a perfect example of why it is necessary to block signal levers in such operations. Throughout the years, investigation of accidents and incidents have shown that human failure cannot be eliminated completely; therefore, the needed redundant requirement to display the train order signal, which made the engineer of a restricted train also responsible for not passing the point where the train order was in effect, was lacking. The dispatcher violated a Conrail rule by transmitting a holding order to the OW operator without requiring the operator to state that "stop signal and train order signal displayed." A further safeguard would have been to address the order to the engineer of train No. 74; however, this is not required by the Conrail rules.

The dispatcher had been working regularly on his assignment for about 1 year 6 months and had been regularly issuing train orders to operators without requiring them to display the train order signal and confirm it with the statement required by the

1/ For further information, read: Railroad Accident Report—"Head-End Collision of Amtrak Passenger Train No. 74 and Conrail Freight Train OPSE-7, Dobbs Ferry, New York, November 7, 1980" (NTSB-RAR-81-4).

rules. This practice was also being followed by the dispatcher when he was an operator and he could not display a train order signal. The OW operator stated that from his experience he had been led to believe through on-the-job training that it was acceptable to state to the dispatcher, "BDA," and then copy the train order before applying the blocking device. That is contrary to the intent of the required exchange between an operator and a dispatcher which is to insure that a blocking device is applied and confirmed before the order is transmitted.

The Conrail management had to have known, if they have been performing periodic inspections, that improper procedures were being used, such as no train order signals being displayed at towers because the operators did not have the ability to do so. Thus, it seemed a fair inference that Conrail management had been condoning the procedures through acquiescence. Further, the disconnecting of the flashing "O" train order signal, the nailing shut of the window which prevented the display of the train order signal at the OW tower, and the existence of this situation for at least 4 years seems to confirm that Conrail management had been condoning improper train order procedures. The situation was worsened by the fact that an improperly trained operator, who had acquired the bad habit of replying BDA (blocking device applied) before actually doing so, had been working for more than a year without being checked in the performance of his duties by a supervisor.

Since the engineers of OPSE-7 and No. 74 were monitoring different radio channels, the engineer of No. 74 was not aware that OPSE-7 was operating on track No. 2 from the opposite direction. No. 74 was monitoring channel 3 in compliance with the timetable special instructions, and OPSE-7 was not monitoring channel 3 because the Conrail freight locomotive units are not equipped with a radio with channel 3. However, the Conrail timetable had established limits of operation that required the use of channel 3 in the area of the accident. If both trains had been operating on the same radio channel, the engineer of train No. 74 may have heard the train order given to the engineer of OPSE-7 to use track No. 2 and thus have been alerted that an opposing move was being made and have stopped his train on track No. 2 at OW. However, Conrail Management, instead of having their freight train locomotives equipped with radios to receive and transmit on channel 3 so that the engineers could comply with the timetable instructions, equipped the Towers with a radio with channel 2. The operators then monitored channel 2 and 3 simultaneously and when necessary could transmit train orders to freight trains on channel 2.

The conflict between the Conrail timetable instructions and the Conrail procedures for the operation of train radio between MO Tower, Bronx, New York, and CD Tower, Harmon, New York, which includes the area of the accident, is a failure to comply with 49 CFR 220.39, which requires radios to operate on the designated channel. The engineer of OPSE-7 could not turn to channel No. 3, as specified by the timetable and required by 49 CFR 220.23, because his locomotive was not equipped with a radio to operate on channel 3. This is another example of the failure of management and supervision to ensure that operations were conducted in accordance with Conrail rules and Federal requirements for safe train operations.

The Safety Board identified the lack of crash protection provided the occupants of locomotives in an accident at Riverdale, Illinois, on September 8, 1970, 2/ and made a

2/ Railroad Accident Report—"Illinois Central Railroad Company and Indiana Harbor Belt Railroad Company Collision Between Yard Trains at Riverdale, Illinois, on September 8, 1970" (NTSB-RAR-71-3).

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recommendation to the Federal Railroad Administration (FRA) for timely improvement of the crashworthiness of railroad equipment particularly as it is related to the protection of the occupants of locomotive control compartments. In a letter to the Safety Board dated May 3, 1971, the FRA outlined its concern for this problem and set up a meeting with the locomotive and car builders, labor organizations, carriers, and the Association of American Railroads (AAR). On January 16, 1973, the FRA advised the Safety Board that a locomotive control compartment committee had been organized, that the AAR had requested a contractor to design a program of testing to determine locomotive cab crashworthiness, and that the test program would set requirements for anticlimbing devices and design requirements for locomotive crash posts and pilots. However, this committee, still in existence, has not published any minimal criteria for the structural design of locomotives. Since the original meeting in 1971 with the FRA, numerous accidents ^{3/} have been investigated by the Safety Board in which crashworthiness and collision posts have been identified as inadequate to provide protection to the occupants of locomotive control compartments. Amtrak apparently gave little consideration to crashworthiness in the design and adaptation of the turboliner power cars as demonstrated by the extensive damage done to the locomotive cab in this relatively low-speed collision. The damage to the cab would have made it unsurvivable for the occupants if they had remained in the cab. The acquisition of this lighter and lower turboliner equipment by Amtrak was possible because of the lack of design requirements established by the FRA for locomotive construction.

In its investigation of an accident at Goldonna, Louisiana, on December 28, 1977, ^{4/} it was determined that the lack of crashworthiness features on the locomotive caused the death of two crewmembers. Because of this investigation, the Safety Board issued to the FRA recommendation R-78-27 which requested that FRA expedite its study of improvements to the design of locomotive operator compartments to minimize crash damage, and promulgate necessary regulations to assure the adoption of appropriate findings. The Safety Board reiterates this recommendation to the FRA and strongly urges that the crashworthiness study be accelerated so that the problem of inadequate crash protection for the occupants of locomotive cabs can be swiftly resolved.

Many passenger injuries were sustained when passengers were thrown forward into seatbacks and the seats rotated because of inadequate locking devices. Other passengers sustained injuries when they were thrown forward and their legs became trapped under seats. The Safety Board has investigated other accidents involving passenger injuries caused by inadequately locked seats.

The Safety Board identified fixtures within passenger cars as injury-producing in an accident investigated at Glendale, Maryland, on June 28, 1969, ^{5/} and recommended to

^{3/} Railroad Accident Report--"Freight Train Derailment Passenger Train Collision with Hazardous Material Car, Soundview, Connecticut, October 8, 1970" (NTSB-RAR-72-1); Railroad Accident Report--"Derailment of Extra 5701 East at Sherman, Wyoming, March 28, 1971" (NTSB-RAR-72-4); Railroad Accident Report--"Collision of the State-of-the-Art Transit Cars with a Standing Car, High Speed Ground Test Center, Pueblo, Colorado, August 11, 1973" (NTSB-RAR-74-2); and Railroad Accident Report--"Head-End Collision of Louisville & Nashville Railroad Local Freight and Yard Train at Florence, Alabama, September 18, 1978" (NTSB-RAR-72-2).

^{4/} Railroad Accident Report--"Collision of a Louisiana & Arkansas Railway Freight Train and a L.V. Rhymes Tractor-Semitrailer at Goldonna, Louisiana, on December 28, 1977" (NTSB-RAR-78-1).

^{5/} Railroad Accident Report--"Penn Central Company Train Second 115 (Silver Star) Derailment at Glendale, Maryland, June 28, 1969" (RAR-70-1).

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the FRA that it initiate studies to determine the relationship between rail passenger car design and passenger injury and, where practical, take action for correction in the design of future high-speed and rapid transit passenger cars. Amtrak has placed many cars in service since that report was issued. The Safety Board has investigated other accidents 6/ in which passenger injuries have been caused by the fixtures within the car. No Federal regulations exist for even minimum standards for interior design of passenger cars. Amtrak's newest cars still have some of the same injury-producing equipment that was cited in past Safety Board investigations.

A 1978 crashworthiness study 7/ conducted by the FRA identified seat rotation as being a cause of passenger injuries and concludes that it is necessary to "prevent double seats from swiveling by providing a positive lock to improve occupant containment." The problem of leg entrapment was also identified as a significant cause of passenger injuries in the FRA study. The report concluded that there was a need to "prevent leg entrapment under seats by adding a back skirt to reduce high frequency of leg injury in collisions."

Since the findings of the FRA study identified the injury-producing fixtures that are present in passenger train accidents, the Safety Board finds it difficult to understand why the FRA has not yet taken steps to correct these unsafe and obvious injury-producing conditions. The Safety Board reiterates to the FRA the urgent need for establishing passenger car safety standards.

The Safety Board is concerned for the safety of passengers and crewmembers traveling on the Metropolitan Region of Conrail because of the large volume of passenger traffic. The apparent failure of Conrail management to recognize the danger of failing to take corrective action to bring train operations in compliance with their operating rules and timetable special instructions must be corrected. Therefore, the Safety Board urges the FRA to immediately launch a safety review of the operation of trains on the Metropolitan Region of Conrail to bring those operations in compliance with the operating rules and timetable instructions as issued by Conrail.

As a result of its investigation of this accident, the National Transportation Safety Board recommends that the Federal Railroad Administration:

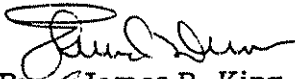
Conduct a safety review of the Metropolitan Region to determine why the actual operation of trains was not in compliance with Conrail rules, and provide the Safety Board a report of the findings. (Class II, Priority Action) (R-81-52)

6/ Railroad Accident Report—"Richmond, Fredericksburg & Potomac Railroad Company Train No. 10/76 Derailment with Three Fatalities and Numerous Personal Injuries, Franconia, Virginia, January 27, 1970" (NTSB-RAR-71-1); Railroad Accident Report—"Derailment of Amtrak Train No. 1 While Operating on the Illinois Central Railroad Near Salem, Illinois, June 10, 1971" (NTSB-RAR-72-5); Railroad Accident Report—"Collision of Illinois Central Gulf Railroad Commuter Trains, Chicago, Illinois, October 30, 1972" (NTSB RAR-73-5); Railroad Accident Report—"Derailment of an Amtrak Train on the Tracks of the Atchison, Topeka & Santa Fe Railroad Company, at Melvern, Kansas, July 5, 1974" (NTSB RAR 75-1); and Railroad Accident Report—"Collision of Two Penn Central Commuter Trains at Botanical Garden Station, New York City, January 2, 1975" (NTSB-RAR-74-8).

7/ "Rail Safety/Equipment Crashworthiness," FRA/ORD 77/73.

Amend 49 CFR 217.9 to require sufficient monitoring to insure that each operating employee is evaluated for compliance with operating rules on a regular basis. (Class II, Priority Action) (R-81-53)

KING, Chairman, DRIVER, Vice Chairman, McADAMS and BURSLEY, Members, concurred in these recommendations. GOLDMAN, Member, did not participate.


By: James B. King
for Chairman