

109# R-579A



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: September 9, 1987

In reply refer to: R-87-23

Honorable John H. Riley
Administrator
Federal Railroad Administration
400 7th Street, S.W.
Washington, D.C. 20590

On July 10, 1986, Union Pacific Railroad (UP) eastbound freight train No. CLSA-09 struck standing UP freight train No. WPX-08, 8 miles west of North Platte, Nebraska. Due to unusually heavy fog, visibility was limited to about 300 to 400 feet. Train No. CLSA-09 was traveling about 40 mph as it approached the area where train WPX-08 was stopped. The engineer applied the brakes when the caboose of the standing train became visible, but the train's speed was reduced to only about 32 mph when the trains collided. Three locomotives and 11 cars from both trains were derailed. The rear brakeman of train WPX-08 was killed and the conductor injured. The engineer and head brakeman of train CLSA-09 were injured when they jumped from the train. ^{1/}

The locomotive cab section of train CLSA-09 was destroyed on impact. Had the engineer remained in his seat, he could have been thrown forward over the control stand and into the area that was totally destroyed. Even had he not been thrown over the control stand, the roof and front of the locomotive at the engineer's location was torn away and would have exposed any occupant. The area where the head brakeman had been standing was completely destroyed. The engineer stated that he jumped from the locomotive before the collision occurred, and the head brakeman stated he either jumped or was thrown off the side of the locomotive as he attempted to jump at the time of the collision. This accident, which probably would have resulted in fatal injuries to the engineer and head brakeman on train CLSA-09 had they not jumped from the cab before the collision, further demonstrates the need for improved crashworthiness on locomotive cabs.

The Safety Board identified the lack of crash protection provided the occupants of locomotives in an accident at Riverdale, Illinois, on September 8, 1970. At that time, the Safety Board made a recommendation to the Federal Railroad Administration (FRA) for timely improvement of the crashworthiness of railroad equipment, particularly to protect the occupants of locomotive control compartments. In a letter to the National Transportation Safety Board dated May 3, 1971, the FRA outlined its concern for this problem and set up a meeting with locomotive builders, labor organizations, rail carriers, and the Association of American Railroads (AAR). On January 16, 1973, the FRA advised

^{1/} For more detailed information read, Railroad Accident Report, "Rear End Collision and Derailed of Two Union Pacific Freight Trains Near North Platte, Nebraska on July 10, 1986" (NTSB/RAR-87/03).

the Safety Board that it was planning a program to test locomotive control compartments to determine locomotive cab crashworthiness, and that the test program would set requirements for anticlimbing devices and design requirements for locomotive crash post and pilots.

In the interval since 1973, however, this committee has not published any criteria for the structural design of locomotives. Since the original meeting in 1971 with the FRA, the Safety Board has investigated numerous accidents in which crashworthiness has been identified as inadequate to protect the occupants of locomotive control compartments.

As a result of its investigation of an accident at Pacific Junction, Iowa, on April 13, 1983, the Safety Board issued Safety Recommendation R-83-102 to the FRA, requesting that they initiate and/or support a design study to provide a protected area in the locomotive operating compartment for the crew when a collision is unavoidable. On April 30, 1984, the FRA responded to the recommendation, indicating that it intended to commence a safety inquiry on issues of health and safety in the locomotive cab, which would be the subject of one or two major safety efforts for the year ahead.

The Safety Board pointed out in its follow-up letter to the FRA on July 5, 1984, that accident investigations continued to indicate that enginecrews were being injured or killed because the locomotive operating compartments or portions thereof are not structurally designed to withstand the impact forces. The Safety Board urged the FRA to direct its attention to this subject when conducting the safety inquiry. As previously noted, inadequate crash protection for the occupants of locomotive cabs has long been a concern of the Board's. The Safety Board has not received a formal response to its letter, nor is there any evidence that the FRA is making a concerted effort to resolve this problem. The time for studying the problem has long since passed and the head-end crew should be afforded far more protection than is the case with the current design of locomotive operating compartments. The FRA is urged to act expeditiously to require this protection. In view of the new recommendation being issued as a result of this investigation, the Safety Board has classified Safety Recommendation R-83-102 as "Closed--Unacceptable Action/Superseded."

The Safety Board's interest in the occupational safety in the locomotive operating compartment dates back as far as 1971 and involves various safety related issues.

On September 8, 1970, a collision between an Illinois Central (IC) yard train and an Indiana Harbor Belt (IHB) train occurred on trackage of the IC at Riverdale, Illinois. The collision caused the IC caboose to override the heavy underframe of the IHB locomotive, demolishing the control compartment of the locomotives. Two following cars continued in the path established by the caboose and completed the destruction of the locomotive control compartment. The IHB engineer was found dead in the wreckage of the control compartment. Following its investigation of this accident, the Safety Board recommended that the FRA and the industry continue to expand their cooperative efforts toward the timely improvement of the crashworthiness of railroad equipment, particularly as related to the protection of the occupants of locomotive control compartments (Safety Recommendation R-71-44).

An accident on October 8, 1970, involving a Penn Central Transportation Company freight train and a passenger train near Sound View, Connecticut, again demonstrated the ineffectiveness of the crew compartment to withstand impact forces. As a result of this accident investigation, the Safety Board recommended that the FRA complete its recently initiated efforts in the improvement of the design of locomotive operator compartments to resist crash damage (Safety Recommendation R-72-005). This

recommendation was ultimately classified as "Closed--No Longer Applicable" following the issuance of Safety Recommendation R-78-27, which addresses the same issue. Over the next few years, the Safety Board continued to voice its concern about the crashworthiness of locomotive cab compartments as the FRA continued its research and tests in this area.

The investigation of the collision of three freight trains near Leetonia, Ohio, on June 6, 1975, again prompted the Safety Board to recommend to the FRA that they continue the investigation of the crashworthiness of locomotive cabs with emphasis on personnel safety and consideration of readily accessible crash refuge (Safety Recommendation R-76-009). Following FRA's assurance that it was continuing its studies in this area, the Safety Board classified Safety Recommendation R-76-009 as "Closed--Acceptable Action" on August 6, 1978.

On September 18, 1978, a Louisville and Nashville (L&N) freight train collided head-on with a yard train inside yard limits at Florence, Alabama. The lead unit of the yard train overrode the lead unit of the freight train. The operator compartment provided no protection for the head brakeman and engineer, who jumped from the compartment but were run over by their units.

On August 11, 1981, a Boston and Maine Corporation freight train and a Massachusetts Bay Transportation Authority commuter train collided head-on near Prides Crossing, Beverly, Massachusetts. The 85,000-pound lead car of the commuter train overrode the 247,000-pound locomotive unit of the freight train and pushed the components of the locomotive into the operating compartment, killing three persons.

The Safety Board's investigations of the above accidents resulted in recommendations to the FRA regarding crashworthiness protection to the locomotive operating compartments (Safety Recommendations R-77-37, R-78-27, R-79-11, and R-82-34, respectively). As a result of the completion of the FRA-sponsored report, "Analysis of Locomotive Cabs," the Safety Board on November 24, 1982, classified these four recommendations "Closed--Acceptable Action."

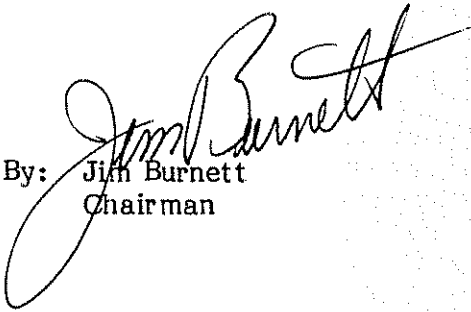
The Safety Board was pleased to note in 1984 that the FRA, as previously noted, announced plans to conduct a safety inquiry on issues of health and safety in the locomotive cab, and to make it one of two major safety efforts that year. It is the Safety Board's position that accident investigations continue to demonstrate that improvements are needed in the crashworthiness design standards for locomotives. The head-end crew should be afforded far more protection than is the case with the current design of locomotive operating compartments. The Safety Board urges the FRA to act expeditiously to address this issue.

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

Promptly require locomotive operating compartments to be designed to provide crash protection for occupants of locomotive cabs. (Class II, Priority Action) (R-87-23)

As a result of this investigation, the Safety Board also issued Safety Recommendations R-87-19 through -22 to the Union Pacific Railroad Company.

BURNETT, Chairman, GOLDMAN, Vice Chairman, and LAUBER, NALL, and KOLSTAD, Members, concurred in this recommendation.

By:  Jim Burnett
Chairman