Log R-652A

NATIONAL TRANSPORTATION SAFETY BOARD

Washington, D.C. 20594

Safety Recommendation

Date: March 29, 1995

In Reply Refer To: R-95-22 and -23

Mr. Edwin L. Harper
President and Chief Executive Officer
Association of American Railroads
50 F Street, NW
Washington, DC 20001

At 4:36 a.m. on May 16, 1994, the southbound National Railroad Passenger Corporation (Amtrak) train 87, Silver Meteor, collided with an intermodal trailer that had either fallen or was falling from a flat car on the passing northbound CSX Transportation Inc. freight train R176-15 (CSXT 176) at Selma, North Carolina. Amtrak train 87 consisted of a two-unit locomotive and 18 cars; CSXT 176 consisted of a three-unit locomotive and 52 cars. All but the last car of Amtrak train 87 derailed, and the next to the last car on CSXT 176 also derailed. On Amtrak train 87, the assistant engineer was killed, the engineer sustained serious injuries, and 1 on-board service crewmember and 119 passengers received minor injuries. The operating crew on CSXT 176 sustained no injuries.[1] The National Transportation Safety Board determined that the probable cause of the derailment of Amtrak train 87 was the failure of the CSX Intermodal Corporation (CSXI) loading crew to properly secure the intermodal trailer to the flat car on CSXT 176 and the failure of CSXI to have in place a comprehensive inspection program.

[1]For more detailed information, read Railroad Accident Report--*Amtrak Train 87 Derailment after Colliding with Intermodal Trailer from CSXT Train 176, Selma, North Carolina, May 16, 1994* (NTSB/RAR-95/02).

On May 14, 1994, trailer REAZ 232980 was loaded at the Orlando (Florida) Taft Yard onto flat car KTTX 251988 that departed the following morning on CSXT 176. While en route to Jacksonville, Florida, CSXT 176 encountered two opposing trains, and neither crew on the opposing trains observed any anomalies as CSXT 176 passed. At the Jacksonville terminal, CSXT 176 remained idle for about 6 hours. The train was reassembled with a new consist, inspected, and departed after a crew change. Proceeding north, CSXT 176 changed crews at Savannah, Georgia, and Florence, South Carolina. After Florence, CSXT 176 encountered an opposing train and a defect detector; no anomalies were noted. As CSXT 176 approached Selma, it was routed onto track 1 from the single main track. At this location, CSXT 176 met Amtrak train 87, and the north trailer REAZ 232980 that was on the 51st flat car KTTX 251988 of CSXT 176 either fell or was falling from that flat car. The trailer had remained on the flat car for 636 miles from the loading location to the point of collision.

The clearance distance between the passing Amtrak locomotive unit and the flat car at the collision point was about 3 feet.[2] Secured, the trailer would not extend beyond the sides of the flat car. Safety Board investigators found that the trailer could extend only 18 inches before falling from the flat car. If the trailer extended less than 18 inches over the side of the flat car, it would still be clear of the adjacent track at the point of collision. No indications of anything dragging beside or behind CSXT 176 south of the point of collision were found. In addition, the Amtrak engineer stated that when he first observed trailer REAZ 232980, he could not distinguish whether it had fallen or was falling off flat car KTTX 251988. Therefore, the Safety Board could only conclude that REAZ 232980 had either fallen or was falling from KTTX 251988 when the Amtrak locomotive unit struck it.

Upon postaccident testing, the kingpin and the hitch mechanism were found to be mechanically sound. The hitch was found after the accident with its locking jaws in the closed position. It is improbable that the locking jaws could have been moved to a closed position by the derailment dynamics or the hitch mechanism being dragged in the ballast. The locking jaws are recessed in a protected position and must be struck sharply and forcefully to close. The shiny marks found on the front of the "vee notch" of the hitch throat indicate that a kingpin had recently struck or rubbed in an area not usually in contact with a kingpin while in transit. After considering the shiny marks, the final position of the derailed flat car, the derailment forces derailing only KTTX 251988, and the impact force needed to close the recessed locking jaws, the Safety Board determined that the locking jaws were closed at the time of the derailment and not as a result of the derailment. Rub rail marks found on derailed flat car KTTX 251988 also indicate that trailer REAZ 232980 was out of the hitch before CSXT 176 arrived in Selma. Based on the evidence present, the Safety Board therefore concluded that trailer REAZ 232980 was improperly loaded and not secured to flat car KTTX 251988 when it departed the Orlando Taft Yard.

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[2]The distance between tracks (center-to-center) was 13.35 feet. The width of the Amtrak locomotive unit, including hand rails, was 10.66 feet. The extreme outside width of KTTX 251988 was 10.08 feet.

The Association of American Railroads (AAR) sets industry standards for certain equipment and components. The Safety Board reviewed the open top loading rules that govern the loading of commodities on open top cars. Seven manuals contain the rules that cover over 600 loading practices. The AAR manual seven, *Loading of Commodities on Open Top Trailers and Containers to be Handled in Trailer-On-Flat-Car (TOFC) Service and Container-On-Flat-Car (COFC) Service*, discusses intermodal shipments. The manual lists recommended practices for the loading of lading into trailers/containers for intermodal service transport and deals with flat bed type trailers rather than highway box type trailers. One reference in the manual does address the placement of a highway type trailer on the flat car but does not address securement of a unit. The placement reference is to which end of the car a single trailer is positioned. An AAR official said that on May 14, 1994, the manual contained "nothing as far as securement of the trailer to the flat car."

The February 21, 1995, AAR letter detailed for the Safety Board the industry progress on intermodal securement handling issues outlined in the September 1994 Federal Railroad Administration (FRA) Office of Safety study, *Trailer-on-Flat Car (TOFC) and Container-on-Flat Car (COFC) Loading and Securement Safety Report*. The letter specified that the AAR, in conjunction with the Intermodal Equipment Handling Task Force, has completed the following or plans to:

> Develop and implement an intermodal trailer and container securement manual (to be issued by March 1995).
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> Develop and implement an inspection for locked position poster (to be issued by March 1995).
>
> Develop and distribute TOFC/COFC securement videos (to be issued by May 1995).
>
> Enhance the AAR recommended practices to include the addendum items regarding the loading, securing, and inspection of trailers onto flat cars (to be issued by June 1995).

The AAR is the leading trade organization to develop and set recommended operational practices for the railroad industry. However, the AAR has not developed standardized procedures that address the loading and inspection of TOFC/COFC. As a result of the Safety Board investigation of the Selma accident, which included reviewing the September 1994 FRA study, the Safety Board concluded that no industry standards addressed the loading, securement, and inspection of intermodal trailers on railroad flat cars on May 14, 1994. The Safety Board is aware of the activities of the AAR and the industry since the Selma accident. It has also been informed of the plans for developing a manual, poster, and video for the industry and for incorporating the recommended practices of the loading, securing, and inspecting of TOFC/COFC equipment in manual seven of the open top loading rules. The Safety Board understands that the AAR has developed and plans to include in its proposed intermodal trailer

and container securement manual comprehensive industry standards for the securement of intermodal trailers (TOFC/COFC) on railroad flat cars before transport. The Safety Board believes that the AAR should advise the Safety Board within 90 days of the progress toward the development of the manual, poster, and video for the railroad industry and the incorporation of the recommended practices for the loading, securing, and inspecting of TOFC/COFC equipment in manual seven of the open top loading rules. The AAR should also implement these actions by December 31, 1995.

The Safety Board noted that not all incidents of trailers falling off flat cars were included in the September 1994 FRA TOFC/COFC safety report, which researched reported accidents/incidents and reviewed 63 TOFC/COFC loading sites across the United States. No single data base was available that accumulated all incidents or accidents involving TOFC/COFC shipments. The growth of the TOFC/COFC traffic across the United States (the FRA study noted that 7.2 million intermodal cars were loaded in 1993) necessitates having information available on these types of shipments. Therefore, the Safety Board believes that the AAR should advise the Safety Board within 90 days of the progress toward developing and maintaining a data base to accumulate all incidents that involve unsafe conditions for TOFC/COFC shipments, including trailers found unsecured, trailers falling from flat cars, and/or acts of vandalism. The AAR should also implement the use of this data base by December 31, 1995.

Therefore, the National Transportation Safety Board recommends that the Association of American Railroads:

> Advise the National Transportation Safety Board within 90 days of the progress toward the development of the manual, poster, and video for the railroad industry and the incorporation of the recommended practices for the loading, securing, and inspecting of TOFC/COFC equipment in manual seven of the open top loading rules. Also, implement these actions by December 31, 1995. (Class II, Priority Action) (R-95-22)
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> Advise the National Transportation Safety Board within 90 days of the progress toward developing and maintaining a data base to accumulate all incidents that involve unsafe conditions for TOFC/COFC shipments, including trailers found unsecured, trailers falling from flat cars, and/or acts of vandalism. Also, implement the use of this data base by December 31, 1995. (Class II, Priority Action) (R-95-23)

Also, the Safety Board issued Safety Recommendation R-95-21 to the Federal Railroad Administration.

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 action taken as a result of its safety

recommendations. Therefore, it would appreciate a response from you regarding action taken or contemplated with respect to the recommendations in this letter. Please refer to Safety Recommendations R-95-22 and -23 in your reply. If you need additional information, you may call (202) 382-6840.

Chairman HALL, Vice Chairman FRANCIS, and Member HAMMERSCHMIDT concurred in these recommendations.

By: Jim Hall
Chairman