

Log R-652

## NATIONAL TRANSPORTATION SAFETY BOARD

Washington, D. C. 20594

### Safety Recommendation



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**Date:** March 29, 1995

**In Reply Refer To:** R-95-21

Honorable Jolene M. Molitoris  
Administrator  
Federal Railroad Administration  
Washington, DC 20590

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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.<sup>1</sup> 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.

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<sup>1</sup>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).

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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.<sup>2</sup> 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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<sup>2</sup>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.

After the accident in Selma, the Secretary of Transportation directed the Federal Railroad Administration (FRA) to assess trailer-on-flat car/container-on-flat car (TOFC/COFC) safety. The September 1994 FRA Office of Safety study, *Trailer-on-Flat Car (TOFC) and Container-on-Flat Car (COFC) Loading and Securement Safety Report*, researched reported accidents/incidents and reviewed 63 TOFC/COFC loading sites across the United States. The FRA study found that 108 accidents/incidents were caused by TOFC/COFC loading problems between 1983-93. Sixty percent of those occurrences were attributable to improper loading; 30 percent were lading- or cargo-caused accidents; and 10 percent resulted from other causes. The study further noted that of the 7.2 million intermodal cars loaded in 1993, seven incidents were reported. Predeparture inspection procedures at the loading sites varied. Some companies reported a strongly enforced written policy of inspections to ensure proper loading and securement of the TOFC/COFC by an individual not in the loading crew.

The FRA study states:

FRA, in partnership with the industry, will promote the following actions to strengthen or eliminate safety weaknesses identified in TOFC/COFC loading operations:

1. require post-loading, pre-departure inspections of all loaded TOFC/COFC equipment by personnel other than the loading crew such as loading crew supervisors or carmen;
2. establish a uniform minimum set of training requirements to qualify TOFC/COFC loading crews throughout the industry;
3. establish required preventative maintenance intervals for TOFC/COFC securement systems that include cleaning and re-lubrication of critical moving parts;
4. develop standard operating procedures for safely loading TOFC/COFC equipment at each loading site;
5. discontinue the practice of collapsing defective hitches into the floor of the car and loading the car with containers without providing a means of positively preventing the defective hitch from being raised and used after it is unloaded;
6. review design standards of trailers and containers to be loaded on TOFC/COFC equipment to ensure they are compatible with the various lifting modes while loaded to capacity; and
7. provide railroad oversight of the work of contractors performing TOFC/COFC loading work to ensure the contractors follow all the established safety procedures.

On February 1, 1995, the Safety Board wrote to the FRA about its safety report on the loading operations of TOFC/COFC railroad equipment. The Safety Board requested the current status of the action that the FRA has taken to resolve the seven problem areas listed in its September 1994 study. The Safety Board indicated that the FRA should continue to discuss with the railroad industry and take appropriate action to address these seven problem areas. Also, the Safety Board asked whether the FRA plans to initiate any regulatory action for the intermodal area in the railroad industry.

On February 21, 1995, the FRA informed the Safety Board:

FRA's report on TOFC/COFC loading and securement safety stated that if the voluntary industry actions did not sufficiently address the identified problem areas, additional measures to reduce the potential for similar accidents would be taken. At this time, FRA does not plan to initiate formal regulatory actions regarding TOFC/COFC loading operations.

The Safety Board understands that the FRA has developed and plans to continue discussions with the railroad industry regarding the seven problem areas. The Safety Board believes that the FRA should advise the Safety Board within 90 days of its progress with the railroad industry in its actions toward the seven problem areas identified in its *Trailer-on-Flat Car (TOFC) and Container-on-Flat Car (COFC) Loading and Securement Safety Report*. The FRA should also ensure that the railroad industry has implemented the seven policies by December 31, 1995.

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

Advise the National Transportation Safety Board within 90 days of its progress with the railroad industry in its actions toward the seven problem areas identified in its *Trailer-on-Flat Car (TOFC) and Container-on-Flat Car (COFC) Loading and Securement Safety Report*. Also, ensure that the railroad industry has implemented the seven policies by December 31, 1995. (Class II, Priority Action) (R-95-21)

Also, the Safety Board issued Safety Recommendations R-95-22 and -23 to the Association of American Railroads. If you need additional information, you may call (202) 382-6840.

Chairman HALL, Vice Chairman FRANCIS, and Member HAMMERSCHMIDT concurred in this recommendation.

By:   
Chairman