



# National Transportation Safety Board

Washington, D.C. 20594  
Safety Recommendation

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Date: October 12, 1990

In reply refer to: R-90-33 through -36

Mr. William H. Dempsey  
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Association of American Railroads  
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On February 26, 1989, CSX Transportation, Inc., freight train No. D812-26 derailed at mile post 16.1 while traveling about 43 mph over Consolidated Rail Corporation (Conrail) main track No. 1, near the south end of Conrail's rail yard, Akron, Ohio. Twenty-one freight cars in the train derailed, including nine tank cars filled with butane. The nine tank cars came to rest adjacent to a B.F. Goodrich Chemical Company plant, and butane released from two breached tank cars immediately caught fire. About 1,750 residents were evacuated from a 1-square-mile area. On February 28, 1989, while some of the derailed tank cars were being moved from the accident site, one tank car full of butane rolled off its trucks; as a result, about 25 families were evacuated from a second area.<sup>1</sup>

The postaccident inspection of WSOR 501003, the 13th car in the train behind the locomotives and the first car to derail, revealed (1) that the truck bolster on the A-end of the car was different from the truck bolster on the B-end, (2) that the gib clearance between the bolster and truck sideframe on the B-end truck was more than 3 inches, exceeding the limits listed in the Association of American Railroads (AAR) Interchange Rules, and (3) that the side bearing clearances exceeded the limits listed in the FRA regulations and the AAR Interchange Rules. Because the original equipment was used in reconstructing the cars after the derailment and because there were no broken parts associated with the truck bolsters and sideframes on WSOR 501003, there should have been no variation in the measurements of side bearing clearances and gib clearances taken before or after the accident. Therefore, the Safety Board concludes that the excessive gib clearance on the B-end truck and the out-of-limits side bearing clearances on WSOR 501003 existed before the derailment. There was no evidence of preaccident mechanical deficiencies with the other cars involved in the derailment.

<sup>1</sup> National Transportation Safety Board. 1990. Derailment of a CSX Transportation freight train and fire involving butane in Akron, Ohio, February 26, 1989. Hazardous Materials Accident Report NTSB/HZM-90/02. Washington, D.C.

Car WSOR 501003 had been inspected on several occasions during predeparture inspections, as required by Federal regulations, and when the car had been interchanged between railroads, in accordance with the AAR Interchange Rules. WSOR 501003 had been inspected both at locations where a designated inspector was and was not on duty. Given that only six items must be inspected for determining imminently hazardous conditions if a designated inspector is not on duty, the Safety Board believes that a train crewmember could not have been expected to detect the excessive gib and out-of-limits side bearing clearances on WSOR 501003.

However, the Safety Board believes that the excessive gib and out-of-limits side bearing clearances should have been detected by a designated car inspector in the car inspection system. The Safety Board is concerned that the excessive gib and out-of-limits side bearing clearances were not detected during the 12 or more interchange inspections and several predeparture inspections. Because detection of the excessive gib and out-of-limits side bearing clearances may have prevented the accident, the failure of car inspectors to do so is considered causal to the accident. The failure to detect the excessive gib clearance may have been in part because of the tendency of car inspectors to look for damaged or excessively worn parts, such as those later found on CNW 69883, rather than mismatched bolsters or sideframes. The testimony of the car inspector who last inspected WSOR 501003 prior to the accident also suggests, however, that car inspectors are not trained or instructed to look for excessive gib clearance. Further, testimony by the CSX supervisory personnel indicates that the car inspector would not have been expected to notice the excessive gib clearance.

The Safety Board notes the corrective action taken by the CSX following the accident to improve inspections of side bearing and gib clearances. The Safety Board believes that the additional instructions and training regarding gib and side bearing clearance inspections should help to detect the type of excessive clearances that were evident in this accident. The Safety Board also believes that the AAR should inform its members of the circumstances of the accident, emphasizing the need for car inspectors to check side bearing and gib clearances during inspections.

In February 1987, the AAR notified the Northern Rail Car Corporation (NRCC) freight car repair shop of deficiencies noted the month before during an inspection of the facility by an MID inspector; the AAR advised the shop to correct the deficiencies and requested to be informed when such action was taken. The AAR, however, did not followup to determine if the deficiencies had been corrected. The Safety Board believes that for the inspections to be effective, followup action is necessary to determine if deficiencies noted have been corrected.

AAR's procedures require that one or more rebuilt cars in a project be inspected by an MID inspector to determine if the car(s) meets all current safety standards and Interchange Rules. The Safety Board received conflicting testimony as to how many cars were available for inspection when the MID inspector visited the NRCC facility to inspect one of the cars from the project. The MID inspector stated that he inspected only one car because it was the only one available. The owner of the facility testified, however,

that he believed five cars were available for inspection because of the numbering sequence of the cars. Regardless of the number of cars available at that time, only one car was inspected, and the MID inspector determined that it met all appropriate standards and rules and that all remaining cars should be rebuilt to the same specifications. The investigation revealed, however, that all remaining cars were not rebuilt to the same specifications. The Safety Board believes that one visit to the facility and the inspection of only one car is not sufficient to determine if all cars being rebuilt in the project meet the appropriate standards and rules. The AAR, therefore, should develop and implement procedures to provide for adequate followup inspections of cars during a rebuild project.

One of the cars in the rebuild project, WSOR 501017, as later noted by another MID inspector in Chicago, did not conform to AAR rules because it was equipped with threaded fittings in the air brake line and did not comply with FRA safety regulations because it was equipped with side ladders extending from the bottom to the top of the car. All 36 cars in the rebuild project were similarly equipped, and the AAR required the Wisconsin & Southern Railroad to correct these deficiencies. The Safety Board is concerned that these two areas of obvious noncompliance were not noted by the MID inspector who inspected WSOR 501032 at the NRCC facility and believes that the thoroughness of initial car inspections should be addressed in AAR's inspection procedures for rebuild projects.

The crewmembers of D812-26 testified at the Safety Board's public hearing on this accident that although they had never been trained on the actions to take following an emergency situation, they recognized the importance of contacting emergency response personnel immediately following a derailment and providing information regarding hazardous materials involved. Their onscene actions immediately following the derailment, however, indicate otherwise. While the traincrew quickly called and informed the dispatcher of the derailment, prudently set up signals to warn approaching trains of the derailment, and used their documents to identify the northern- and southern-most cars involved in the derailment, there appeared to be no urgency in contacting the emergency response personnel onsite and providing the necessary information regarding the contents of the tank cars involved in the derailment. The front-end crew, apparently believing that either the dispatcher or the conductor would provide the necessary information to emergency response personnel, were leaving the accident site to get a soft drink at a nearby restaurant when they encountered a local police official, who then requested that the crewmembers meet with the fire chief. The conductor and flagman were preoccupied for more than an hour attempting to prevent onlookers from approaching too closely to the burning tank cars and never did seek emergency response personnel. While the crew should make every effort to protect onlookers from the dangers of derailed tank cars, the crew should have also recognized the need to contact emergency response personnel when it became evident that emergency response agencies were onscene. The Safety Board concludes that the traincrew, contrary to company instructions, did not contact as soon as possible emergency response personnel onsite to provide them with shipping papers and vital information about hazardous materials involved in the derailment. Although the Safety Board recognizes the confusion and unpredictable situations that may arise

following a hazardous materials emergency, the actions of the crew of D812-26 were not indicative of a crew that had been instructed and trained thoroughly about actions to take following an emergency involving hazardous materials.

Even after the front-end crew came in contact with the fire chief, the crew did not convey accurate and complete information to the fire chief regarding the location of the other crewmembers and a second copy of the consist. After the brakeman and the fire chief returned to the accident site and were unsuccessful in locating the lost profile, the brakeman contacted the conductor by radio to let the fire chief talk to the conductor about the cars involved in the derailment. However, neither the conductor nor the brakeman informed the fire chief that he was talking to the conductor or that the conductor and the flagman were at the rear of the train with a second copy of the profile (the fire chief believed that he was talking with someone in the rail yard). Had the fire chief been informed that he was talking to the conductor who was at the rear of the train with a second copy of the profile, the fire chief could have sent someone to that location to obtain the profile and much of the subsequent skepticism about the cars involved in the derailment could have been avoided. The traincrew's failure to communicate accurate and complete information to the fire chief again suggests a lack of thorough training on the actions to take immediately following an emergency involving hazardous materials.

The actions of the first arriving railroad supervisory personnel suggest that first line supervisors also had not been adequately instructed on the actions to take immediately following an emergency involving hazardous materials. After the CSX trainmaster arrived onscene and talked to the flagman by radio, he believed that fire department personnel had been provided with the necessary information regarding the derailed tank cars. He then returned to Akron Junction. He made no effort to contact the fire chief to determine if all necessary information had been provided or to verify the accuracy of the information. Although the Safety Board recognizes that supervisory personnel may have other responsibilities following a train derailment, the Board believes that supervisors must first verify that emergency response agencies have received accurate and timely information regarding any hazardous materials involved in the derailment.

The Safety Board believes that the accident in Akron illustrates that CSX personnel were still not provided adequate training on the actions to take immediately following an emergency situation despite the Safety Board's recommendations on this issue and CSX's assertions that this training was being accomplished. Although it appears that CSX management has made the necessary information available in the form of bulletins or guidelines, operating crews apparently are not understanding or being instructed sufficiently on the importance of this information. The Safety Board acknowledges CSX's efforts after the Akron accident (1) to provide division managers enhanced training on responding to rail transportation emergencies involving hazardous materials and (2) to review the feasibility of providing video tapes on hazardous materials rules and on emergency response for use in operating rules classes. The Safety Board believes, however, that specific training on responding to emergencies involving hazardous materials needs to be provided to traincrews and supervisory personnel in addition to what is

covered in operating rules classes for traincrews. This training should include, at a minimum, the responsibility of crewmembers to identify themselves to emergency response personnel and to provide accurate information, including onboard documentation, of hazardous materials involved in the accident, and the responsibility of supervisory personnel to verify that emergency response personnel have all needed information and that it is accurate. The Safety Board also believes that the AAR should notify its members and reemphasize the need to provide traincrews and supervisory personnel adequate training regarding the actions to take immediately following a train derailment.

Had the derailment caused more extensive damage to the B.F. Goodrich chemical facility, located adjacent to the railroad tracks, or caused damage to the pipelines transporting chemical products at the facility buildings, the accident could have been much more severe. The storage and production of hazardous materials in close proximity to mainline railroad tracks has long been a concern of the Safety Board.

On March 25, 1981, at Enos, Indiana, a railroad flatcar that had derailed struck three of four 1,000-gallon farm truck tanks loaded with anhydrous ammonia parked near the mainline tracks. Ammonia escaped from one of the breached tanks, mixed with fog, drifted across a divided highway 1/4 mile away, obscured motorists' vision, and led to multiple motor vehicle crashes. The distance from the tanks to the track ranged from about 19 to 40 feet. The flatcar traveled 65 feet from the track before coming to rest. On November 26, 1976, in Belt, Montana, one of several derailed railroad cars struck a 16,000-gallon gasoline storage tank. In the ensuing fire, the entire bulk storage plant burned; 2 persons were killed and 24 others were injured. The tank was located about 42 feet from the mainline track; several of the derailed cars traveled more than 100 feet from the track.

In a study of accidents investigated by the Board from 1976 to 1979, the Safety Board found that in 123 of 298 accidents (or about 41 percent), derailed cars traveled more than 50 feet (lateral distance) after leaving the track. In slightly more than 6 percent of the accidents, cars traveled more than 100 feet after leaving the track.

As a result of these accidents, the Safety Board issued the following Safety Recommendations I-82-1 through -4 to the AAR, I-82-5 to the National Association of Regulatory Utility Commissioners (NARUC), I-82-6 to the National Fire Protection Association (NFPA), and I-82-7 to the American National Standards Institute, Inc. (ANSI):

I-82-1

Reevaluate existing practices and standards influencing the placement of hazardous materials storage which may be vulnerable to damage by derailed railroad cars in train accidents.

I-82-2

Based on the results of a reevaluation of existing practices and standards, develop necessary changes in recommended practices to identify and protect vulnerable hazardous materials storage near mainline railroad tracks and disseminate these recommended practices to member companies for implementation.

I-82-3

In coordination with the National Association of Regulatory Utility Commissioners, identify actions States might take to require adequate protection of future hazardous materials storage near mainline railroad tracks against damage by derailed railroad cars in train accidents.

I-82-4

Coordinate development of recommended practices for identifying and protecting hazardous materials storage near mainline railroad tracks with the National Fire Protection Association and the American National Standards Institute, to assure consistency among related recommended safety practices.

I-82-5

Reevaluate State statutes and administrative orders to identify action States might take to improve protection of hazardous materials storage near railroad right-of-way against damage by derailed railroad cars in train accidents, and develop guidelines for State actions if needed.

I-82-6

Reevaluate National Fire Protection Association No. 30 "Flammable and Combustible Liquids Code" to assure adequate protection of hazardous materials storage located near mainline railroad tracks against derailed railroad cars in train accidents.

I-82-7

Reevaluate and amend as necessary American National Standards Institute Standard K61.1-1972, "Safety Requirements for the Storage and Handling of Anhydrous Ammonia," to provide adequate protection of hazardous materials containers located near mainline railroad tracks against derailed railroad cars in train accidents.

In regard to these safety recommendations, the Safety Board notes the efforts of the interindustry task force, established by the Chemical Manufacturers Association (CMA) and the AAR to address the safe transportation of hazardous materials by rail, and Circular OT-55 subsequently issued by the AAR to its members on this subject. The Safety

Board has reviewed the circular and believes that it provides valuable guidance on separation distances of hazardous materials from mainline railroad tracks. The Safety Board believes, however, that the AAR should clarify and emphasize in its circular that hazardous materials storage and production facilities (including newly constructed and reconstructed facilities, tank cars, cargo tanks, and portable tanks) should be located no closer than 100 feet from mainline railroad tracks. The AAR in its recent letter of July 25, 1990, addressing Safety Recommendations I-82-1 through -4, and again referencing the work done by the interindustry task force, indicated that it intends to work with the NARUC, the NFPA, and the ANSI to encourage these organizations to adopt recommendations on storage distances contained in Circular OT-55. The Safety Board is aware that the CMA has issued a notice to its members urging them to adopt recommendations on storage distances contained in the AAR's circular. In view of AAR's efforts, the Safety Board believes that the intent of Safety Recommendations I-82-1 and -2 have been met and, consequently, these recommendations have been classified as "Closed--Acceptable Response." Based on AAR's indication that it will work with the NARUC, the NFPA, and the ANSI to coordinate recommended practices and proposals with these agencies to assure that proposed separation distances are safe and consistent among related standards, Safety Recommendations I-82-3 and -4 will be classified as "Open--Acceptable Response" pending the outcome of this joint effort.

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

Notify members of the Association of American Railroads about the circumstances of the accident in Akron, Ohio, on February 26, 1989, emphasizing the need (1) for car inspectors to check side bearing and gib clearances during inspections, and (2) for traincrews and supervisory personnel to be provided adequate training regarding the actions to take immediately following a train derailment. (Class II, Priority Action) (R-90-33)

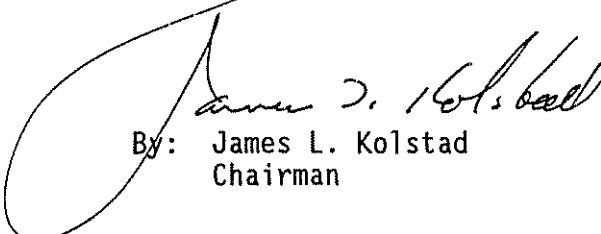
Require followup action on deficiencies noted during inspections of freight car repair facilities to determine if the deficiencies have been corrected. (Class II, Priority Action) (R-90-34)

Develop and implement procedures that provide for thorough and adequate initial and followup inspections of cars during a rebuild project. (Class II, Priority Action) (R-90-35)

Clarify and emphasize in Circular OT-55 that hazardous materials storage and production facilities (including newly constructed and reconstructed facilities, tank cars, cargo tanks, and portable tanks) should be located no closer than 100 feet from mainline railroad tracks. (Class II, Priority Action) (R-90-36)

Also, as a result of its investigation of this accident, the Safety Board issued safety recommendations to the CSX Transportation, Inc., the City of Akron, the Federal Railroad Administration, the International Association of Fire Chiefs, the National League of Cities, the National Association of Counties, the National Fire Protection Association, the American National Standards Institute, Inc., and the National Association of Regulatory Utility Commissioners.

KOLSTAD, Chairman, COUGHLIN, Vice Chairman, and LAUBER, BURNETT, and HART, Members, concurred in these recommendations.



By: James L. Kolstad  
Chairman