



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: October 25, 2006

In reply refer to: R-06-22

Dr. Charles Emely
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American Railway Engineering and
Maintenance of Way Association
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The National Transportation Safety Board is an independent Federal agency charged by Congress with investigating transportation accidents, determining their probable cause, and making recommendations to prevent similar accidents from occurring. We are providing the following information to urge your organization to take action on the safety recommendation in this letter. The Safety Board is vitally interested in this recommendation because it is designed to prevent accidents and save lives.

This recommendation addresses the need to establish inspection guidelines for track inspectors that address the problems and characteristics unique to concrete crossties for all classes of track. The recommendation is derived from the Safety Board's investigation of the April 3, 2005, derailment of Amtrak (National Railroad Passenger Corporation) passenger train No. 27, near Home Valley, Washington,¹ and is consistent with the evidence we found and the analysis we performed. As a result of this investigation, the Safety Board has issued four recommendations, one of which is addressed to the American Railway Engineering and Maintenance of Way Association. Information supporting this recommendation is discussed below. The Safety Board would appreciate a response from you within 90 days addressing the actions you have taken or intend to take to implement our recommendation.

On April 3, 2005, about 9:35 a.m., westbound Amtrak passenger train No. 27, consisting of a single locomotive unit and four passenger cars, derailed at milepost (MP) 58.56² on the BNSF Railway Company's (BNSF's) Northwest Division. The train was traveling 60 mph on single main line track when it derailed as it was traveling through a cut section of the Columbia River Gorge on the north side of the Columbia River near Home Valley, Washington.

¹ For additional information, see National Transportation Safety Board, *Derailment of Amtrak Passenger Train No. 27, Home Valley, Washington, April 3, 2005*, Railroad Accident Brief NTSB/RAB-06/03 (Washington, DC: NTSB, 2006).

² MP 58.56 is on the Fallbridge Subdivision.

The train remained upright; however, the cars came to rest leaning up to approximately 35° against the outside curved embankment. There were 106 passengers and 9 Amtrak employees on board. Thirty people (22 passengers and 8 employees) sustained minor injuries; 14 of those people were taken to local hospitals. Two of the injured passengers were kept overnight for further observation; the rest were released. Track and equipment damages, in addition to clearing costs associated with the accident, totaled about \$854,000.

The National Transportation Safety Board determined that the probable cause of the April 3, 2005, derailment of Amtrak passenger train No. 27 near Home Valley, Washington, was the BNSF Railway Company's inadequate response to multiple reports of rough track conditions that were subsequently attributed to excessive concrete crosstie abrasion, which allowed the outer rail to rotate outward and create a wide gage track condition. Contributing to the accident was the Federal Railroad Administration's (FRA's) failure to provide adequate track safety standards for concrete crossties.

The investigation determined that the point of derailment was at MP 58.56 in curve No. 58B. Around that location, there were 19 consecutive concrete crossties that exhibited rail seat abrasion, which ranged in depth from 1/16 inch to 1 1/4 inches into the concrete surface on the field side of the outside curve rail. The abrasions created voids between the bottom of the rail base and the top of the concrete crossties, which allowed the rail to deflect downward and rotate outward under load. This rotation of the rail resulted in gage widening as trains passed over the area. The locomotive unit of Amtrak passenger train No. 27 was the first vehicle to derail. It appeared that a wheel first derailed near the deepest abrasion.

During the 12 days prior to the accident, four separate "rough riding" reports were made regarding the area where the train later derailed. The last track inspection conducted by the BNSF 2 days before the accident identified an area of rail seat abrasion near the area where the train later derailed; however, the BNSF substitute track inspector did not take any remedial action, and he only reported the abrasion to his immediate supervisor. The BNSF regular track inspector, who conducted an inspection 4 days before the accident, stated during postaccident interviews that concrete crosstie abrasion was not considered a track defect in the FRA sense. Therefore, there were no guidelines to determine whether remedial action was necessary.

There are no Federal standards specific to concrete crossties in the "Track Safety Standards" for Classes of Track 1 through 5³ that are similar to those standards for Classes of Track 6 and higher (used for higher speed operations).⁴ The track where the accident occurred was designated as FRA Class 4, with maximum allowable operating speeds of 60 mph for freight trains and 80 mph for passenger trains. Because of geographical characteristics and track curvatures, the maximum allowable operating speeds through the derailment area were 55 mph for freight trains and 60 mph for passenger trains.

The Safety Board is concerned about the lack of Federal requirements to help inspectors identify when concrete crossties on Classes of Track 1 through 5 have deteriorated to unsafe

³ Title 49 *Code of Federal Regulations* (CFR) 213.109, "Crossties."

⁴ Title 49 CFR 213.335(d), "Crossties."

levels.⁵ The serious nature of this accident highlights the need for the FRA to ensure adequate safety standards exist for concrete crossties in all track structures. Still, the Safety Board recognizes that it will take time for the FRA to establish safety standards for concrete crossties and extend them to all classes of track.

Therefore, the National Transportation Safety Board makes the following safety recommendation to the American Railway Engineering and Maintenance of Way Association:

Using the circumstances of the April 3, 2005, accident near Home Valley, Washington, emphasize to your railroad members through your publications, web site, and conferences, as appropriate, the need to establish inspection guidelines for track inspectors that address the problems and characteristics unique to concrete crossties for all classes of track. As your railroad members develop these guidelines, encourage them to consider the elements in 49 *Code of Federal Regulations* Part 213, "Track Safety Standards," for concrete crossties for Classes of Track 6 and higher. (R-06-22)

The Safety Board also issued safety recommendations to the Federal Railroad Administration, the BNSF Railway Company, the Association of American Railroads, and the American Short Line and Regional Railroad Association. In your response to the recommendation in this letter, please refer to Safety Recommendation R-06-22. If you need additional information, you may call (202) 314-6177.

Chairman ROSENKER, Vice Chairman SUMWALT, and Members HERSMAN and HIGGINS concurred in this recommendation.

[Original Signed]

By: Mark V. Rosenker
Chairman

⁵ Another Amtrak passenger train derailed on January 28, 2006, on the BNSF's Northwest Division in Sprague, Washington. The BNSF identified concrete crosstie abrasion and wide gage as factors in that accident.