

Log R-468

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: April 20, 1984

SAFETY RECOMMENDATION(S)

R-84-20

FORWARDED TO:

Members of the
Association of American Railroads
(see attached list)

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About 10:09 a.m. on November 12, 1983, Amtrak train No. 21 (The Eagle) with 162 persons aboard, derailed near Woodlawn, Texas, while traveling about 72 mph on the Missouri Pacific (MP) Railroad. The train was traveling westbound on the single main track when it passed over a section of rail that a maintenance crew had just installed to replace a broken rail. The accident resulted in 4 passenger fatalities and 72 injuries. Damage is estimated to be more than \$2,250,000.

About 6:42 a.m. on November 12, 1983, an MP track inspector discovered a broken field weld near milepost 55.6, near Woodlawn, with about a 3 1/2-inch separation between the fracture faces. He notified the dispatcher, removed the track from service, and arranged for a maintenance gang to make temporary repairs to place the track back into service. The temporary repairs consisted of removing a length of the north rail containing the broken field weld and replacing it with a 19-foot 6-inch length of rail bolted in place. The break occurred in a length of continuous welded rail (CWR) of new 136-lb RE section, chrome-vanadium alloy, high-strength vacuum-treated rail, which had been installed in the track about 1 month earlier. The repair insert consisted of a section of fit 136-lb RE section standard rail. The maintenance gang used an oxyacetylene torch to cut both the new CWR alloy rail and the fit standard rail. The maintenance gang drilled two holes and installed two bolts in each end of the repair insert, and drilled one hole and installed one bolt in each end of the CWR section in which the insert rail was being placed. The track maintenance gang stated to Safety Board investigators that they were going to drill another hole and install another bolt in each end of the CWR section so that both of the rail joints would have four bolts each.

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While the temporary repairs were in progress, a freight train was allowed to proceed over the repair site. The 5,995-foot-long freight train consisted of 2 (6-axle) locomotive units, 53 loaded cars, and 45 empty cars, with a trailing tonnage of 6,354 tons. About 9:30 a.m. the train was allowed to pass over the incomplete temporary track repair at an unrestricted speed of 50 mph. About 10:09 a.m., Amtrak train No. 21 was allowed to pass over the incomplete temporary track repair, and was moving at an unrestricted speed of about 72 mph when it derailed.

Postaccident investigation of the chrome-vanadium alloy, high-strength, vacuum-treated rail indicated the presence of a small crack in the web of the rail at a discontinuity in the torch cut face. Further, a break extended from that discontinuity in the torch cut face through the web a distance of about 6 feet. Within the next 34 feet approximately, the rail broke into between 50 and 100 pieces of various size. The rail breakup greatly exceeded the amount of breakup seen in most other rail failures. The extent of this rail breakup indicates a need for installation, maintenance, and inspection procedures which minimize any possibility of rail failure due to stress factors or defects existing in such rails.

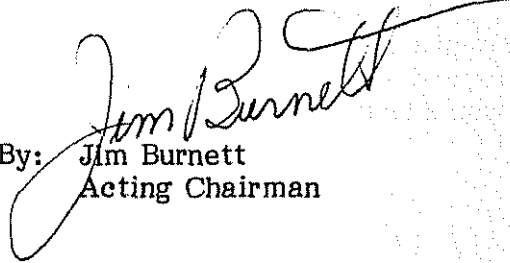
The MP has advised the Safety Board of changes it has instituted in its procedures as a consequence of the accident. The changes include speed restrictions on the particular heat of rail from which the subject rail was manufactured, an increase in the frequency in which internal defect inspections are conducted on chrome-vanadium alloy rail from twice a year to four times a year, and an order to use rail saws when cutting rails.

Therefore, the National Transportation Safety Board recommends that the Association of American Railroads and its membership, the American Railway Engineering Association, and the American Short Line Railroad Association:

Review and revise, where necessary, procedures for the installation and maintenance of high-strength alloy rails, especially high-strength chrome-vanadium alloy rails, to minimize the possibility of externally induced stress factors in such rails and to implement more stringent internal defect testing programs. (Class I, Urgent Action) (R-84-20)

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" (P.L. 93-633). The Safety Board is vitally interested in any actions taken as a result of its safety recommendations, and the Board would appreciate a response from you regarding action taken or contemplated with respect to the recommendation in this letter.

BURNETT, Acting Chairman, and GOLDMAN and GROSE, Members, concurred in this recommendation. BURSLEY, Member, did not participate.

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