Log # R-586C

National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: December 9, 1987

In reply refer to: R-87-33 through -37

Honorable John H. Riley
Administrator
Federal Railroad Administration
Washington, D.C. 20590

On May 18, 1986, 14 of the 23 passenger cars of a Norfolk and Western Railway Company (N&W) passenger excursion train powered by a steam locomotive derailed near Suffolk, Virginia. Of the approximately 1,000 train passengers, all of whom were N&W employees and their relatives and guests, 177 were injured; 19 of the injured were hospitalized. The estimated cost of damage was $231,530. 1/

The physical evidence and the testimony of the crew and passengers suggest strongly that as the train approached a turnout on the westbound track, it passed over track that was already laterally displaced. Lateral displacement of track occurs more often in the early spring and early summer months as ambient temperatures increase and as daily temperatures vary widely. In May 1986, the CWR on the middle and westbound main tracks was subject to variations in temperature, which could have produced tensile and compressive rail stresses that could have readily produced a lateral track displacement. The wide variations in ambient temperatures from the high of 91° F on May 7 to a low of 46° F on May 11 followed by the high temperatures on the day of the derailment were significant because the changes in temperature created increases in the rail stresses that had to be resisted by the turnout.

On May 6, 1986, a prototype shoulder ballast cleaner was being operated on the westbound main track when it struck the turnout at the east end of the accident site and damaged eight adjustable brace plate bolts. The Safety Board believes that during the repair process the track was jacked up significantly to cause the tie/ballast interface to be disturbed. This reduced the ability of the track structure at the turnout to resist the forces in the rail created by the increasing temperature on that day. On the following day, when the section foreman realigned the track and removed a slow order placed on the track because of the track condition, the ambient temperature recorded by the National Weather Service (NWS) at Norfolk was 79° F. However, a "heat wave" order effectively reducing the effects of a train on the track was issued by the dispatcher about 2:44 p.m. on the same day, after the temperature went above 90° F, the threshold for issuing "heat wave" orders on that track section.

The N&W relief track inspector was responsible for performing the Federal Railroad Administration (FRA) required track inspections of the westbound, eastbound, and middle tracks in the derailment area during May 1986. However, he had not formally performed these track inspections for 9 years. Despite this lengthy period of time in which the relief track inspector had performed such inspections, on May 6, 1986, the day the turnout was damaged by a prototype shoulder ballast cleaner and subsequently repaired, his inspection forms indicated that the performed both a daily and a monthly inspection of the

1/ For more detailed information, read Railroad Accident Report--"Derailment of Steam Excursion Train Norfolk and Western Railway Company Train Extra 611 West, Suffolk, Virginia, May 18, 1986" (NTSB/RAR-87/05).

turnout. Further, the relief track inspector was not aware of the damage or repairs or that a slow order had been issued for the track conditions. Had he known about these situations, he would have had a better opportunity to look for, and perhaps recognize, the misalignment in the approach to the westbound track approaching the accident site.

Although it was apparently the N&W's policy to have constant supervisory monitoring of the work of its track inspectors, the N&W had no formal procedures for supervisory evaluation of track inspectors, no medical or visual requirements, and no requisite for requalification. Thus, it had no system to determine that its track inspectors were actually physically fit and that they could perform a proper inspection. The FRA Track Safety Standards do not address physical ability or fitness of track inspectors. There are also no FRA standards for the requalification of relief track inspectors or for the retraining of track inspectors who need such training.

The N&W had no method of assuring that the relief track inspector was following N&W Maintenance of Way Standards to determine if the kinks he observed were unsafe or worth reporting. The roadmaster and assistant roadmaster were responsible for the condition of the track, but they had not accompanied the relief track inspector or otherwise evaluated the quality of his work, despite the N&W's policy that this be done.

The difficulty the relief inspector experienced at the Safety Board public hearing in identifying from his reports which track he traveled or the switches he inspected and in identifying the class of track and its meaning indicates that the relief track inspector lacked familiarity with his duties. The Safety Board believes that this demonstrates the inadequacy of the training received by the track inspector and the need for periodic retraining and requalification.

The FRA Track Safety Standards, as detailed in 49 CFR 213.233, do not address the number of tracks that can be inspected nor the track on which the track inspector must perform his inspection. The permitted speed of the inspection vehicle is that which permits visual inspection of the track for compliance with the regulations. The vehicle speed for inspection of turnouts and crossings by the N&W timetable and FRA Track Safety Standards is limited to 5 mph. Track inspection speed in other areas is limited only by traffic, track conditions, and the timetable requirement of a maximum speed of 35 mph for the hi-rail type of inspection vehicle.

The Safety Board is concerned about N&W's policy of inspecting multiple tracks while traveling one track. The division engineer's statement that the FRA track inspection requirements permit the inspection of three tracks when the middle track is between two main tracks conflicted with the interpretation by an FRA track inspector. The FRA track inspector testified that it is ". . . pretty near impossible to see all three tracks from one . . ." and ". . . would be a subjective interpretation of the standards . . . ." The N&W's policy in this regard resulted in the roadmaster and the assistant roadmaster believing that the middle track was being inspected each time the main tracks were inspected. The Safety Board believes that multiple tracks cannot be inspected properly while the track inspector is traveling only one of the tracks.

The N&W Maintenance of Way Standards for turnouts and rail anchors on continuous-welded rail (CWR) specified frequent inspection and adjustment and that the inspection and adjustment of anchors was the responsibility of the track inspector while inspecting the track on a hi-rail vehicle. Usually, indications of anchors moving away from the tie (which can result in the longitudinal movement of the rail) can be seen during such an inspection. However, the track inspector will not see small variations unless the hi-rail vehicle is traveling slowly. Further, the track inspector may not see even excessive variations when inspecting multiple tracks at any speed.

The Safety Board is aware that much of the modification and restoration of historic equipment is performed by members of railroad historical societies and associations who take pride in restoring the equipment to its original condition. However, the Safety Board believes that when historic equipment is used on the general railroad system, the public has a right to expect that the historic equipment will not jeopardize the public's safety. It was no coincidence that, of the 14 cars to derail, the cars that jackknifed and/or overturned were not equipped with tightlock couplers. The railroad industry has long recognized that tightlock couplers prevent vertical disengagement of couplers during derailments, thus resisting cars overturning and telescoping in collisions. Tightlock couplers have been a mandatory standard of the Association of American Railroads on railroad passenger equipment built since 1956. The N&W management had the responsibility and authority to accept or reject equipment or to impose restrictions as necessary. The Safety Board believes that the N&W management should not have permitted passenger equipment without tightlock couplers to be used in a train.

As a result of its investigation of a train derailment at Sound View, Connecticut, on October 2, 1970, 2/ the Safety Board recommended on December 22, 1971, that the FRA:

R-72-2

Promulgate regulations requiring interlocking couplers on all passenger-carrying equipment including the passenger locomotive.

At the Safety Board/FRA quarterly meeting of April 17, 1979, a discussion of interlocking couplers on passenger-carrying equipment centered on an FRA letter of July 14, 1978, which cited the cost of retrofitting older passenger equipment with interlocking couplers. FRA personnel advised the Safety Board staff that these cars were in commuter service and in the process of being retired. In addition, the National Railroad Passenger Corporation (Amtrak), the primary intercity rail passenger carrier, had equipped all of its passenger cars and locomotives with interlocking couplers.

The Safety Board believed that the recommendation was valid at the time of issuance, but based on the information from the FRA that all passenger cars were now equipped with interlocking couplers, except for a small number soon to be retired, Safety Recommendation R-72-2 was classified as "Closed--No Longer Applicable" on March 10, 1981. However, with the emergence of these cars in excursion service, the Safety Board believes that there is now a need to address this issue. The FRA should require interlocking couplers on all passenger-carrying equipment, including historic or older equipment and passenger locomotive units.

The FRA exempts historic or older equipment used for excursions on the general railroad system from complying with Federal requirements for safety glazing standards and emergency exits. In this accident, windows in the derailed passenger cars were broken either as a result of the derailment or by evacuation of passengers. More injuries, possibly even fatal injuries, could have resulted had car NW 1069 overturned and slid, like cars SOU 1087 and SOU 4061, which had no glazing in the window openings to keep occupants from being ejected from the car. The Safety Board believes that with the increasing number of excursion trips on the general railroad system, no passenger car should be exempt from compliance with the recognized safety standards that are intended to provide the safest equipment for the public.

2/ Railroad Accident Report--"Penn Central Transportation Company Freight Train Derailment, Passenger Train Collision with Hazardous Material Car, Sound View, Connecticut, October 8, 1970" (NTSB-RAR-72-01).

Title 49 CFR Part 219, Subpart C states that the determination to conduct toxicological testing is left to the railroad representative responding to the scene of the accident/incident. This representative is responsible for making reasonable inquiry into the facts as necessary to make a decision. The regulations state that the railroad representative satisfies the requirements if, after making a reasonable inquiry, he exercises good faith judgment in making his decision. The Safety Board believes that the senior officers of the N&W failed to take advantage of an excellent opportunity to demonstrate to its employees the importance it places on its toxicological testing program and the FRA's toxicological testing program and that the N&W management not only supported such training, but would participate in such testing if they were involved in an accident. The Safety Board believes that the FRA should amend 49 CFR Part 219, Subpart C to require toxicological testing of all applicable employees in the event of a passenger train accident involving reportable injuries.

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

> Amend the Track Safety Standards, 49 CFR 213.7, to require periodic requalification of persons for supervising certain renewals and inspection of track. (Class II, Priority Action) (R-87-33)
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> Amend 49 CFR 213.233(b) and (c) to establish procedures for inspection of track in multiple track areas and to define the maximum speed for riding over the track in a track inspection vehicle. (Class II, Priority Action) (R-87-34)
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> Amend the Safety Glazing Standards in 49 CFR Part 223 to include the requirement that windows of historic or older equipment used for excursion purposes on the general railroad system be equipped with certified glazing. (Class II, Priority Action) (R-87-35)
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> Promulgate regulations to require that interlocking (tightlock) couplers be installed on all passenger-carrying equipment, including historic or older equipment and passenger locomotive units. (Class II, Priority Action) (R-87-36)
>
> Amend 49 CFR Part 219 to require toxicological testing of all applicable employees in the event of a passenger train accident involving reportable injuries. (Class II, Priority Action) (R-87-37)

The Safety Board also issued Safety Recommendations R-87-24 through -29 to the Norfolk and Western Railway Company; Safety Recommendations R-87-30 and -31 to the National Railroad Historical Society, the American Association of Private Railroad Car Owners, Inc.; the American Short Line Railroad Association, and the Association of American Railroads; and R-87-32 to the American Short Line Railroad Association and the Association of American Railroads.

BURNETT, Chairman, GOLDMAN, Vice Chairman, and NALL and KOLSTAD, Members, concurred in these recommendations. LAUBER, Member, did not participate.

By: Jim Burnett
Chairman