



National Transportation Safety Board

Washington, D. C. 20594

Safety Recommendation

Date: May 13, 1988

In reply refer to: R-88-15

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As a result of the National Transportation Safety Board's continued concern for the safety of the Washington Metropolitan Area Transit Authority's (WMATA) passengers, highlighted by the investigation of two derailments and a vandalism incident ^{1/} occurring in a 4-month period which resulted in CSX Transportation (CSXT) equipment encroaching on the Red Line B-6 Corridor of WMATA, the Safety Board issued two safety recommendations to CSXT on December 9, 1987:

R-87-57

Modify the existing intrusion detection warning system to ensure that the signal systems on the Metro tracks and the CSX Corporation tracks automatically display stop indications for all trains when an intrusion is detected.

R-87-58

Discontinue the use of pusher locomotives on freight trains in the common corridor with the Washington Metropolitan Area Transit Authority.

In addition, the Safety Board issued two safety recommendations to WMATA on December 9, 1987:

R-87-59

Raise the intrusion detection warning system to a uniform height above the top of the CSX Corporation rail beds.

^{1/} The derailments occurred on June 19, 1987, and September 5, 1987; the vandalism incident occurred on September 17, 1987.

R-87-60

Modify the existing intrusion detection warning system to ensure that the signal system on the Metro tracks and the CSX Corporation tracks automatically display stop indication for all trains when an intrusion is detected.

The Safety Board has been made aware through recent correspondence that both WMATA and CSXT intend to implement these recommendations as part of their proposed remedy to the common corridor problem which was presented in the final report of the joint operating safety committee. Implementation of these recommendations would result in compliance with the Safety Board's recommendations set forth above. While we are encouraged by the actions recommended by the joint committee, it is the Safety Board's understanding that many of these improvements may not be fully implemented for at least 1 year and even when implemented, these improvements would not ensure that a derailed train would not be struck by equipment moving on the parallel track.

The CSXT and WMATA tracks in the common corridor are 20 feet between centers. The Safety Board has determined that approximately 3/4 of the derailed cars of a derailed freight train come to rest more than 20 feet laterally from the center of the track on which they were traveling. This data was based on 298 derailments over a period of 3 years. 2/ Therefore, assuming that derailments can occur on an equal basis to either the left or right of the track, the Safety Board concludes that over 1/3 of the derailments in the joint corridor could result in intrusions into space that is normally occupied by cars of the other system. Further, the percentage of intrusions into transit car space could be much higher since the lateral travel of a derailed freight car would only have to be about 8 or 10 feet to be in a position to collide with a WMATA car. The Safety Board is skeptical about the value of reducing speed in the corridor as a safety enhancement since Federal Railroad Administration derailment statistics for a 4-year period (1983 through 1986) indicate that about 35 percent of all freight car derailments on mainline tracks occurred at speeds of 10 mph or less. In addition, the railroad industry universally requires that after emergency braking has occurred on any train, all adjacent tracks must be inspected for derailed cars to prevent the possibility of collision by trains traveling on the other tracks. There is no such provision in the common corridor, although the intrusion fence may give a warning.

The Safety Board is very concerned about the joint occupancy conflict on the corridor. CSXT has indicated that there are nine eastbound freight trains and eight westbound freight trains operating in the joint corridor each day. Of these 17 trains, only 4 are scheduled to move through the joint corridor during WMATA's rush hours (6:30 - 9:30 a.m. and 3 - 6:30 p.m.). 3/ These four freight trains are scheduled to operate at 8:15 a.m., 8:25 a.m., 3:30 p.m., and 5 p.m. The 8:15 a.m. train is westbound; the other three trains are eastbound. Eleven passenger or commuter trains also operate in the corridor during rush hours. The Safety Board believes that the freight trains pose a far greater hazard to WMATA transit trains than do the passenger trains in the corridor. Considering

2/ Safety Recommendation I-82-5 was issued to National Association of Regulatory Commissioners, April 28, 1982.

3/ The Safety Board is aware that there is a secondary peak travel time during lunch hour (11:30 a.m.- 1:30 p.m.) when trains are operated approximately 6 minutes apart which effectively reduces off-peak travel time between rush hours to 3 1/2 hours.

the accident history of passenger train derailments, the Safety Board does not believe there is any present justification to limit the access of passenger trains to the common corridor. However, a WMATA car colliding with either a passenger locomotive or a passenger car of a commuter train would be equally as catastrophic as a collision with a freight locomotive or a freight car.

The Safety Board is very concerned about the lack of crashworthiness of the WMATA transit cars. This concern was originally expressed in a 1970 report and later was substantiated by the side collision at Rhode Island Avenue 4/ in 1977 and the January 1982 accident at Smithsonian Interlocking. 5/ Both of these accidents demonstrated how easily the sides of a WMATA transit car could be penetrated. The Smithsonian Interlocking accident also demonstrated that once the sidewall members of the transit cars were severed, there was little resistance to further penetration of the passenger-carrying compartment. Since the WMATA cars were not intended to meet the more rigorous requirements of common corridor operations, the passengers will not receive the protection afforded the passengers in trains that are designed to operate beside railroad freight trains.

Since there are no scheduled eastbound freight trains and only one scheduled westbound freight train in the 3 1/2-hour off-peak period between the morning and evening rush hours, the rescheduling of the four freight trains that currently travel the corridor during the rush hours should not present a major problem. In addition, WMATA runs its trains 3 minutes apart during rush hours, but it operates trains 12 minutes apart and in some cases, as much as 20 minutes apart during off-peak hours making it easier to schedule train separation during the off-peak periods. Rescheduling and a method of joint dispatching by the WMATA and CSXT could remove the joint freight train/transit train occupancy conflicts if both systems are willing to address the corridor as a system. Thus WMATA might be given primacy in the corridor during rush hour but may be expected to adjust its schedules at off-peak times to ensure that CSXT can meet obligations to its customers.

In summary, the achievement of positive separation of vehicles in transit is one of the primary safety requirements in all transportation modes. Such separation can be achieved either by physical distance, physical barriers, or control of access to space that can be jointly occupied. While CSXT and WMATA have made changes in track and mechanical inspections to reduce the probability of derailments, freight trains and transit trains are still operating simultaneously in the shared corridor. We understand that WMATA and CSXT have considered rescheduling freight trains to off-peak periods to ensure train separation, but have rejected this remedy as not feasible. However, the Safety Board remains convinced that as an interim measure a positive means to separate the cars and locomotives of the CSXT freight trains from the passenger-carrying, less crashworthy WMATA cars is needed until a permanent solution to the problems of joint corridor occupancy are implemented and their effectiveness is assessed. The Safety Board's concern about safety in the corridor are heightened by the fact that it will be at least a year before the additional safeguards planned by both CSXT and WMATA will be in place.

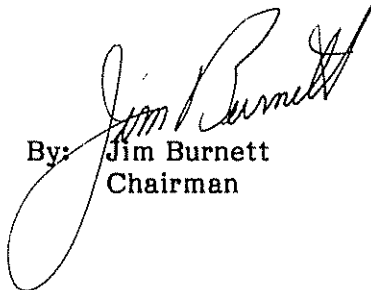
4/ Side collision during equipment testing, Rhode Island Avenue, Washington, D.C., 1977.

5/ Railroad Accident Report--"Derailment of Washington Metropolitan Area Transit Authority Train No. 416 at Smithsonian Interlocking", January 13, 1982 (NTSB/RAR-82/6).

Therefore, the National Transportation Safety Board recommends that the Washington Metropolitan Area Transit Authority and CSX Transportation:

Until permanent solutions to joint corridor occupancy are implemented and their safety effectiveness is assessed, develop and implement a plan to control the access of Washington Metropolitan Area Transit Authority (WMATA) transit trains and CSX Transportation (CSXT) freight trains into the common transportation corridor where WMATA trackage lies between the two tracks of CSXT so that CSXT freight trains and WMATA Transit Trains do not simultaneously occupy this corridor. (Class II, Priority Action) (R-88-15)

BURNETT, Chairman, and LAUBER and NALL, Members, concurred in this recommendation. KOLSTAD, Vice Chairman, did not concur with this recommendation.

By: 
Jim Burnett
Chairman