



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: August 10, 2010

In reply refer to: R-10-3

The Honorable Ray LaHood
Secretary of Transportation
U.S. Department of Transportation
1200 New Jersey Ave, SE
Washington, D.C. 20590

On Monday, June 22, 2009, about 4:58 p.m., eastern daylight time, inbound Washington Metropolitan Area Transit Authority (WMATA) Metrorail train 112 struck the rear of stopped inbound Metrorail train 214. The accident occurred on aboveground track on the Metrorail Red Line near the Fort Totten station in Washington, D.C. The lead car of train 112 struck the rear car of train 214, causing the rear car of train 214 to telescope¹ into the lead car of train 112, resulting in a loss of occupant survival space in the lead car of about 63 feet (about 84 percent of its total length). Nine people aboard train 112, including the train operator, were killed. Emergency response agencies reported transporting 52 people to local hospitals. Damage to train equipment was estimated to be \$12 million.²

The National Transportation Safety Board (NTSB) determined that the probable cause of the June 22, 2009, collision of WMATA Metrorail train 112 with the rear of standing train 214 near the Fort Totten station was (1) a failure of the track circuit modules, built by GRS/Alstom Signaling Inc., that caused the automatic train control system to lose detection of train 214 (the struck train) and thus transmit speed commands to train 112 (the striking train) up to the point of impact, and (2) WMATA's failure to ensure that the enhanced track circuit verification test (developed following the 2005 Rosslyn near-collisions) was institutionalized and used systemwide, which would have identified the faulty track circuit before the accident.

Contributing to the accident were (1) WMATA's lack of a safety culture, (2) WMATA's failure to effectively maintain and monitor the performance of its automatic train control system, (3) GRS/Alstom Signaling Inc.'s failure to provide a maintenance plan to detect spurious signals

¹ *Telescoping* occurs when a railcar body breaches the end structure of another carbody and passes into the structure of that carbody.

² See *Collision of Two Washington Metropolitan Area Transit Authority Metrorail Trains Near Fort Totten Station, Washington, D.C., June 22, 2009*, Railroad Accident Report NTSB/RAR-10/02 (Washington, DC: National Transportation Safety Board, 2010) on the NTSB website at <<http://nts.gov/publicctn/2010/RAR1002.pdf>>.

that could cause its track circuit modules to malfunction, (4) ineffective safety oversight by the WMATA Board of Directors, (5) the Tri-State Oversight Committee's ineffective oversight and lack of safety oversight authority, and (6) the Federal Transit Administration's lack of statutory authority to provide federal safety oversight.

Contributing to the severity of passenger injuries and the number of fatalities was WMATA's failure to replace or retrofit the 1000-series railcars after these cars were shown in a previous accident to exhibit poor crashworthiness.

Within the U.S. Department of Transportation (DOT), the Federal Railroad Administration (FRA) is one of several operating administrations that have the authority to promulgate and enforce transportation safety regulations. The FRA governs the operation of standard gauge railroads that are part of the general railroad system of transportation, such as freight, intercity passenger, and commuter railroads. Full-time FRA safety inspectors monitor compliance with federally mandated minimum safety standards relating to hazardous materials, motive power and equipment, operating practices, track and signals, and train control. The FRA also collects accident and incident data from the railroads, which it uses to identify trends in railroad safety in general or performance deficiencies of a specific railroad.

Rail transit systems, such as WMATA Metrorail, are not subject to FRA regulation and oversight. These systems fall under the purview of the Federal Transit Administration (FTA), whose mission is not to provide regulatory oversight but to provide public transportation agencies with financial, technical, and planning assistance. Although Congress has provided the FTA with regulatory authority with regard to drug and alcohol testing and state safety oversight of rail fixed guideway systems, it has not provided the agency with the authority to directly enforce even those limited regulations.

The NTSB has issued several recommendations to the FTA and its predecessor agencies addressing the need for the FTA to promulgate regulations and to establish mandatory safety guidelines and requirements for recipients of FTA funding. It has been the longstanding position of the FTA that it does not have the legal authority to promulgate regulations or to require an entity that receives funding through the FTA to comply with FTA guidelines and recommended best practices as a condition of federal financial assistance. The extent of the FTA's efforts to this point has been to encourage recipients to adhere to industry best practices and recommendations made by the NTSB.

The FTA's state safety oversight regulation assigns the responsibility for safety oversight to each state. The states carry out that responsibility through a designated oversight agency. The FTA does not, and cannot, provide the oversight agency with the authority to promulgate and enforce safety regulations or standards. Therefore, except for oversight agencies in states such as California and Massachusetts, which have provided their oversight agencies with regulatory and enforcement authority, a state oversight agency is powerless to compel a rail transit agency to comply with its system safety program plan or any other FTA requirement. An oversight agency's lack of authority to establish and enforce safety standards creates a situation in which a rail transit agency can have ineffective and unsatisfactory internal standards leading to failures of safety-critical operations and procedures.

State safety oversight agencies do have the authority to conduct their own accident investigations, but because of staffing limitations or a lack of expertise, this task is often delegated to the rail transit agency itself. If the oversight agency does not agree with the findings of the transit agency's investigation, its only alternatives are to conduct its own investigation or to negotiate with the transit agency until a resolution is reached. The latter leads to situations, as is the case with WMATA Metrorail, in which large numbers of corrective action plans remain open and unresolved.

The FTA conducts regular audits of each oversight agency to evaluate its compliance with requirements of the state safety oversight regulation. Of the 250 findings that the FTA has made to state oversight agencies since the state safety oversight regulation was revised in May 2006, 55 findings of noncompliance remain open. The FTA effectively can take no action to compel the oversight agency to comply with the actions identified in a corrective action plan. In such cases, the regulation does allow the FTA to withhold up to 5 percent of the funds designated for the state or affected urbanized area, but because these funds are withheld from a state or area and not from the transit agency itself, this option is ineffective in compelling a rail transit agency to comply with the oversight agency's requirements. The NTSB therefore concludes that the structure of the FTA's oversight process leads to inconsistent practices, inadequate standards, and marginal effectiveness with respect to the state safety oversight of rail transit systems in the United States.

Proposed legislation prepared by the DOT in the draft Public Transportation Safety Program Act of 2009, if implemented, would provide the DOT, and therefore the FTA, with the broad authority necessary to address the safety issues identified by the NTSB in its numerous investigations of rail transit accidents. The proposed legislation requires the DOT secretary to establish and implement a public transportation safety program to improve the safety of, and reduce accidents involving, rail fixed guideway transportation systems. Specifically, the secretary would be empowered to prescribe regulations and issue orders for every aspect of rail public transportation systems to ensure the safe operation of such systems. The legislation also requires regulations to establish a safety certification program for individuals involved in safety oversight of rail transit operations. It further allows states to implement more stringent requirements to address local issues so long as those requirements are not inconsistent with federal requirements. The draft legislation also provides authority to the secretary to conduct inspections, investigations, audits, examinations, and testing of a public transportation system's equipment, facilities, rolling stock, operations, and persons engaged in the business.

Although the broad authority proposed in the legislation may be adequate to allow the FTA to address the safety issues raised by the NTSB in its previous accident investigations, the NTSB believes that transit safety will be enhanced if the FTA is given specific authority in a number of areas critical to rail transit safety that have been individually addressed in previous NTSB safety recommendations. Those areas are discussed below.

Crashworthiness

Currently, the FTA has no requirements that address structural crashworthiness provisions for passenger cars operating in transit service. The NTSB believes such minimum crashworthiness standards are necessary to prevent the telescoping of transit railcars in

collisions. The NTSB believes that the FTA should be able to establish, develop, and require such standards and to set a reasonable timetable for the mandatory removal from service of older equipment that cannot be modified to meet the new standards. The NTSB's investigation of a 2004 WMATA rail transit accident at the Woodley Park station³ identified these issues and resulted in the NTSB issuing the following recommendation to the FTA on April 19, 2006:

Develop minimum crashworthiness standards to prevent the telescoping of transit railcars in collisions and establish a timetable for removing equipment that cannot be modified to meet the new standards. (R-06-6)

The NTSB added this recommendation to its Most Wanted List of Transportation Safety Improvements in February 2010. This recommendation is currently classified "Open–Acceptable Response." On June 2, 2010, the FTA responded to Safety Recommendation R-06-6 stating that while the FTA awaits congressional authority to require crashworthiness standards, it plans to revise Title 49 *Code of Federal Regulations* (CFR) Part 659 to address Safety Recommendation R-06-6.

Safe and Rapid Emergency Responder Entry and Passenger Evacuation

Rail transit cars are not currently required to be equipped with means for safe and rapid emergency responder entry and passenger evacuation. A rapid means of transit railcar ingress and egress can be instrumental in reducing the risks to passengers in the event of a catastrophic accident. The NTSB believes that the FTA should be empowered to develop transit railcar design standards to provide adequate means for safe and rapid emergency responder entry to and passenger evacuation of transit railcars.

In response to the investigation of the Woodley Park accident, the NTSB made a recommendation to the FTA on safe emergency entry to and egress from transit railcars:

Develop transit railcar design standards to provide adequate means for safe and rapid emergency responder entry and passenger evacuation. (R-06-5)

The NTSB added this recommendation to its Most Wanted List in February 2010. This recommendation is currently classified "Open—Acceptable Response."

On June 2, 2010, the FTA responded to Safety Recommendation R-06-5 stating that it needs Congress to grant it the regulatory authority to require emergency ingress and passenger egress standards for rail transit vehicles.

Event Data Recorders

The FTA does not, and currently cannot, require that rail transit cars be equipped with data recorders. Such recorders are often the only means of determining the events, operating conditions, and equipment status in place before an accident. The lack of such information makes

³ *Collision Between Two Washington Metropolitan Area Transit Authority Trains at the Woodley Park-Zoo/Adams Morgan Station in Washington, D.C., November 3, 2004*, Railroad Accident Report NTSB/RAR-06/01 (Washington, DC: National Transportation Safety Board, 2006).

it difficult for accident investigators to develop appropriate recommendations to prevent similar accidents in the future. Further, the lack of such information makes it difficult for transit agencies to adequately assess their training and maintenance programs or to evaluate the effectiveness of their operating rules.

Fatigue Management

The FTA does not have hours-of-service regulations for transit vehicle operators. Instead, the agency has delegated the responsibility for fatigue management to the designated state safety oversight agency to be carried out through the respective system safety program plans. But the regulations describing the general requirements for, and the prescribed contents of, system safety program plans (49 CFR 659.17 and 659.19, respectively) do not contain any requirements or program plan elements that address hours-of-service limits or any other aspect of managing fatigue in the rail transit industry. After the Woodley Park accident, in which the operator had only 9 hours off between shifts, the NTSB made the following recommendation to the FTA on April 19, 2006:

Require transit agencies, through the system safety and hazard management process if necessary, to ensure that the time off between daily tours of duty, including regular and overtime assignments, allows train operators to obtain at least 8 hours of uninterrupted sleep. (R-06-3)

The NTSB classified this recommendation “Open—Acceptable Response” on September 23, 2008.

Safety Oversight

The NTSB has long recognized the need to improve the FTA’s oversight of rail transit operators and of state oversight agencies. As a result of the safety oversight issues raised in its investigation of the July 11, 2006, derailment of a Chicago Transit Authority train in Chicago, Illinois,⁴ the NTSB recommended that the FTA develop and implement an action plan, including provisions for technical and financial resources as necessary, to enhance the effectiveness of state safety oversight programs to identify safety deficiencies and to ensure that those deficiencies are corrected.⁵

These recommendations are in addition to the numerous recommendations the NTSB has made to individual rail transit systems and transit oversight agencies over the years. In almost every case, the lack of adequate federal safety authority has hindered the development of effective federal safety oversight. The NTSB believes that the DOT should ensure that the minimum safety requirements it establishes address the safety issues identified in previous NTSB recommendations, including transit railcar crashworthiness, event recorders, emergency egress/ingress, fatigue, the ability of state safety oversight programs to identify and correct safety deficiencies, and the adequacy of state safety oversight technical and financial resources.

⁴ *Derailment of Chicago Transit Authority Train Number 220 Between Clark/Lake and Grand/Milwaukee Stations, Chicago, Illinois, July 11, 2006*, Railroad Accident Report NTSB/RAR-07/02 (Washington, DC: National Transportation Safety Board, 2007).

⁵ Safety Recommendations R-07-9 and -10.

Therefore, the National Transportation Safety Board makes the following safety recommendation to the U.S. Department of Transportation:

Continue to seek the authority to provide safety oversight of rail fixed guideway transportation systems, including the ability to promulgate and enforce safety regulations and minimum requirements governing operations, track and equipment, and signal and train control systems. (R-10-3)

The NTSB also issued safety recommendations to the Federal Transit Administration, the Tri-State Oversight Committee, the Washington Metropolitan Area Transit Authority Board of Directors, the Washington Metropolitan Area Transit Authority, Alstom Signaling Inc., the Massachusetts Bay Transportation Authority, the Southeastern Pennsylvania Transportation Authority, the Greater Cleveland Regional Transit Authority, the Metropolitan Atlanta Regional Transportation Authority, the Los Angeles County Metropolitan Transportation Authority, and the Chicago Transit Authority.

In response to the recommendation in this letter, please refer to Safety Recommendation R-10-3. If you would like to submit your response electronically rather than in hard copy, you may send it to the following e-mail address: correspondence@ntsb.gov. If your response includes attachments that exceed 5 megabytes, please e-mail us asking for instructions on how to use our secure mailbox procedures. To avoid confusion, please use only one method of submission (that is, do not submit both an electronic copy and a hard copy of the same response letter).

Chairman HERSMAN, Vice Chairman HART, and Members SUMWALT, WEENER, and ROSEKIND concurred in this recommendation.

[Original Signed]

By: Deborah A.P. Hersman
Chairman