

# **National Transportation Safety Board**

**490 L'Enfant Plaza, SW**

**Washington, D.C. 20594**

**(202) 314-6000**



**Bob Chipkevich, Director  
Office of Railroad, Pipeline and  
Hazardous Materials Investigations**

**Testimony of Bob Chipkevich**  
**National Transportation Safety Board**  
**Before the**  
**U.S. House of Representatives**  
**Committee on Transportation and Infrastructure**  
**Subcommittee on Highways and Transit**  
**Hearing on Public Transit Safety: Examining the Federal Role**  
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Good afternoon, Chairman DeFazio, Ranking Member Duncan, and Members of the Subcommittee. Thank you for the opportunity to appear before you today on behalf of the National Transportation Safety Board (NTSB) regarding the safety of our nation's rail transit systems.

Today, I will first discuss the NTSB's longstanding concerns regarding the limited safety oversight of rail transit systems, and then I will highlight several specific safety issues that we have identified through our accident investigations. These safety issues include the need for improvements in the crashworthiness of rail transit cars, the lack of on-board data event recorders on rail transit cars, inadequate testing programs to ensure compliance with transit company operating rules, and deteriorated track conditions.

In the past 10 years alone, the NTSB has investigated 23 serious rail transit accidents. We have made numerous safety recommendations to individual rail transit systems and oversight agencies over the years, and we have found that safety oversight of rail transit systems varies greatly in effectiveness and scope.

#### Rail Transit Safety Oversight

The Federal Transit Administration (FTA) has limited direct safety oversight authority over rail transit systems. Instead, the FTA must rely on state rail transit safety oversight agencies to determine if rail transit systems have adequate safety programs. In a 1971 special study, the NTSB urged the Urban Mass Transportation Administration (UMTA), now the FTA, to require that all rail transit applications seeking Federal grants include a description of a safety plan for a proposed project. However, a safety study later issued by the NTSB in 1991 concluded that although available information suggested that transportation by rail transit was generally safe, external oversight was still needed because of the potential for catastrophic accidents. The NTSB also found that UMTA's monitoring of state safety oversight programs was limited.

On December 18, 1991, considering the NTSB's safety study and recommendations, Congress enacted the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) (Public Law 102-240), which added Section 289 to the Federal Transit Act. The ISTEA directed the FTA to establish a state safety oversight program for rail fixed guideway public transportation systems that are not subject to regulation by the Federal Railroad Administration.

The FTA has advised the NTSB that the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) (Public Law 109-59) allows the FTA to conduct investigations into safety hazards and security risks associated with a condition in equipment, a facility, or an operation financed under this chapter to establish the nature and extent of the condition and how to eliminate, mitigate or correct it. However, the FTA also advised the NTSB that it never interpreted this statute “as giving the agency authority to conduct a nationwide investigation into transit facilities or equipment or regulate those facilities or equipment through uniform standards for the entire industry of manufacturers and transit operators.”

The FTA, as recently as last year, advised the NTSB that

“It is the States – not FTA – that are responsible to require, review, approve, and monitor each rail transit agency’s plan; investigate hazardous conditions and accidents at rail transit systems; and require action to correct or eliminate those conditions. FTA’s role and responsibility is solely one of monitoring the many state agencies that exercise hands-on oversight of rail transit operations, and providing technical assistance to those state agencies.”

Title 49 *United States Code* section 5330, and 49 *Code of Federal Regulations* (CFR) Part 659 require each state to designate an oversight agency to conduct safety oversight of its rail transit system. At least every 3 years, the state oversight agency must conduct an on-site review of the rail transit agency’s system safety program plan and issue a report containing findings and recommendations resulting from that review. Rail transit agencies must then provide the state oversight agencies with verification that corrective actions have been implemented or that corrective action plans have been prepared to address deficient findings from safety reviews.

However, in our investigation of rail transit accidents, we have continued to find deficiencies in rail transit system safety programs and inadequate safety oversight. For example, following a Chicago Transit Authority (CTA) train derailment in a subway on July 11, 2006, the NTSB found that the CTA did not have an effective track inspection and maintenance program. After derailing, a passenger transit car hit a 600-volt direct current third rail, generating smoke. Most passengers walked to an emergency exit stairway about 350 feet in front of the train, and up 8 flights of stairs that led to the street level. About 1,000 passengers were on the train, and 152 persons were treated and transported from the scene. The NTSB determined that the probable cause of the subway accident was the CTA’s ineffective management and oversight of its track inspection and maintenance program and its system safety program, which resulted in unsafe track conditions. Contributing to the accident was the state oversight agency’s failure to require that action be taken by the CTA to correct unsafe track conditions and the FTA’s ineffective oversight of the state oversight agency.

As a result of the safety oversight issues raised by the 2006 CTA accident, the NTSB recommended that the FTA

Modify your program to ensure that State safety oversight agencies take action to prompt rail transit agencies to correct all safety deficiencies that are identified as a result of oversight inspections and safety reviews, regardless of whether those

deficiencies are labeled as “findings,” “observations,” or some other term. (R-07-009); classified Open—Acceptable Response.

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. (R-07-010); classified Open—Acceptable Response.

In response to the recommendations, the FTA has informed the NTSB that it is developing a clarification letter regarding the scope of the 3-year safety reviews, the activities to be performed, and the process for issuing and tracking findings requiring corrective action. The FTA is attempting to incorporate elements of the clarification letter into 49 CFR Part 659, and it is developing a “Safety Auditor Training Program” to assist state safety oversight agencies in carrying out the required safety audits.

In the past, the NTSB had made recommendations that called for regulatory action. However, the FTA has repeatedly informed the NTSB that it cannot exceed the authorities granted by Congress, and rather than seek additional regulatory authority it has addressed safety issues by developing various initiatives, training, and guidelines designed to promote voluntary safety improvements by rail transit agencies and state governments. The FTA has pointed out that unlike any other agency in the DOT, the FTA’s predecessor, the UMTA, arose from the General Welfare Clause of the Constitution and its mission was strictly one of providing federal financial assistance to maintain and develop municipal transit systems. Further, the FTA has stated that in the few instances in which it has issued rules that touch on safety, it has done so only at the explicit direction of Congress. The NTSB notes that Secretary LaHood and Administrator Rogoff are now seeking additional authority.

A 2006 U.S. Government Accountability Office (GAO) report on the FTA State Safety Oversight program also found problems with FTA’s oversight of state programs. The report recognized that the FTA faces some challenges in managing and implementing its program because officials from 16 of the 24 state system safety oversight agencies said that they do not have enough qualified staff to manage their programs. In addition, officials from both transit and oversight agencies stated that there was a need for additional oversight and technical training to ensure uniformity among the various state programs.

### Survival Factors and Crashworthiness

As a part of its accident investigation process, the NTSB examines factors that could have mitigated the consequences of an accident and makes safety recommendations to reduce the likelihood of deaths and injuries if subsequent accidents should occur. Among the potentially mitigating factors investigated is the crashworthiness of the transportation vehicle, that is, the vehicle’s ability to withstand the dynamic forces of the accident so as to protect the vehicle operators and passengers. Another factor examined is the emergency response to the accident, for example, the emergency responders’ ability to rapidly access, evacuate, and treat the vehicle occupants. Collectively, these factors are referred to as “survival factors” because they all affect the survivability of a transportation accident.

The NTSB's investigation of a 2004 Washington Metropolitan Area Transit Authority (WMATA) rail transit accident examined two significant survival factors issues. Two Metrorail trains collided in the Woodley Park-Zoo/Adams Morgan Station in Washington, D.C. The operator of one train, while stopped on a steep incline between stations, allowed it to roll backward into the station where it struck at 36 mph a standing train that was off-loading passengers. The lead car of the standing train telescoped into the rear car of the striking train. The rear car sustained a loss of about 34 feet of the passenger occupant volume (survival space), which is almost half the length of the passenger compartment. Fortunately, the striking train was not in passenger service at the time of the accident. When the emergency responders sought to confirm that the last car of the striking train was empty, they encountered extreme difficulty in gaining access to the car. The emergency exit door was damaged and could not be opened. The windows were not designed to be easily removed, and the rubber grommets holding the windows in place were brittle and kept tearing as the responders tried to remove them. It was more than an hour after the accident before the emergency responders gained access to the rear car and verified that it was unoccupied.

Although the tragic collision last June between two WMATA passenger trains near the Fort Totten station is still under investigation, staff is examining the same survival factors issues identified in the Woodley Park accident—car telescoping and emergency responder access. During the Fort Totten collision, the lead car of the striking train telescoped and overrode the rear car of the standing train by about 50 feet. The NTSB plans to hold a public hearing on this accident on February 23-24, during which crashworthiness will be among the issues explored.

Currently, the FTA has no requirements that address structural crashworthiness provisions for passenger cars operating in transit service. Nor does the FTA have any requirements that require rail transit cars to be equipped with means for safe and rapid emergency responder entry and passenger evacuation. The NTSB had previously recommended that the FTA

Develop transit railcar design standards to provide adequate means for safe and rapid emergency responder entry and passenger evacuation. (R-06-5); currently classified Open—Acceptable Response.

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); currently classified Open—Acceptable Response.

In the FTA's response to the recommendations, it stated that it does not have the authority to establish vehicle design or equipment standards or to require the removal of non-compliant equipment from service. The FTA went on to state that it remained aware of the importance of setting voluntary vehicle design standards and is funding the development of consensus-based standards.

In the FTA's most recent response to the NTSB, dated February 14, 2008, it reported working with the American Public Transportation Association (APTA) and the American Society of Mechanical Engineers (ASME) to develop new technical standards for new light- and

heavy-rail vehicles. It is also researching and developing crash energy management specifications for overhauling the front ends of existing light-rail vehicles. The FTA stated that it expects to issue a final report of this project in 2009.

The FTA also responded that it was sponsoring the development of a rail transit standard titled “Emergency Features for Rail Transit Cars.” The project will develop consensus-based standards to recommend emergency features for inclusion on light- and heavy-rail transit vehicles.

The NTSB notes that although industry standards can provide guidance, standards are not enforceable as are regulations.

### Event Recorders

The NTSB has investigated several accidents in which transit cars did not have event recorders, and insufficient information was available to provide the basis for a thorough analysis of the actions of the operators and the performance of the trains before the collisions.

Although the investigation is ongoing, the NTSB is concerned that the striking train in the Fort Totten station Metrorail accident was not equipped with event recorders that could have recorded numerous parameters on the operation of the train, including the speed commands received from the train control system.

The NTSB has long advocated the installation of event recorders on rail transit vehicles. The lack of event recorders was a significant safety issue discussed in the NTSB’s special investigation report issued on September 5, 2002. Within a 2-month period in 2001, the Chicago Transit Authority (CTA) experienced two similar rear-end collisions involving CTA rapid transit trains. The first accident occurred on June 17, 2001, when a CTA train collided with a standing CTA train near Addison Street Station. The second accident occurred on August 3, 2001, when a CTA train collided with a standing CTA train on elevated tracks near Hill Street. The NTSB concluded that because the transit cars involved in these accidents either did not have event recorders or had event recorders with only limited data-recording capability, insufficient information was available to provide the basis for a thorough analysis of the actions of the operators and the performance of the trains before the collisions.

In its special investigation report, NTSB recommended that the FTA

Require that new or rehabilitated vehicles funded by Federal Transit Administration grants be equipped with event recorders meeting Institute of Electrical and Electronics Engineers Standard 1482.1 for rail transit vehicle event recorders. (R-02-19); Closed—Unacceptable Action.

There continues to be no federal regulation requiring rail transit vehicles to be equipped with event recorders, and most vehicles currently do not have them installed. The FTA reported to the NTSB in March 2007 that a survey of the 37 rail transit agencies in FTA’s State Safety Oversight (SSO) program showed that only 26 percent of the nationwide vehicle fleet of 12,591 vehicles had event data recorders. Although the FTA reported that most new and rehabilitated

vehicles are receiving recorders, the FTA estimated that it will not be until 2012 that more than half of the nation's rail transit vehicle fleet is equipped with event data recorders.

In its response to Safety Recommendation R-02-19, the FTA stated that it cannot regulate equipment or operations unless Congress has given the agency explicit authority to issue regulations. Based on the FTA's perceived current limitations of its authority and its subsequent lack of action to address this recommendation, Safety Recommendation R-02-19 was classified Closed—Unacceptable Action by the NTSB on August 29, 2008.

### Operating Rules Compliance

Another issue that was addressed in the NTSB's special investigation report on September 5, 2002, was the adequacy of the CTA's programs for ensuring compliance with its operating rules. Within a 2-month period in 2001, the CTA had experienced two similar rear-end collisions involving its rapid transit trains. Both accidents were preceded by the train operators having failed to comply with operating rules designed to prevent collisions.

The investigation of the first CTA accident, which occurred June 17, 2001, revealed that the train's operator was trained and qualified in 3 safety-sensitive positions; operator, flagman, and switchman. She had failed the operator and flagman training programs twice and had qualified on the third try only after receiving remedial training. She had failed switchman training once and qualified on the second try after receiving remedial training. The CTA's records also showed that she had violated several safety rules during her 12-month career as an operator, including failing to stop at stop signals. The CTA's response was to refer her for additional training, in which she was given multiple opportunities to pass. The NTSB concluded that the CTA's management process for identifying and addressing operators who did not meet safety performance standards was not effective in addressing the repeated problems that the operator was experiencing.

An investigation of the second CTA accident, which occurred August 3, 2001, revealed that the train's operator repeatedly proceeded after stops without waiting for the train ahead to clear and without contacting the operations control center, a clear violation of a CTA operating rule. He said that he knew a Purple Line train was close ahead before the accident but it was common practice for operators to proceed from a stop without either waiting for a proceed signal or calling for authorization from the operations control center. Because the operator consciously violated the rule, the safety of further train movements relied entirely on his alertness and his ability to stop short of another train. The NTSB concluded that had the operator complied with the CTA operating rule and waited for his stop signal to clear before proceeding, the accident would not have occurred.

The NTSB concluded that the CTA's program for the enforcement of operating rules was inadequate in design and execution, and consequently, rules violations, such as those related to these two accidents, were not uncommon. The NTSB also found that the CTA's internal safety audit was not effective in identifying the inadequacies in the rules compliance program. The NTSB recommended that the FTA

Adopt the American Public Transportation Association manual that contains updated language on auditing the effectiveness of operating rules compliance programs, and simultaneously modify 49 Code of Federal Regulations Part 659 so that the Part always references the current American Public Transportation Association manual. (R-02-18); classified Closed—Acceptable Alternate Action.

A final rule for 49 CFR Part 659 “Rail Fixed Guideway Systems, State Safety Oversight” was issued by the FTA on April 29, 2005, revising regulations for safety and security programs. The rule stipulated that rail transit agencies must develop and implement a written system safety program plan, and any subsequent revisions, to the oversight agency for review and approval. Section 659.19(m) now requires a description of the process used by rail transit agencies to develop, maintain, and ensure compliance with rules and procedures having a safety impact, including “techniques used to assess the implementation of operating and maintenance rules and procedures by employees, such as performance testing.”

### Track Safety and Oversight

The NTSB’s investigation of the July 11, 2006 CTA subway accident found serious track problems that were not documented in CTA track inspection records. There were hundreds of missing or incomplete track inspection records, and some records showed track defects without parallel records showing that repairs were made. The investigation found deficiencies in the track inspection training program, and track inspectors for the area of the subway where the accident occurred did not have sufficient time to inspect all of their assigned territory twice a week as prescribed.

The NTSB determined that the CTA did not establish an effective track inspection and maintenance program, and unsafe track conditions developed that were not corrected. The tie plates and fastener system failed to maintain the track gage because of the effects of corrosion and degraded half-ties. Abrasion on the tie plates, broken lag screws, elongated fastener holes, and poor drainage in the area of the derailment were all readily observable and should have been documented during walking inspections.

At least every 3 years, the state oversight agency was required to conduct an on-site review of the rail transit agency’s implementation of its system safety program plan and system security plan, and issue a triennial report containing findings and recommendations resulting from that review. However, the NTSB found that the state agency failed to follow up with the CTA and prompt action to correct track safety deficiencies that were identified in the triennial report. The NTSB also found that the FTA’s oversight of the state’s rail safety oversight program was also inadequate and failed to prompt actions needed to correct track safety deficiencies on the CTA’s rail transit system.

The NTSB issued multiple safety recommendations to address the track safety problems identified in its investigation of the July 11, 2006, CTA subway accident including the following safety recommendation to the FTA:

Schedule the Chicago Transit Authority as a priority for receiving the maintenance oversight workshop and the training course to be developed for track

inspectors and supervisors that will address the unique demands of track inspection in the rail transit environment. (R-07-11); currently classified Open—Acceptable Response.

The NTSB also issued the following safety recommendations to the Regional Transportation Authority, the state safety oversight agency:

Determine if track safety deficiencies on the Chicago Transit Authority's Dearborn Subway in the area of the derailment have been adequately repaired. (R-07-14); classified Closed—Acceptable Action.

Strengthen your followup action on Chicago Transit Authority system safety reviews to ensure that the Chicago Transit Authority corrects all identified safety deficiencies, regardless of whether those deficiencies are labeled as “findings,” “observations,” or some other term. (R-07-15); classified Closed—Acceptable Action.

In response to these safety recommendations, the Regional Transportation Authority advised the NTSB that it had verified that track deficiencies were corrected at the accident site, and that it had enhanced its safety audit program by requiring the CTA to provide a plan for correcting deficiencies identified in future audits and then tracking those actions.

The NTSB remains concerned about the limited safety oversight of rail transit systems across the country.

This concludes my prepared testimony, and I would be happy to answer questions at the appropriate time.