National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: December 22, 2011

In reply refer to: R-11-1
R-10-3 (Reiteration)

The Honorable Ray H. LaHood
Secretary
U.S. Department of Transportation
Washington, DC 20590

About 4:44 p.m., eastern standard time, on November 28, 2008, a three-car train (of a type referred to as an automated people mover, [APM]) that was operating along a fixed guideway[1] on E Concourse at Miami International Airport near Miami, Florida, failed to stop at the passenger platform and struck a wall at the end of the guideway. Although a maintenance technician was monitoring train operations from the lead car of the train when the accident occurred, the train was operating in fully automatic mode without a human operator. The maintenance technician and five passengers on board the train were injured in the accident. One person on the passenger platform also required medical attention.[2]

The National Transportation Safety Board determined that the probable cause of this accident was the installation by Johnson Controls, Inc., maintenance technicians of a jumper wire that prevented the overspeed/overshoot system from activating to stop the train when the crystal within the primary program stop module failed. Contributing to the accident were (1) the failure of Johnson Controls, Inc., to provide its maintenance technicians with specific procedures regarding the potential disabling of vital train control systems during passenger operations, (2) ineffective safety oversight by the Miami-Dade Aviation Department, (3) lack of adequate safety oversight of such systems by the state of Florida, and (4) lack of authority by the U.S. Department of Transportation to provide adequate safety oversight of such systems.

Safety oversight of the APM system at Miami International Airport should have been provided by, at a minimum, the Miami-Dade Aviation Department (MDAD) and the state of Florida. The National Transportation Safety Board's (NTSB) investigation revealed,

[1] A *rail fixed guideway system* is defined by Title 49 *Code of Federal Regulations* Part 659 as any light, heavy, or rapid rail system, monorail, inclined plane, funicular, trolley, or automated guideway.

[2] See *Miami International Airport, Automated People Mover Train Collision with Passenger Terminal Wall, Miami, Florida, November 28, 2008,* Railroad Accident Report NTSB/RAR-11/01 (Washington, DC: National Transportation Safety Board, 2011) on the NTSB website at <http://www.ntsb.gov>.

however, that neither entity was routinely providing detailed oversight with regard to safety issues.

The MDAD project manager/superintendent of contracts and construction was responsible for monitoring the safety and maintenance of the system while the MDAD Facilities Maintenance Division was responsible for oversight of the APM system contractor. Those oversight roles were largely carried out by notifying maintenance technicians employed by the system contractor, Johnson Controls, Inc. (JCI), when a train malfunctioned and relying on those maintenance technicians to take the actions necessary to return the trains to service.

JCI had taken over as maintenance contractor for the system about 10 months before the accident. Based on maintenance records and employee interviews, the trains during that period had exhibited frequent and recurring problems that were addressed on an ad hoc basis. At no point did MDAD management evaluate the various safety risks inherent in the APM system and develop methods of managing and minimizing those risks. Nor did it seek to enforce the contract provision requiring that trains be taken out of service in the event of a malfunction that significantly degraded passenger safety.

Risk to passengers rose to unacceptable levels when trains were allowed to operate in passenger service with the overspeed/overshoot system bypassed by a jumper wire. However, the fact that the vital overspeed/overshoot system was being bypassed on some trains in passenger service was apparently not known by MDAD management, indicating a failure of the agency to fulfill its proper oversight role.

The NTSB concluded that the state of Florida and MDAD failed to exercise safety oversight of the Miami International Airport APM system, which resulted in trains being allowed to operate in regular passenger service with a vital safety system disabled.

The Florida Department of Transportation (Florida DOT) provides safety oversight of six fixed guideway transportation systems within the state, including APM systems at the Orlando and Tampa airports. The Florida DOT does not provide safety oversight of the APM system at Miami International Airport. In 1988, the Florida DOT asked that MDAD develop a system safety program plan for the Miami airport APM. Although MDAD acknowledged that the state partly financed the system, it declined to develop a safety plan stating that the system predated the state statute requiring such oversight.

The Florida DOT also does not provide safety oversight of the monorail APM system at Walt Disney World Resort in Lake Buena Vista, Florida, where a fatal accident occurred on July 5, 2009.[3] The state does not provide oversight because the monorail system did not receive state or Federal Transit Administration (FTA) funding.

External safety oversight of public transportation systems is critical to identifying and correcting systemic safety risks that may not be readily apparent or may not be effectively addressed by the operator or transit agency. The NTSB believes that higher-level oversight of

[3] *Collision of Two Monorails in Walt Disney World Resort, Lake Buena Vista, Florida, July 5, 2009,* Railroad Accident Brief NTSB/RAB-11/07 (Washington, DC: National Transportation Safety Board, 2011). <http://www.ntsb.gov>.

fixed guideway transportation systems, such as the Miami airport APM system, is necessary to help promote effective risk analysis and safety management of these systems and will lead to safer travel.

The NTSB has long seen the need to improve the oversight of rail transit operators by state oversight agencies; however, the FTA, which requires that such an oversight agency be identified, does not, and cannot, due to its limited statutory authority, provide the oversight agency with the authority to promulgate and enforce safety regulations or standards. Therefore, except for states such as California and Massachusetts, which have provided their oversight agencies with regulatory and enforcement authority, a state oversight agency is limited in its ability to compel a rail transit agency to comply with its system safety program plan or any other FTA requirement.

To compound this deficiency, not all transit and fixed guideway systems—as is the case with the Miami airport APM—are subject even to state oversight. The state of Florida is not alone in this regard. The NTSB investigation revealed that at least 22 other states have fixed guideway systems that fall outside the regulatory authority of the designated state oversight agencies.

The NTSB is concerned that the lack of safety oversight of some APM systems creates a situation in which adequate risk management and safety standards may not exist or may be ineffectively applied, which could lead to an inconsistent level of safety and risk management and a heightened risk to passengers. The NTSB concluded that a lack of state and Federal safety oversight of fixed guideway transit systems can permit those systems to operate with ineffective safety standards, which could, in turn, lead to failures of safety-critical operations and procedures.

The NTSB has attempted to address the lack of safety oversight of rail transit systems by issuing a series of safety recommendations over a number of years. For example, 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]

Less than a year after the accident at Miami International Airport, the NTSB investigated a much more serious accident involving a collision of two Washington Metropolitan Area Transit Authority Metrorail trains in Washington, DC.[6] Based on the findings from that investigation, as well as from its investigations of previous rail transit accidents, the NTSB concluded that the structure of the FTA's oversight process leads to inconsistent practices, inadequate standards, and

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[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). <http://www.ntsb.gov>.

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

[6] *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). <http://www.ntsb.gov>.

marginal effectiveness with respect to the state safety oversight of rail transit systems in the United States.

The NTSB, therefore, issued the following safety recommendation to the DOT:

> 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)

In an attempt to place renewed emphasis on this important safety issue, the NTSB is reiterating Safety Recommendation R-10-3 to the DOT.

As noted earlier, about 22 states are known to have, within their jurisdictions, fixed guideway transportation systems that fall outside the regulatory authority and oversight of the designated state safety oversight agency. Other states may also have fixed guideway systems that are not subject to state safety oversight. The first step in addressing this deficiency is to identify all fixed guideway transportation systems within each state as a precursor to obtaining the regulatory authority to provide the necessary safety oversight. The NTSB, therefore, recommends that the DOT, the 50 states, and the District of Columbia work together to identify all fixed guideway transportation systems within each jurisdiction.

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

> Working with the 50 states and the District of Columbia, identify all fixed guideway transportation systems within each jurisdiction. (R-11-1)

The National Transportation Safety Board also reiterates 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 50 states and the District of Columbia, to Miami-Dade County, and to Johnson Controls, Inc.

In response to the recommendations in this letter, please refer to Safety Recommendations R-11-1 and 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. 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, ROSEKIND, and WEENER concurred in these recommendations. Vice Chairman HART filed a concurring statement, which is attached to the railroad accident report for this accident.

[Original Signed]

By: Deborah A.P. Hersman
Chairman