



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: September 26, 2002

In reply refer to: R-02-18 and -19

Honorable Jennifer L. Dorn
Administrator
Federal Transit Administration
400 7th Street, S.W.
Room 9328
Washington, D.C. 20590

Within a 2-month period in 2001, the Chicago Transit Authority (CTA) experienced two similar rear-end collisions involving CTA 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 two accidents highlighted deficiencies in the CTA management's approach to ensuring rules compliance among its operators.¹

The first accident occurred about 11:40 a.m., central daylight time, on Sunday, June 17, 2001, when CTA train 104, en route from downtown Chicago to O'Hare Airport, collided with standing CTA train 207. Each train consisted of four passenger cars. About 75 passengers were on train 104, and about 40 passengers were on train 207. Eighteen passengers, an off-duty CTA employee, and both train operators sustained minor injuries. The CTA estimated damages at \$30,000.

The National Transportation Safety Board determined that the probable cause of the accident was the failure of the operator of train 104 to comply with operating rules. Contributing to the accident was the failure of CTA's management to exercise adequate operational safety oversight.

The second accident occurred about 9:04 a.m., central daylight time, on Friday, August 3, 2001, when CTA train 416, en route from Kimball to downtown Chicago, collided with standing CTA train 505. Each train consisted of six passenger cars. The accident occurred during morning rush hour, and both trains had standing loads estimated at 90 passengers per car. Chicago Police Department logs indicate that 118 people were transported to area hospitals with minor injuries, none of which were life threatening. The CTA estimated damages at \$136,138.

¹ For additional information, see forthcoming Railroad Special Investigation Report—*Two Rear-End Collisions Involving Chicago Transit Authority Rapid Transit Trains at Chicago, Illinois, June 17 and August 3, 2001* (NTSB/SIR-02/01).

The Safety Board determined that the probable cause of the accident was the failure of the operator of train 416 to comply with operating rules. Contributing to the accident was the failure of CTA's management to exercise adequate operational safety oversight.

In addition to its own internal safety audit program, the CTA has also engaged the American Public Transportation Association (APTA) to conduct periodic safety audits. The last APTA safety audit before the accident, which was conducted in 1998, took no exception to how transportation line management oversaw operators' rules compliance. APTA's audit did not include a checklist item specifically addressing the training department's program of twice-yearly check rides with operators or the safety department's monitoring of operating rules compliance. The APTA audit process creates a unique checklist for every transit system it audits. The checklist is based on the transit system's system safety program plan.

Item 12 on the APTA System Safety Checklist in the *Manual for the Development of Rail Transit System Safety Program Plans* addresses rules/procedure reviews. The manual indicates that records reviews and supplemental spot checks are the methods to use in determining whether rules are being followed. There is little specific guidance on what rules compliance programs should entail or how they should be efficiently implemented.

The Safety Board concluded that the APTA manual, published on August 20, 1991, does not contain the necessary specific guidance for assessing the effectiveness of rules compliance programs; as a result, the guidelines are not effective tools for regulatory authorities or transit agencies.

The Safety Board, therefore, believes that APTA should modify the manual to provide specific guidance on auditing the effectiveness of operating rules compliance programs by referencing the APTA standard covering transit rules compliance and efficiency test programs as audit criteria.

Because the Federal Transit Administration (FTA) requires that fixed guideway transit systems, such as the CTA's rail transit system, develop and implement a system safety program plan that complies with the guidelines in the 1991 APTA manual, the Safety Board believes that the FTA should adopt the APTA manual that contains updated language on auditing the effectiveness of operating rules compliance programs. Further, the Safety Board believes that the FTA should simultaneously modify 49 *Code of Federal Regulations* Part 659 so that the Part always references the current APTA manual.

The investigation of the second CTA accident showed that some CTA rail transit cars contain a system for preserving a limited amount of train performance data when an accident involves a specific triggering event (in this case, propulsion breakers on two rail cars were knocked out of position by the collision impact). The data loggers record only a limited amount of data and will record over existing data if new triggering events occur. (Event recorders collect a much greater variety of data and record for a much longer period of time.) It was happenstance that the accident involved a triggering event and, thus, that data was available to investigators. Had the triggering event not occurred, as was the case on the remainder of the cars in the train, no train performance data would have been captured. The Safety Board, therefore, 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.

APTA is sponsoring a working group, the APTA Rail Transit Standards Development Vehicle Inspection and Maintenance Committee, that is addressing event recorders on rail transit vehicles, as well as a variety of other maintenance issues. The committee consists of representatives from APTA, various transit properties, consultants, and government entities. The committee is addressing inspection and maintenance standards and recommended practices for rail transit event recorders. The committee's recorder standard is expected to detail maintenance intervals and techniques for data, voice, and image recording systems (where available) on transit vehicles. The group defers to the Institute of Electrical and Electronics Engineers (IEEE) Standard (1482.1) for any recommended operational and crashworthiness standards. The committee expects to have a final draft standard for rail transit event recording systems by the end of 2002.

In response to Safety Board recommendations to the transit industry through APTA, the CTA has developed a draft specification and intends to equip its new rail transit cars with event recorders meeting the IEEE 1482.1 standard. While the Safety Board is encouraged by the CTA's plans to equip its future rail rapid transit cars with event recorders, the Board is concerned that other transit agencies may not share the commitment. To help expedite expanded employment of event recorders in rail transit vehicles, the Safety Board believes that the FTA should require that new or rehabilitated vehicles funded by FTA grants be equipped with event recorders meeting IEEE Standard 1482.1 for rail transit vehicle event recorders.

Therefore, the National Transportation Safety Board makes the following safety recommendations to the Federal Transit Administration:

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)

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)

Also, the Safety Board issued safety recommendations to the American Public Transportation Association and the Chicago Transit Authority. In your response to the recommendations in this letter, please refer to Safety Recommendations R-02-18 and -19. If you need additional information, you may call (202) 314-6177.

Chairman BLAKEY, Vice Chairman CARMODY, and Members HAMMERSCHMIDT, GOGLIA, and BLACK concurred in these recommendations.²

Original Signed

By: Carol J. Carmody
Acting Chairman

² At the time the report was adopted (September 4, 2002), Ms. Marion C. Blakey was the Chairman.