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**NATIONAL TRANSPORTATION SAFETY BOARD**  
**WASHINGTON, D.C.**

ISSUED: August 23, 1976

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Forwarded to:

Mr. George Krambles  
General Manager  
Chicago Transit Authority  
Chicago, Illinois 60654

SAFETY RECOMMENDATION(S)

R-76-35 through R-76-41

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On January 9, 1976, at 8:06 a.m., Chicago Transit Authority (CTA) train No. 315 struck the rear end of train No. 104 while it was standing at the Addison Street Station platform in Chicago, Illinois. The impact forces extensively damaged the lead car of the moving train and the rear car of the standing train, and slightly damaged the other cars in each train. Damage to the equipment and track was estimated to be \$267,000. Of the 381 passengers who were injured in the collision, 1 passenger died. 1/

Through years of operational experience, the railroad and rapid transit industries have recognized the need for a safety backup system for the train operators. Advancing technology has produced backup equipment that is safe, reliable, and efficient.

The Chicago Transit Authority has installed automatic train control (ATC) and cab signals over portions of its system. This system provides a high degree of safety when it is used and maintained properly. Problems arise when the ATC becomes inoperative. A bypass provision was

1/ For more detailed information on this report, read "Railroad Accident Report--Chicago Transit Authority, Collision of Trains No. 104 and No. 315 at Addison Street Station, Chicago, Illinois, January 9, 1976." NTSB-RAR-76-9.

incorporated into the system so the train could be moved when the ATC failed. This is necessary because the nature of some failures would prevent the trains from moving. However, the bypass feature has been used to move trains in revenue service. When this is done, all the safety afforded by the ATC is lost and safe operation becomes totally dependent on the motorman.

During the investigation of the CTA accident, the Safety Board found that during 1975, ATC systems failed an average of 6.5 times a day and caused the trains to be operated in the bypass mode. This failure rate probably could be decreased (1) if trains were inspected more frequently to detect minor failures or impending failures, and (2) if predeparture tests were initiated to check the ATC, the cab signals, and the train phone equipment.

The day after the accident, the CTA issued instructions that trains would no longer be permitted to leave a terminal with the ATC inoperative and that if the ATC failed en route, passengers were to be unloaded at the next station so that the equipment could be taken out of service immediately for repairs. This procedure would prolong the time that the train would be in the station and would set up the conditions which allowed this accident to occur. The CTA should study these new instructions to assure that they are the best way to resolve ATC failures.

The investigation also revealed that the communication system was not reliable because it failed several times the morning of the accident. Reliable communication facilities are essential to insure dependable controls for operational moves and to warn other trains when a hazardous condition or a problem exists. A study of this system is warranted.

The operating employees and some supervisors displayed a lack of understanding of operating rules and procedures. The motorman who was operating the striking train said that he was not sure what operating rule governed his speed. Consequently, his estimated operating speed was in excess of the authorized speed. Although the job training program seems to be adequate, followup training seems inadequate. The monitoring of employees' performance on operating procedures and the questions asked them by instructors and supervisors on operating rules do not appear to insure that employees are up to date and knowledgeable on those rules for which they are responsible. Some crewmembers exhibited confusion as to their areas of responsibilities. This situation was not

helped by the condition of the operating rules book. The current rulebook, effective October 1, 1962, had a number of rules that were no longer applicable, some that were applicable but not enforced, and titles and job functions of supervisors whose functions had changed. The rulebook needs to be updated in all respects.

The Safety Department of the CTA has just been re-organized and has not yet realized its full potential. It should be given more than an advisory role in the system hierarchy and become involved in design and procurement of equipment, operations, maintenance, and training.

Therefore, the National Transportation Safety Board recommends that the Chicago Transit Authority:

Study the procedure which it implemented on January 10, 1976, to handle trains which have inoperative automatic train controls (ATC) or cab signals to insure that all hazards have been considered and that their potential has been minimized. (R-76-35)  
(Class II, Priority Followup)

Implement predeparture tests at terminals to insure that the ATC, the cab signals, and the train phones are operating properly. (R-76-36) (Class II, Priority Followup)

Review the maintenance schedule and procedures for the ATC and the cab signals to determine their adequacy to (a) Detect the failure of nonvital functions or components and (b) detect and isolate substandard or progressively deteriorating components which result in failure, so that these can be dealt with and so that the inservice failure rate can be reduced. (R-76-37) (Class II, Priority Followup)

Insure that the train phone system provides dependable, reliable, and backup communication for operational control and that proper procedures are in effect to provide emergency warnings and instructions. (R-76-38)  
(Class II, Priority II Followup)

Update the book of operating rules so that current supervisory titles and functions are in agreement, and upgrade it so that only those rules for which employees are responsible and that are enforceable and necessary for safe operation are contained therein. (R-76-39)  
(Class II Followup)

Reassess the operating employees' training program and the method which is used currently to evaluate their understanding and knowledge of rules and operating procedures to insure that both are effective. (R-76-40) (Class II, Priority Followup)

Develop the full potential of the Safety Department, involve it in all phases of the system operation including operations, design, maintenance, and training, and provide it with more than advisory authority so that it can require implementation of system safety programs. (R-76-41) (Class II, Priority Followup)

TODD, Chairman, McADAMS, HOGUE, BURGESS, and HALEY, Members, concurred in the above recommendations.

*Kay Bailey*  
*for*

By: Webster B. Todd, Jr.  
Chairman



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