

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: June 29, 1977

Forwarded to:

Mr. J. J. McDonough
Chairman of The Board
Chicago Transit Authority
P.O. Box 3555
Chicago, Illinois 60654

SAFETY RECOMMENDATION(S)

R-77-14 through 17

About 5:27 p.m. c.s.t. on February 4, 1977, Chicago Transit Authority (CTA) Lake-Dan Ryan train No. 930 struck the rear of Ravenswood train No. 415, which was standing on the elevated rail structure at the intersection of Wabash Avenue and Lake Street. The first four cars of the eight-car Lake-Dan Ryan train fell from the elevated structure and overturned. Eleven persons were killed and 183 persons were injured. Property damage was estimated to be \$1.2 million.

The CTA's automatic train control system displays color light cab signals and the speedometer displays the maximum speed permitted for each cab signal. The displays are as follows:

<u>Color displayed by cab signal</u>	<u>Indication</u>	<u>Maximum speed indicated by illumination of yellow light on speedometer</u>
Green	Two blocks ahead are unoccupied	65 mph
Yellow	Block ahead is unoccupied; second block is occupied	35 mph
Yellow	Special speed restrictions or short unoccupied blocks	15 mph
Red	Block ahead is occupied	STOP (no speed indicated)
Flashing Red	Block ahead is occupied. After obtaining permission from controller, train may proceed at a restricted speed.	15 mph (flashing)

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The system is designed so that if an operator exceeds the indicated speed for more than a defined period of time the brakes of his train will automatically apply. A train that enters a signal block adjacent to an occupied block, or an occupied signal block, receives a steady red cab signal. When the train stops, the signal changes to a flashing red, which allows the train to be moved forward at a speed not exceeding 15 mph. The rules of the CTA do not permit a train to proceed on a flashing red cab signal until permission has been obtained from the controller.

Because of a train ahead, the Ravenswood train had received a steady red cab signal and was stopped on the westbound track with its rear car standing on the curve at Wabash Avenue and Lake Street. The operator had not called the controller for permission to move because he was waiting for the train ahead to proceed.

The following Lake-Dan Ryan train started operating on the westbound track along Wabash Avenue on a yellow cab signal indication which permitted a maximum speed of 35 mph. The operator of the train said that he had seen the Ravenswood train ahead several times and that the last time he saw the train, it was moving around the curve at Wabash and Lake. As the Lake-Dan Ryan train came into the Randolph Street Station, which was immediately to the rear of the standing train, the operator said that the yellow cab signal, which had changed to a maximum speed of 15 mph, changed directly to a flashing red. After the train was stopped at the Randolph station and the proceed signal was received from the conductor, the operator moved the train forward on the flashing red cab signal without obtaining permission from the controller. The train accelerated to about 10 mph. The operator said that he did not see the standing Ravenswood train at the curve until he was about 2 or 2 1/2 car lengths from it. He immediately applied the brakes in full service and, because he thought the application's effectiveness was slow, he made an emergency brake application just before his train struck the Ravenswood train.

The operator of the Lake-Dan Ryan train apparently did not understand that, unless communications failed, he was always required to obtain permission from the controller before proceeding on a flashing red cab signal. He also did not have a clear understanding of the meanings of the cab signal indications. The curve at Wabash Avenue and Lake had a programmed maximum speed of 15 mph with a yellow cab signal when the track west of the curve was unoccupied. The operator stated that the most favorable cab signal indication he could obtain at that point was a flashing red, which permitted a maximum speed of 15 mph. Several other CTA operators could not explain clearly the display and meanings of the cab signals.

This confusion and lack of understanding of operating rules and of the cab signal indications indicates inadequate training or the lack of periodic recurrent training. CTA instructs operators on the rules when they are first hired and depends on the posting of rule change information to keep the operators current with the rules. A frequent review of the rules with the operators and efficiency checks by supervisors would

provide invaluable assistance in keeping the operators conversant with the intent of the rules.

Evidence brought out at the public hearing indicated that the motorman's record during the past 8 years contained numerous rule violations. The present agreement between the CTA and the operators' union to use only an employee's discipline record for 1 year to determine his past performance for disciplinary purposes also is being used by the CTA to evaluate the safety performance of an employee and to decide if he is a potentially high-risk employee. The Board believes that more than 1 year of an operator's service record should be considered in a safety performance evaluation.

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

Initiate a program which will:


1. Provide a systematic review of the operating rules so that all employees will have a clear understanding of such rules and of any changes.
2. Insure employee compliance with the rules. (Class II, Priority Followup) (R-77-14)

Discontinue the automatic display and control function of the flashing red cab signal and its associated flashing yellow 15 mph on the speedometer. (Class II, Priority Followup) (R-77-15)

Operate trains on an absolute block. If it becomes necessary to enter an occupied block in emergency, provide procedures that will insure safe operation. (Class II, Priority Followup) (R-77-16)

Consider an operating employee's complete service record when judging the employee's operating capabilities. (Class II, Priority Followup) (R-77-17)

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


for By: Webster B. Todd, Jr.
Chairman