

ADOPTED: 3/13/90



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

R-622

Date: March 21, 1990

In reply refer to: R-90-2 thru 11

Mr. Alan F. Kiepper
President
New York City Transit Authority
370 Jay Street
Brooklyn, New York 11201

On March 10, 1989, New York Transit Authority (NYCTA) 2-car revenue collector train 3A had been collecting and delivering receipts and tokens to the token booths at stations along various lines of the NYCTA system.¹ Train 3A had been placed on the number 1 IRT line at 137th Street terminal at 4:35 a.m. (eastern standard time) to travel southbound on track 1 following the 0408/IRT (408), a 10-car subway passenger train and preceding the 0428/IRT (428), a 10-car subway passenger train. Train 3A stopped at each station to allow the on-board personnel to pick up receipts and tokens; this required the train to remain in a station for about 5 minutes. After continuing southbound, train 3A made a normal stop at the 103rd Street Station about 5:00 a.m., and the on-board employees began their delivery and collection of cash and tokens.

The operator of train 428 estimated the speed of his train as he entered the 103rd Street Station to be about 18 mph. The lack of speed indicators and the best guess method for speed does not provide a sufficiently accurate means for operators to determine the speed of their trains. The NYCTA has a very complex system of switches and crossovers. Further, many maintenance people need to be around the tracks. Speed restrictions must be enforced to protect train movements and workmen along the tracks. During the post-accident testing, the train operator on the test train consistently underestimated the speed of the train. The Safety Board believes, based on postaccident testing, that train 428 entered the station at speeds well in excess of the posted speed, in part, because the operator had no reasonable means to determine his speed. Speed indicators are needed to allow train operators to properly control the speed of their trains. The Safety Board believes that the NYCTA is aware of the difficulties of controlling speed without speed indicators, but NYCTA has not taken sufficient action to

¹For more detailed information, see Railroad Accident Report--"Rear End Collision of Two New York City Transit Authority Trains, 103rd Street Station, New York, New York" (NTSB/RAR-90/01).

address the problem. The infrequent use of radar guns to perform speed checks by supervision responsible for train operations and the failure to train operators to use time and distance to determine speed are indications that the NYCTA may not have recognized the importance of this problem.

The 428 train was continually closing the gap with train 3A ahead. During this investigation, it was determined that a subway train making a normal station stop is in the station about 90 seconds, but a revenue collector train like 3A is in each station about 5 minutes. Because the revenue collector train is not scheduled, the operator of train 428 was not aware of the train or that his train was closing the gap between the two trains. He did not expect to find a train standing in the 103rd Street Station and probably was prepared to enter the station normally to make the scheduled station stop. The train dispatcher at Times Square tower knew that train 428 would be closing the gap with train 3A and intended to switch train 3A off track I at Times Square to avoid delay to train 428. However, the trains did not reach that point before the collision. The train dispatcher at Times Square did not have any radio communication with either train prior to the accident, and did not have a display of the signal indications for 103rd Street Station. The console dispatchers in command center did not have any radio communication with either train nor did they have at their location any indication of the signals displayed in the field. The need for security of revenue collector trains is recognized by the Safety Board, but it believes the need to maintain train separation required for passenger safety is of greater importance. The Safety Board believes that the operator of train 428 should have been advised before departing the originating terminal that train 3A had been placed on the line ahead. The alteration of the signal system removed the necessary warning and there was no reliable backup to warn the operator of the standing train. The Safety Board believes that the NYCTA must review the events of this accident and develop the necessary protection to prevent trains from closing and striking.

This accident demonstrates that with any deformation to the front of the car, the door of the train operator's cab cannot be opened. The window on the cab side of the car is small and does not open for its full length; this created a problem in evacuating the train by the train operator. The NYCTA should evaluate the door design for the operator's cab so that in the event of an accident the door can be opened or removed. The NYCTA should also consider the desirability of designing the cab window with a pull-out strip so that the window can be removed quickly in the event of an accident. The NYCTA should also consider that in an accident it is possible that the crewmembers may become incapacitated and not be able to open the side doors for emergency passenger evacuation. The NYCTA, therefore, should provide instructions inside each car on the proper manner to open the doors manually and exit safely.

The Safety Board recognizes that there are times when it may be necessary to use jumper wires for repairing a signal circuit, such as replacing a fuse, and thus the NYCTA position prohibiting the use of jumper wires may not be realistic. Because the jumper wire was made of a standard material furnished to signal maintainers to make repairs to the system and because it was tucked away in the signal circuit rack, it was difficult to

detect the jumper wire when making visual inspections. Following this accident, several rail carriers indicated to the Safety Board that they recognize the need for jumper wires for certain applications, but require that the jumper wire be made from a wire of a different color from their standard wire (many use red) so that if left in place, it will be readily visible to anyone checking the system. These rail carriers also indicated that the use of a jumper wire is allowed only after a signal maintainer receives permission from supervision and proper safeguards are taken. Subsequent to this accident, the Safety Board has been advised by NYCTA management that jumper wires, yellow in color, are approved for use. However, the jumper wire found in place following this accident apparently had been used to avoid doing proper repairs. Signal maintenance personnel could easily make such a jumper wire from the material furnished to them and install it just as the one in this accident had been. The Safety Board believes that the NYCTA must immediately instruct signal department employees of the extreme danger of wiring a signal circuit in such a manner, and monitor the activities of signal personnel to prevent such a situation from occurring again.

In addition to the failure to perform correct repairs, the reporting of failures and repairs was not performed. The lack of a log book entry suggests that the individual making the improper repair with a jumper wire knew it was not a proper repair and did not want to alert anyone that correct repairs had not been performed. The Safety Board believes this unsuitable repair may have been done for expediency to keep trains running on time, and because of the small window of time available for a signal maintainer to perform the correct repairs and testing of the system in rush hour traffic. The lack of any unusual occurrence report indicating a signal failure at the time the first wire broke is also a failure to adhere to the reporting requirements of the NYCTA.

The Safety Board is also concerned that the train operator was not wearing corrective glasses and may have been wearing contact lenses which did not correct his problem with vision. Although this may not have contributed to the accident, contact lenses are prohibited for operating employees and yet there is no method in place on NYCTA to alert supervision that an operating employee is required to wear corrective glasses on duty. Therefore, the operator of train 428 was allowed to operate trains for some period of time with contact lenses. The Safety Board believes that the NYCTA needs to provide operations supervisors sufficient information to check its employees for compliance with operating rules. When a supervisor receives a form indicating a check ride is needed on a train operator, it should indicate if the operator is required to wear corrective glasses.

It has not been possible for the Safety Board to determine just how long the operator had not been using the required corrective glasses because the NYCTA could not produce a record of the physical examination that was required to be taken by the train operator for promotion from conductor. It is also possible that the train operator was promoted without a physical examination as no record of an examination could be found.

Therefore, the National Transportation Safety Board recommends that the New York City Transit Authority:

Provide speed indicators on each car in service on the system to allow train operators the ability to properly determine speed. (Class II, Priority Action) (R-90-2)

Establish a procedure to notify train operators before leaving the originating terminal when an extra train is placed in front of their train. (Class II, Priority Action) (R-90-3)

Conduct random testing, using radar guns, of train speed, with specific emphasis given to those locations where speed restrictions are in effect. (Class II, Priority Action) (R-90-4)

Redesign cab doors and provide a removable strip to enable removal of cab window to provide an escape route for train operators. (Class II, Priority Action) (R-90-5)

Provide procedures for use and reporting of jumper wires in the signal system. (Class II, Priority Action) (R-90-6)

Establish a procedure for supervisors to determine when making ride checks if the train operator is required to wear corrective glasses. (Class II, Priority Action) (R-90-7)

Install emergency evacuation placards on all New York City Transit Authority passenger train cars. (Class II, Priority Action) (R-90-8)

Conspicuously post emergency procedures for opening side passenger doors adjacent to each set of doors on all passenger cars. (Class II, Priority Action) (R-90-9)

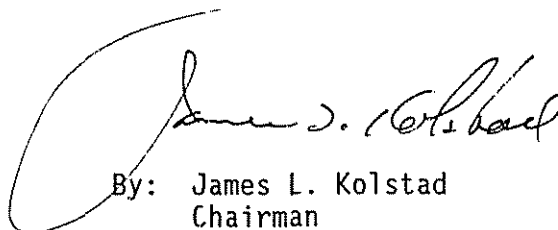
Establish audit procedures to determine that signal maintainers and signal supervisors are properly logging an activity involving the signal system. (Class II, Priority Action) (R-90-10)

Establish procedures to require that physical examinations are given when required by NYCTA rules. (Class II, Priority Action) (R-90-11)

The National Transportation Safety Board is an independent Federal agency with the statutory responsibility "to promote transportation safety by conducting independent accident investigations and by formulating safety improvement recommendations" (Public Law 93-633). The Safety Board is

vitaly interested in any action taken as a result of its safety recommendations. Therefore, I would appreciate a response from you regarding action taken or contemplated with respect to the recommendations in this letter. Please refer to Safety Recommendations R-90-02 through -11 in your reply.

KOLSTAD, Chairman, and COUGHLIN, Acting Vice Chairman, and LAUBER and BURNETT, Members, concurred in these recommendations.



By: James L. Kolstad
Chairman