Log R-639

National Transportation Safety Board

Washington, D. C. 20594

Safety Recommendation

Date: December 21, 1992

In Reply Refer To: R-92-18 through -20

Mr. Alan F. Kiepper
President
New York City Transit Authority
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About 12:12 a.m. on August 28, 1991, a New York City Transit Authority (NYCTA) 10-car subway train derailed at a crossover, striking steel columns and concrete supports at the Union Square Station (14th Street). Of the 216 passengers on board, 5 passengers (all in the first car) were fatally injured. One hundred and twenty-one passengers and 24 rescue personnel were transported to 13 area hospitals for the treatment of possible injuries. Of the 145 persons transported to hospitals, 16 were admitted and 129 were treated and released. Damage to the train included the destruction of two cars (1440 and 1437) and substantial damage to other cars. In addition, 23 steel columns supporting the overhead roadway (South Park Avenue) were damaged, resulting in a 1/2-inch to 1 1/4-inch settlement of the roadway. NYCTA estimates that the cost of accident damage, cleanup, and track replacement will exceed $5 million.[1]

As a result of its investigation of this accident, the National Transportation Safety Board made recommendations to the NYCTA concerning providing supervisors retraining on detecting substance abuse in employees, revising and updating the operating rulebook, and establishing responsibility in the operating department for developing, administering, and interpreting the operating rules.

The Safety Board found in its investigation that NYCTA rules[2] 103(h) and 103(i) require dispatchers to determine whether train crewmembers are fit for duty and to remove them from service if they are not. However, these rules do not adequately address the recognition of drug, alcohol, and fatigue problems in train crewmembers, such as conductors or train operators (motormen), as this accident illustrated.

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[1]For more detailed information read Railroad Accident/Incident Summary Report--*New York City Transit Authority, New York, New York,* August 28, 1991 (NTSB/RAR-92/03/SUM).

[2]NYCTA operating rules are contained in the manual *Rules and Regulations Governing Employees Engaged in the Operation of the New York City Transit System*, which was last revised in 1979

The Woodlawn train dispatcher reported that train 4-2333's operator was supposed to start work on August 27 at 11:15 p.m., but the first time he saw the operator the night of the accident was approximately 11:20 p.m. in the dispatchers office. The dispatcher was seated at his desk and observed the operator in the adjacent room. The dispatcher said that although he is very busy at that time of night, he is still required to observe operators as they sign in. He said that when he saw the train 4-2333 operator, he wanted to get the sign-in over with and called for him to come down and sign in. While standing about 4 feet from the dispatcher, the operator asked if his job assignment was the same as the night before. The dispatcher said that it was similar but did not include the deadhead segment of the previous night. At that time, the dispatcher observed the operator's appearance to determine his fitness for duty as required by rules 103(h) and 103(i). The dispatcher reported that he routinely checks to see whether operators are wearing acceptable clothing. The dispatcher found no fault with the operator's clothing but made no observations to determine the operator's impairment from alcohol or drugs.

The train dispatcher believed that he was able to identify a person impaired by alcohol, asserting that "training and living as long as I have lived, I ought to know an alcoholic or somebody when something is wrong." However, the dispatcher took no exception to the train operator's demeanor when he reported for work at 11:30 p.m., when his BAC was believed to have been approximately 0.30 percent. He also did not believe that the operator was impaired when he saw him being taken into the police station about 6 a.m.

The Safety Board believes the operator's BAC seriously affected his ability to perform his duties and that a more informed evaluation by the train dispatcher would have revealed signs of the operator's intoxication. In this case, such an evaluation would have been critical because the train operator's record from the time that he had been promoted to train operator in July 1988 had not shown a pattern of absenteeism and leave abuse that might have revealed alcohol abuse.

Although the NYCTA's training manual for dispatchers and the *Dispatcher Participant's Guide* both contain rules 103(h) and 103(i) requiring fitness-for-duty determinations to be made by dispatchers, these manuals do not clearly define what constitutes fitness for duty. Before 1989, the NYCTA did not provide formal guidance to dispatchers on what to look for to determine fitness, including how to recognize indications of drug and alcohol abuse. In 1989, the NYCTA instituted a substance abuse training program that has evolved into an 8-hour course. The train dispatcher reported that he had received some information concerning the signs of drug and/or alcohol impairment through a movie shown in the superintendent's office at Grand Central Station after work one morning, and his training record indicates that he had received 2 1/2 hours of substance abuse training in November 1989. The Safety Board believes that the current substance abuse training program should include the retraining of all supervisors who had received shorter versions of the substance abuse training in previous years and also provide periodic refresher training.

In its investigation, the Safety Board also examined the adequacy of the NYCTA's administration and interpretation of the operating rules as they applied to the actions of operating personnel (train operators, conductors, and towermen) and to the signals governing train movements.

However, the Safety Board discovered during its investigation that these rules are often inconsistent with NYCTA's actual mode of operation. For instance, although rules 106(b) and 107(b) could be interpreted to mean that both the conductor and train operator (motorman) are in charge of various phases of a train's operation, in practice, the conductor has very little control over the train.

Since train operators have been issued radios and are capable of direct communication with the command center, the responsibility of the conductor has eroded to the point of calling stations over the train's public address system, opening and closing the doors, and overseeing passenger behavior on the train. According to the NYCTA Board of Inquiry, even though NYCTA training for new conductors[3] states that the conductor is in charge of the train, a conductor realizes after "about 2 weeks" of actual operation that the train operator is in charge.

Rules 106(c) and 107(b) state that the train operator (motorman) takes orders from the conductor regarding the starting, stopping, and general operation of the train and that the conductor is in charge of the train. However, when the conductor was asked his understanding of these rules about his authority to take a train out of service, the conductor replied, "I have to inform the command center, and they make the decision."

The only rule that charges the conductor directly with stopping a train is rule 107(f), which requires the conductor to stop the train and investigate when the train operator fails to make a station stop. In this accident, the rule most relevant to the train operator's conduct was rule 36(c), which recognizes that overrunning and stopping short of a station platform does happen. However, this rule does not contain any specific instructions for the conductor to investigate the cause, stop the train, or report the train operator's conduct.

Had the rules been sufficiently specific on how to handle this situation or had the conductor clearly understood that it was within his authority to stop the train in an emergency, the accident might have been prevented. The Safety Board believes that NYCTA management should more clearly define the authority, duties, and responsibilities of the conductor and the train operator in its operating rules and ensure that these rules are not in conflict with NYCTA training programs.

Safety Board investigators also found in their investigation that unlike railroads and most transit authorities, the NYCTA does not designate a person familiar with the transit system's daily operating procedures to speak with authority about the operating rules and their consistent interpretation and application.

For example, NYCTA labor relations and operations personnel, as well as instructors, dispatchers, and towermen, all interpreted rule 109(m), which governs the signal system, differently. The labor relations department charged the towerman at Grand Central Station who had established the route for train 4-2333 with violating rule 109(m) for clearing the home signal for the diverging route before the train had passed the approach signal. This charge was dropped when operations personnel pointed out that the home signal (signal 132) establishing

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[3]The conductor of train 4-2333 had been employed by NYCTA for about 3 years but had worked regularly as a conductor for only the 6 weeks before the accident. Before that, he had worked as a conductor for about 1 week after his initial training and then became a construction flagman

the diverging route for train 4-2333 was grade-time controlled,[4] and therefore, the changing of the signal aspect to permit movement beyond the home signal was automatic and dependent on train 4-2333's speed and not the towerman's action.

Because the 1979 version of rule 109(m) did not reflect signal operations, the NYCTA revised the rule after the accident. However, regardless of rule 109(m), the signal aspect of signal 134 (yellow over green with an illuminated D) immediately preceding signal 132 establishing the diverging route directed the train operator to slow and prepare to take a diverging route or stop. All of the signals in the area of the accident are described in the operating rulebook except the approach signal displaying yellow over green with an illuminated D, which was put in use after the last rulebook revision in 1979. Any new signal aspect, such as this signal aspect, and its official indication must be included in the operating rulebook to ensure that all train crewmembers are trained and familiar with the signal's purpose.

The safe operation of trains, whether in the general railway industry or in a transit system, depends on management's ability to administer and interpret the operating rules and ensure that actual train operations are conducted within those rules. Given the circumstances of this accident, it appears that the NYCTA's operating rules are administered and interpreted by the labor relations department, a management entity that is not directly involved in the daily operation of the system and is not fully aware of actual practices at the operating level.

To provide a safe operating environment for the public, the Safety Board believes that the NYCTA needs to establish a position or a department staffed by persons who are familiar with and directly associated with the daily operation of the system to administer and interpret the operating rules. Further, the Safety Board believes that the NYCTA needs to revise its 1979 rulebook, *Rules and Regulations Governing Employees Engaged in the Operation of the New York City Transit Authority*, to include changes such as those made to the rules governing the signal system. The new rulebook should be prepared by personnel knowledgeable about NYCTA operations and should clarify those rules placing responsibility on employees involved in train operations.

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

> Provide retraining all supervisors who had received shorter versions of the present substance abuse training course. Also, provide periodic refresher training in drug and alcohol detection for supervisory personnel, such as dispatchers, and other NYCTA employees who are required to monitor the fitness for duty of operating crewmembers. (Class II, Priority Action) (R-92-18)

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[4]A signal set for an "average" approach speed based on the amount of time that it would take a train to travel to it from the previous signal at that speed. In this case, the NYCTA had calculated that it would take a train 11.26 seconds to travel from signal 134 to signal 132 at an average speed of 20 mph. If a train reaches a grade-time controlled signal before the predetermined travel time elapses, the signal indication remains red (stop), a penalty-brake application is engaged.

Revise and update the operating rulebook to include clearly defined duties and responsibilities for operating crewmembers and information on aspects and indications of signals not previously addressed. (Class II, Priority Action) (R-92-19)

Establish responsibility in the operating department for developing, administering, and interpreting, the operating rules. (Class II, Priority Action) (R-92-20)

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 vitally interested in any action taken as a result of its safety recommendations. Therefore, it 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-92-18 through -20.

VOGT, Chairman, COUGHLIN, Vice Chairman, and LAUBER, HART, and HAMMERSCHMIDT, Members, concurred in these recommendations.

By: Carl W. Vogt
Chairman