Log R-641

NATIONAL TRANSPORTATION SAFETY BOARD

Washington, D.C. 20594

Safety Recommendation

Date: May 24, 1993

In reply refer to: R-93-1 through -3

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On July 2, 1991, about 8:45 p.m., Greater Cleveland Regional Transit Authority (GCRTA) train 6612 struck the rear of a westbound GCRTA equipment train on track number 1 (the westbound main track) of the GCRTA Red Line near the West 98th Street station. GCRTA train 6612 had 1 operator and 28 passengers on board; the equipment train had only an operator on board. Both operators and 13 passengers sustained minor injuries. The GCRTA estimates damage to the trains at $5,500.[1]

As a result of its investigation of this accident, the Safety Board is making recommendations to the GCRTA concerning implementing an effective management oversight program, implementing procedures for documenting and controlling the use of the cab-signal cut out switch, and updating *The Rail Rule Book* to reflect current practices and eliminate ambiguous and confusing rules.

The Safety Board recognizes that this accident occurred almost 2 years ago. Nonetheless, it was not the first accident on the GCRTA that the Safety Board has investigated and found management oversight lacking. Between 1975 and the time of this accident, the Safety Board conducted three major accident investigations (in 1976, 1977, and 1985) and four regional accident investigations (in 1977, 1982, 1984, and 1985). The 1976 and 1985 major

[1]For more detailed information, read *Railroad Accident/Incident Summary Report--Rear-End Collision Involving Two Greater Cleveland Regional Transit Authority Trains Near the West 98th Street Station, Cleveland, Ohio, July 2, 1991* (NTSB/RAR-93/01/SUM).

investigations dealt with rear-end collisions on the Red Line, and in its reports[2] on these investigations, the Safety Board noted deficiencies in the GCRTA's oversight of its operations. Because oversight problems have persisted and because they have serious safety implications, the Safety Board is restating its concern and urging GCRTA management to address the oversight issue.

The 1976 investigation prompted the Safety Board to recommend on August 19, 1977, that the GCRTA take the following actions:

R-77-20

Develop a system assurance and safety program that will provide and insure the following:

1. A set of operating rules and procedures that will provide objective requirements for safe and efficient operation.

2. A training program that will originally acquaint operating personnel with the rules and a system of reexamination to keep them current with the rule requirements.

3. A system of supervision which will enforce the rules and will provide an efficient operation.

On November 18, 1977, the GCRTA informed the Safety Board that in response to the recommendation it had done the following:

1. Developed a set of operating rules...;

2. Developed an outline of the basic operator training procedures along with...an annual reexamination to maintain currency with the operating rules; and

3. Implemented a system of supervision which would enforce the rules through proficiency testing to provide efficient operation.

Consequently, the Safety Board classified Safety Recommendation R-77-20 as "Closed--Acceptable Action" on March 22, 1979.

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[2]For more detailed information, read *Rear End Collision to Two Greater Cleveland Regional Transit Authority Trains, Cleveland, Ohio, August 18, 1976* (NTSB/RAR-77/05); *Rear-End Collision of Two Greater Cleveland Regional Transit Authority Red Line Rapid Transit Trains Near the 98th Street Station, Cleveland, Ohio, July 10, 1985* (NTSB/RAR-87/01).

However, in 1985, the Safety Board's investigation of another rear-end collision of two GCRTA trains near the 98th Street station prompted the Safety Board to make recommendations to the GCRTA revisiting the training and supervision issues:

<u>R-87-8</u>

> Perform and document frequent supervisory checks using a systematic procedure to determine if train operators are complying with the operating rules including speed restrictions and signal rules.

<u>R-87-10</u>

> Periodically train and examine all rail train service employees and rail supervisors on the operating rules, operating procedures, and bulletin instructions.

The GCRTA responded to Safety Recommendation R-87-8 on March 4, 1988, July 27, 1988, and October 18, 1988. These responses stated that the GCRTA had procedures in place to

> Provide for a minimum of 2 ride checks per day to note the performance of the operator with respect to speed limits, signals, door operation, calling stops, etc. Provide for a minimum of 6 formal safety ride checks each week during which operators are observed for compliance to operating rules.

In addition, the GCRTA provided the Board with examples of the documentation of a number of ride checks. Further, the GCRTA noted that it had acquired radar guns so that it could monitor speed. Based on this information, the Safety Board classified Safety Recommendation R-87-8 as "Closed--Acceptable Action" on January 17, 1989.

The GCRTA responded to Safety Recommendation R-87-10 on March 4, 1988, and July 27, 1988, stating that all GCRTA rail operators receive annual training on operating rules and procedures under an enhanced program called the "Annual Safety and Refresher Training Program." The GCRTA assured the Board that all operators and supervisors had been trained through an annual refresher program that was presented between September 15 and November 20, 1987, and that the course would be repeated in 1988. Based on this information, the Safety Board classified Safety Recommendation R-87-10 as "Closed--Acceptable Action" on September 29, 1988.

However, as a result of the GCRTA's July 2, 1991, accident, the Safety Board is concerned that despite the GCRTA's assurances that supervisory and training programs have been implemented, a management program does not exist capable of effective internal oversight. The Safety Board believes that had effective oversight existed, this accident would have been prevented, and therefore, the GCRTA should revise its management oversight process so that

train operations are effectively supervised and the operating rules are efficiently and consistently enforced.

As a result of its investigation, the Safety Board also concluded that this accident would have been prevented had the operator of train 6612 not deactivated the cab-signal system because the automatic train control system would have prevented train 6612 from operating at a speed in excess of 15 mph after passing signal X-182. Consequently, the Safety Board also investigated the GCRTA's safeguards against the misuse of the cab-signal system.

A review of the taped conversation between the operator of train 6612 and the tower control supervisor revealed that at no time during the accident trip did the supervisor give the operator permission to cut out the cab signal. Even though GCRTA operators have been trained not to cut out the cab-signal device without permission from the tower control supervisor, no efficiency checks or specific operating rules prohibit their doing so. GCRTA management believed that rule 3.3.1, which prohibits employees from "making unauthorized adjustments or making changes to settings of mechanical, electrical or safety equipment," was adequate to prevent misuse of the cab-signal cutout device, even though supervisors did not use efficiency checks to monitor for compliance. However, this accident demonstrates that the GCRTA procedures requiring dispatchers and tower control supervisors to grant permission to operators prior to their use of the cab-signal cutout are not being consistently followed. The Safety Board believes that cab signals are a safety device and that the GCRTA should maintain written records of approvals to cut out the cab signal.

Further, the Safety Board believes that the GCRTA does not adequately supervise the operators' use of the cab-signal cutout device. To strengthen accountability in this area, the Safety Board believes that tower control supervisors should keep accurate records of when they give operators permission to cut out cab signals. In addition, the Safety Board believes that operator access to the cab-signal cutout switch should be limited and allowed only when authorized by the supervisor.

Finally, the Safety Board found deficiencies in the GCRTA's written guidance to its employees and supervisors. During its investigation of this accident, the Safety Board found several manuals in addition to *The Rail Rule Book* pertaining to the GCRTA's operating procedures. Further, investigators discovered that these publications and *The Rail Rule Book* had not been updated to reflect current operations. For instance, one operating manual did not include the 15-mph speed restriction for entering a signal block when there is a red aspect. In addition, the copy of *The Rail Rule Book* provided to Safety Board investigators was missing several pages and stated that the cab-signal area is in effect only from the Hopkins International Airport station east to the West Park station platform--even though the system at the time of the accident had been extended to 79th Street. The Safety Board believes that such omissions and inconsistencies make it more difficult for train operators to comply with the rules and for supervisors to monitor their compliance.

The Safety Board found that when the GCRTA issues permanent instructions, such as general orders, bulletin orders, and train operations manuals, it does not change *The Rail Rule Book* accordingly. The Safety Board believes the GCRTA should periodically review any guidance it issues and incorporate it into the rulebook, as appropriate, to ensure that the rulebook reflects current practices. When reissued, the rulebook should include the revision date so field supervisors can routinely check, such as when they are conducting proficiency tests, whether an operator's copy of the rulebook is current.

The Rail Rule Book is the primary means that train operators and supervisory personnel have of ensuring that their operating decisions are correct. Decisionmaking becomes more difficult when an employee's rulebook has no effective date, is missing pages, and does not include all the rules that have already been posted by general or bulletin orders.

The Safety Board also believes that the GCRTA should review and update its rulebook to prevent problems that could be caused by rules that conflict or can be misinterpreted.

The Safety Board believes that had the operating rules more clearly defined how operations should be conducted and had GCRTA management ensured that train operators understood that these rules would be enforced, this accident could have been prevented. Indicative of the GCRTA's lack of clear procedures and consistent enforcement of the operating rules is the fact that the GCRTA did not even post bulletins (much less update its rulebook) on when and how to cut out cab signals until after this accident. In addition, during the course of its investigation, the Safety Board found a number of undesirable situations that could have been remedied by clearly written and consistently applied operating rules:

- The operating rules do not specify what operators should do if their trains are delayed while using cab signals.

- The operating rules allowed train 6612's operator to use line-of-sight rules instead of using the cab-signal system.

- The operator of train 6612 failed to get permission from the tower operator to cut out the cab-signal system, a common practice.

- The train operator in this accident cut out a functioning cab-signal system in order to move faster, thus eliminating a built-in safety device.

- Only after this accident did the GCRTA post bulletins outlining when and how to cut out cab signals.

- The GCRTA is not making optimal use of its investment in a state-of-the-art train control system when it uses the technology ineffectively.

The Safety Board believes that the GCRTA should rewrite *The Rail Rule Book* to reflect current practices and to clarify or eliminate ambiguous and confusing rules.

Therefore, the National Transportation Safety Board recommends that the Greater Cleveland Regional Transit Authority:

> Implement a management oversight program that effectively supervises train operations and enforces the operating rules. (Class II, Priority Action)(R-93-1)
>
> Develop and implement procedures for recording the use of the cab-signal cutout to help prevent its unauthorized operation, and increase accountability for granting permission to use the cab-signal cutout and limit operator access to it by allowing operator access only when authorized by the supervisor. (Class II, Priority Action) (R-93-2)
>
> Periodically update *The Rail Rule Book* to reflect current practices, dating each revision so it can be readily verified as the most current version, and rewrite *The Rail Rule Book* to clarify or eliminate ambiguous and confusing rules. (Class II, Priority Action) (R-93-3)

As a further result of this report, the Safety Board reiterated the following recommendation to the State of Ohio:

> <u>R-91-37</u>
>
> Develop or revise, as needed, existing programs to provide for continual and effective oversight of rail rapid transit safety. The elements of the oversight program should include reviews of maintenance and inspection records, accident investigation activities, audits of system safety program plans, reviews of the transit system safety department, reviews of training programs, monitoring of accident data, and periodic inspections of equipment and infrastructure.

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-93-1 through -3 in your reply. If you need additional information, you may call (202) 382-6846.

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

By: Carl W. Vogt
Chairman