National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: SEP 16 1997

In Reply Refer To: R-97-47

Mr. P. Gregory Conlon
President
California Public Utilities Commission
505 Van Ness
San Francisco, California 94102

About 6:30 a.m. on April 26, 1997, a San Francisco Municipal Railway (MUNI)[1] light rail vehicle (LRV)[2] train was involved in an accident at Ocean Avenue in San Francisco, California. The train was in nonrevenue service (no passengers). The third car, which was the last car of the train, derailed at a switch, resulting in a collision with a handicapped passenger loading platform, destroying the car and the platform. No injuries were reported; property damage, including replacement of the LRV, exceeded $2.2 million.[3]

The accident occurred after the operator, who had been assigned to a single-car train, was instructed to tow a second car to the Embarcadero Station. The operator inadvertently coupled a third car to the train, which, upon exiting the MUNI yard, had to negotiate a track switch with a very sharp curve at Ocean Avenue. At this location the MUNI tracks are embedded in the street, and painted yellow markings on the pavement indicate to the train operator when the train is clear of the switch.

[1]MUNI operates 831 buses, 128 LRVs, and 39 cable cars. The LRVs operate over 75 route miles in the city of San Francisco, California, carrying more than 123,000 passengers daily during the week and 60,000 passengers on Saturdays.

[2]MUNI LRV cars are self-propelled; all trucks are powered from an overhead catenary. The accident car, built by Boeing, was 73 feet long and weighed 67,000 pounds.

[3]MUNI's Boeing-built LRV cars that have sustained significant damage in accidents are not being repaired, but placed in storage. To maintain the LRV fleet, MUNI is purchasing new cars from the Italian firm of Breda Costruzioni, S.p.A. for approximately $2 million.

The operator accelerated his train at the two-car marker to gain power for climbing the steep grade. This sudden gain in acceleration caused the third car to climb the rail in the switch and derail. The operator, unaware that he had a three-car train and that the last car had derailed, continued to accelerate his train for about 800 feet, and the last car swayed back and forth along the track and street, eventually colliding with a handicapped passenger loading platform. The Ocean Avenue location is adjacent to a college campus; early on Saturday morning, no passengers were on or near the platform.

Between December 1996 and April 1997, MUNI recorded four other accidents that came to the attention of the Safety Board. Although there were no fatalities, the Safety Board began to monitor activity on MUNI; and, concerned about the number of accidents in a 5-month period, the Board investigated the April 26 incident. Since then, MUNI has had five additional accidents. Based on accident information provided by MUNI, the Safety Board determined that these 10 accidents showed a broad range of unsafe practices and operational deficiencies. Three accidents were related to stop signal violations, and four were the result of poor judgment on the part of the operator. Inadequate oversight of the train operator and inadequate track and equipment maintenance were factors in the remaining accidents.

Safety Board investigators met with MUNI officials on four occasions to discuss the safety problems associated with these accidents. Despite efforts by MUNI to alleviate the safety problems, accidents continued to occur. The Safety Board is concerned that the high incidence of accidents (10 in 8 months) and their severity (10 minor injuries and $3.6 million in equipment damage, as well as unreported property damage) indicate that a systemic safety problem may exist on MUNI.

The Safety Board has repeatedly stated its concern for the safety of passengers traveling on the Nation's rail rapid transit systems. The increasing number and severity of accidents in the industry led the Safety Board to undertake a safety study of such systems, and the Board issued its results, *Oversight of Rail Rapid Transit Safety* (NTSB/SS-91/02), on July 31, 1991. In the study, the Safety Board made safety recommendations to all States in which rail rapid transit systems operated. The Board asked that the Governor of California:

R-91-37

> 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 programs, reviews of the transit system safety department, reviews of training programs, monitoring of accident data, and periodic inspections of equipment and infrastructure.

On March 26, 1996, the Director of the California Public Utilities Commission (CPUC) responded to Safety Recommendation R-91-37, stating that in accordance with the Federal Transit Administration's (FTA's) final rule on "Fixed Guideway Systems; State Safety Oversight" (49 Code of Federal Regulations Part 659), the commission was to be the State

oversight regulatory agency for MUNI. In addition, CPUC staff were to receive FTA training in transit rail accident investigation, system safety, and system security to meet the FTA requirements by January 1, 1997, the effective date of the final rule. As a result of the CPUC's action, Safety Recommendation R-91-37 was classified "Closed—Acceptable Action."

Before the FTA final rule took effect, the Mayor of San Francisco, the San Francisco Public Utility Commission, and the San Francisco Board of Supervisors shared oversight responsibility for MUNI. The CPUC already had oversight responsibility for five other transit operations in the State when the Governor assigned oversight responsibility for MUNI to the commission to comply with the FTA's final rule.

During the investigation of the April 26, 1997, accident, Safety Board discussions with the CPUC uncovered a lack of urgency in the commission's efforts to address the recurring accidents on MUNI. Indeed, the CPUC intended to give priority in its safety audits to other fixed guideway systems that had not experienced the level of accidents that MUNI had. In light of the high number of accidents on MUNI since December 1996, the Safety Board is concerned that the CPUC has not taken the initiative to immediately conduct a safety audit of the system.

On July 11, 1997, MUNI's Director for Public Transportation informed Safety Board investigators of a 10-point action plan intended to prevent the recurrence of such accidents. The action plan addresses specific problems identified in these accidents and includes measures to improve adherence to rules and inspection procedures. However, the plan remains unclear concerning when it is to be fully implemented, how its effectiveness is to be evaluated, and where the responsibility resides for its execution.

Moreover, one official, MUNI's System Safety Administrator, has safety oversight responsibility for 455 buses, 376 trolleys, 153 rapid transit vehicles, 39 cable car operations, and more than 1,830 operators. The official who had been responsible for MUNI safety oversight for more than 20 years recently retired; his replacement has been in the position for about 1 year. Given the number of passengers on MUNI (over 3/4 million per week) and the number of operators and equipment, the Safety Board is concerned that the responsibility for safety oversight could overwhelm one individual and diminish the effectiveness of the oversight effort.

MUNI is a member of the American Public Transit Association, which has an industry-recognized "Rail Safety Audit Program" that it has conducted for several members upon request. Transit-related consulting firms are also able to perform safety audits. An independent evaluation of the MUNI system could provide management with important information for improving the safety of the transit operation. However, MUNI has not sought an independent audit of its system operations to ensure passenger safety.

The Safety Board concludes that the recent increase in accidents on MUNI, together with an action plan that does not address systemic safety issues, shows inadequate attention to the safe operation of the MUNI transit system. The Safety Board believes that a comprehensive safety review of MUNI's management structure, maintenance programs, and operating procedures is

needed to determine whether training of employees, enforcement of operating rules, and oversight of transit operations is adequate to ensure passenger safety.

Therefore, the National Transportation Safety Board recommends that the California Public Utilities Commission:

> Conduct, with the San Francisco Municipal Railway and an independent safety auditing organization, a comprehensive safety review of the San Francisco Municipal Railway operations and infrastructure that includes: 1) an audit and evaluation of your management structure, maintenance programs, and operating procedures to determine whether employee training, operating rules enforcement, and transit operations oversight are adequate to ensure passenger safety; and 2) the development and implementation of recommendations to correct deficiencies identified in the independent safety review. (R-97-47)

The Safety Board also issued Safety Recommendations R-97-46 to the San Francisco Municipal Railway and R-97-48 to the Governor of California.

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 actions taken as a result of its safety recommendations and would appreciate a response from you regarding action taken or contemplated with respect to the respect to the recommendation in this letter. Please refer to Safety Recommendation R-97-47 in your reply. If you need additional information, you may call (202) 314-6430.

Chairman HALL, Vice Chairman FRANCIS, and Members HAMMERSCHMIDT, GOGLIA, and BLACK concurred in this recommendation.

By: Jim Hall
Chairman