

**PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA**

Rail Safety and Carriers Division  
Rail Engineering Safety Branch  
Rail Transit Safety Section

Resolution ST-37  
Date: June 18, 1998

**RESOLUTION**

**RESOLUTION ST-37. TO ADOPT AN AGREEMENT BETWEEN THE RAIL SAFETY AND CARRIERS DIVISION AND THE SAN FRANCISCO MUNICIPAL RAILWAY (SF MUNI) TO PREPARE A JOINT REPORT ESTABLISHING REQUIREMENTS FOR SAFETY RELATED IMPROVEMENTS TO BE MADE TO LIGHT RAIL TRAIN OPERATIONS**

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**Summary**

The Commission is responsible for safety regulation and oversight of SF MUNI's light rail train operations. Observations of these operations made by the Commission's staff and the National Transportation Safety Board (NTSB) have shown evidence of unresolved systemic safety issues. These issues led to an in depth review of SF MUNI's management structure, operating procedures and maintenance program by a safety review panel of industry experts assembled under the auspices of the American Public Transit Association (APTA). The APTA safety review panel has issued its final report containing 50 recommendations. SF MUNI has prepared a general action plan that addresses all 50 recommendations. In addition, SF MUNI has agreed to prepare a joint report with the Commission's staff identifying a certain number of the APTA safety review panel's recommendations selected for special treatment. These specially selected recommendations will be chosen on the basis of their safety significance and potential for offering the greatest improvements to the safety of light rail train operations. The joint report will also describe the project plans and schedules that will be used by SF MUNI to control implementation of the specially selected recommendations..

**Background**

On January 26, 1996, the Federal Transit Administration issued rule 49 CFR Part 659, State Safety Oversight of Rail Fixed Guideway Systems. On September 20, 1996, the

Commission, acting in response to the federal rule, issued General Order No. 164, Rules and Regulations Governing State Safety Oversight of Rail Fixed Guideway Systems (superceded by G.O. 164-A on October 1, 1997). Paragraph 3.5 of G.O. 164-A authorizes the Commission staff to perform investigations of the design, construction, operation and maintenance of each rail transit agency's fixed guideway system.

SF MUNI came under the jurisdiction of the Commission and General Order No. 164 for the first time on January 1, 1997. During the first nine months of 1997, SF MUNI experienced 146 rail accidents which were reported to the Commission under the rules of General Order No. 164. Many of these same accidents were also reported by SF MUNI to the NTSB. This number of accidents during a relatively short time period led the NTSB to issue a formal report concluding there was sufficient evidence of unresolved systemic safety issues to warrant a formal safety review of SF MUNI's management structure, maintenance programs, and operating procedures. The Commission's staff as well as SF MUNI concurred with the NTSB's conclusions, and a meeting attended by all three parties was held on September 18, 1997 to make arrangements for APTA to conduct a comprehensive safety review of SF MUNI. APTA then assembled a safety review panel of industry experts, and with full time participation by the Commission's staff, the panel performed its review during the first week of February, 1998.

The APTA safety review panel issued a final report containing its findings and recommendations during the last week of April, 1998. The report, which is appended to this resolution, was received by SF MUNI and forwarded to the NTSB and the Commission on April 24, 1998. The APTA safety review panel's recommendations address the full spectrum of SF MUNI's activities. They cover everything from capital improvement project management issues to issues dealing with the City's civil service system, security and labor management relations. The APTA safety review panel did not limit its recommendations to issues that are strictly rail safety-related, which is the sole area of interest to the Commission.

### **Discussion**

The APTA safety review panel's final report has been reviewed by the Commission's staff and SF MUNI. Both parties are in agreement that the report accurately describes the panel's observations. The 50 recommendations presented in the report are comprehensive, consistent with, responsive to, and justified by the information the APTA safety review panel gathered during its on-site review. SF MUNI has developed an action plan to address all 50 of the recommendations. The Commission supports SF MUNI's plans to act upon those recommendations. The Commission also believes a number of the safety recommendations have particular safety significance, are more easily defined, and should be promptly addressed.

SF MUNI has agreed that, in addition to carrying out its action plan to address all 50 recommendations, it will, in cooperation with the Commission's staff, select from the APTA safety review panel's final report a certain number of safety recommendations for immediate special attention and further follow up by both SF MUNI and the Commission's staff. SF MUNI has also agreed to prepare specific, detailed, project plans and schedules to cover each of the specially selected safety related recommendations. The purpose of these project plans and schedules is to help assure that each of these specially selected safety recommendations is successfully implemented in a reasonable time period. Each project plan will describe the tasks to be performed and be supported by a milestone schedule prepared by a designated project manager.

### Findings

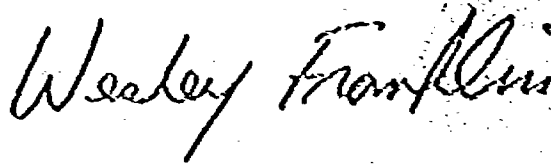
1. Observations by the Commission's staff and the NTSB have revealed evidence of unresolved systemic safety issues associated with SF MUNI's management structure, maintenance program and operating procedures.
2. An APTA safety review panel issued a final report containing 50 recommendations for safety improvements.
3. SF MUNI has prepared an action plan to address all 50 recommendations.
4. SF MUNI has also agreed to select, in cooperation with the Commission staff, from the APTA safety review panel's final report, a certain number of safety specific recommendations for special attention and formal follow up by both SF MUNI and the Commission's staff.
5. SF MUNI has agreed to prepare detailed, specific project plans and schedules to control the implementation of each of these specially selected, safety related, recommendations.

### Order

1. The APTA safety review panel's final report dated April, 1998 and appended to this resolution is accepted.
2. As previously agreed to by the parties, SF MUNI, in cooperation with the Commission's staff, shall prepare and submit a joint report to the Commission within 90 days of the date of this resolution.

3. The joint report shall identify those recommendations made by the APTA safety review panel that address issues of the most immediate and far reaching safety concern to SF MUNI's light rail train operations. Specifically, the selected recommendations shall be limited to those that appear to offer the greatest benefit in terms of promptly resolving identified systemic safety issues and preventing future accidents from occurring.
4. The joint report shall also describe the project plans and milestone schedules that will be used to assure that the tasks required to implement the specially selected recommendations are properly performed.

I certify that this resolution was adopted by the Public Utilities Commission of the State at its regular meeting in California held on June 18, 1998. The following Commissioners voting favorably thereon:



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WESLEY M. FRANKLIN  
Executive Director

Richard A. Bilas  
President  
P. Gregory Conlon  
Jessie J. Knight, Jr.  
Henry M. Duque  
Josiah L. Neeper  
Commissioners

**FINAL REPORT**

**OF THE**

**AMERICAN PUBLIC TRANSIT ASSOCIATION**

**SAFETY REVIEW PANEL**

**OF**

**LIGHT RAIL OPERATIONS, MAINTENANCE  
TRAINING AND SYSTEM OVERSIGHT PROCEDURES**

**FOR THE**

**SAN FRANCISCO MUNICIPAL RAILWAY**

\* \* \* \* \*

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RAIL SAFETY REVIEW BOARD**

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**FINAL REPORT**  
**OF THE**  
**AMERICAN PUBLIC TRANSIT ASSOCIATION**  
**SAFETY REVIEW PANEL**  
**FOR THE**  
**SAN FRANCISCO MUNICIPAL RAILWAY**

**APRIL 1998**

**PANEL MEMBERS:**

**Anthony J. Schill, Chair**  
**James T. Brown, Jérôme Kirzner, Leroy B. Spivey,**  
**Paul J. Lennon, Conrad E. Santana**

**Published by:**

**The Rail Safety Review Board**

**of the**

**American Public Transit Association**  
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**Washington, D.C. 20005**

**RAIL SAFETY REVIEW BOARD**

**Chair.....Langley C. Powell**  
**Board Staff Advisor.....Paul J. Lennon**

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This report, including any or all of its findings and recommendations contained herein, is guidance to be used by the transit system in the transit system's implementation of its programs and activities, at its discretion. Neither the Report nor any of its findings or recommendations are intended to guarantee or otherwise ensure the safety of the transit system's operations and should not be relied on as such.

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**APTA SAFETY REVIEW PANEL  
SAN FRANCISCO MUNICIPAL RAILWAY - FINAL REPORT**

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**FOREWORD**

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The American Public Transit Association (APTA) is a non-profit, international association composed of transit service providers, transit-related businesses, academic institutions and government agencies. APTA's members serve the public interest by providing safe, efficient and economical transit services and products. APTA members serve over 90% of the public transportation users in North America.

APTA sponsors the Rail Safety Review Board (RSRB), which upon request by an APTA member provides an independent review of a particular rail transit system's safety-related projects and programs. The Rail Safety Review Board also provides teams of transit experts for on-the-scene investigation of major rail accidents. RSRB peer reviews are conducted by panels composed of transit professionals having extensive experience in transit operations, training and safety.

This report contains the findings and recommendations of the Safety Review Panel established in January 1998, at the request of the San Francisco Municipal Railway. This Panel was charged with reviewing the Municipal Railway's light rail operations and maintenance functions; management oversight activities; training programs and system safety policies, programs and procedures. The Review was conducted February 2 through February 6, 1998.

APTA and the Panel extend thanks to the staff of the San Francisco Municipal Railway for the high level of interest and cooperation without which this Review would not have been possible. Our industry takes great pride in the information sharing aspect of its internal relationships such as demonstrated by the peer review process.

Interviews and discussions were conducted with staff at all levels, including line supervisors and Light Rail Vehicle (LRV) operators. The Panel was impressed with the caliber and dedication of the employees of the Municipal Railway. All of the MUNI employees with whom we had contact expressed a strong desire to learn from the experiences of the panelists to further enhance and supplement existing MUNI programs. With such team commitment and spirit MUNI will be able to accomplish its objective for the creation of a true system safety culture inclusive of: an enhanced safety oversight organization; improved safety and occupational training for all employees; enhanced organization communications; improved accident investigation procedures; and an enhanced control center. These program improvements will enhance management oversight of MUNI's light rail operation and will assure the continued delivery of safe public transportation service.

The Panel is confident that adoption of the management and safety programs proposed as Recommendations in this Report will do much to ensure that the San Francisco Municipal Railway becomes an industry leader in the delivery of public transit service of the highest possible quality.

**PART I. INTRODUCTION**

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**Request by MUNI**

This review was conducted in response to the request of Mr. Emilio R. Cruz, Director of Public Transportation, San Francisco Municipal Railway. This request was made to APTA's President, William W. Millar, on December 11, 1997. Mr. Cruz requested that this Review cover MUNI's management structure, system safety programs, operating rules and procedures, employee training and certification, and vehicle/facility maintenance programs.

The review was to include but not be limited to the following:

- Proposed new management structure, in terms of authority, coverage and adequacy to address the scope of responsibilities.
- Adequacy of personnel resources as compared to system operating and maintenance requirements.
- Effectiveness of procedures which support MUNI policies, including procedures for safety audits and investigations; enforcement of rules, regulations, and procedures; follow-up actions relative to violations; documentation of findings and reporting.
- Adequacy of safety, operations, and maintenance training.
- Training and certification of vehicle operators, supervisors and maintenance personnel; adequacy of operations and maintenance rules and procedures, oversight and enforcement.

MUNI also requested that the California Public Utilities Commission (CPUC) have an oversight role and, during the course of the Review, the CPUC should be afforded free access to all meetings and interviews; witness inspections; review plans, schedules, working papers and reports; and provide input during the Review. The schedule for conducting this review was developed after discussions between MUNI and APTA staff. It was agreed the panelists should be experienced professionals with working rail transit system knowledge and expertise in the following disciplines:

- Operations
- Maintenance
- System Safety
- Training

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The Safety Review Panel consisted of the following members:

**ANTHONY J. SCHILL (chair)**  
General Manager  
Niagara Frontier Transit Metro System, Inc.  
Buffalo, NY

**LEROY B. SPIVBY**  
Vice President, System Safety  
MTA New York City Transit  
Brooklyn, NY

**JAMES T. BROWN**  
Chief of Safety  
Massachusetts Bay Transportation Authority  
Boston, MA

**CONRAD B. SANTANA**  
System Safety Program Coordinator  
American Public Transit Association  
Washington, DC

**JEROME KIRZNER**  
Director of Rail Services  
ProgramsCalTrain  
San Carlos, CA

**PAUL J. LENNON (staff advisor)**  
Manager-Safety and Security  
American Public Transit Association  
Washington, DC

San Francisco Municipal Railway liaison was provided by Brian Cunningham, System Safety Administrator. APTA's Paul J. Lennon provided panel coordination and logistical support. Mr. Lennon also provided member input for drafting the Final Safety Review Report.

### Methodology

A serious accident involving a MUNI light rail vehicle (LRV) occurred on April 26, 1997. This accident was investigated by the National Transportation Safety Board (NTSB), which subsequently issued a recommendation (R-97-46) encouraging MUNI to seek an outside review. MUNI subsequently requested APTA to form and schedule an official peer review under the auspices of APTA's Rail Safety Review Board. The Safety Review Panel was formed in January of 1998, and was charged with reviewing various aspects of MUNI operations, as outlined on page four.

During the course of the review, members of the Panel frequently utilized all of MUNI's services, including that provided by LRVs, trolley coaches, motor coaches, and cable cars. The Panel met, both as a group and individually, with a wide range of MUNI employees. This report will not attempt to replicate all of the information gained by these activities. It will, however, emphasize areas of significant importance and will document conclusions made as official recommendations. The recommendations are divided into ten (10) major subject headings. MUNI staff should focus their efforts on these major subjects to enhance overall operations and safety. These ten areas are: *General Management Issues; System Safety Management; Training; Operational and Maintenance Issues; Capital Program Management; Risk Management; Human Resources; Labor Relations; Security; and New Organizational Alignment.*

### Scope of Report

The Panel received thorough briefings on: MUNI's management and organizational structure; employee selection and training; safety programs; accident investigation process; internal and external emergency response procedures and coordination; MUNI operating rules and procedures; the frequency with which such rules and regulations are updated; and the methodologies by which MUNI communicates among its departments to resolve safety problems and/or contain hazards encountered. The Panel met with operations, safety, maintenance, and training personnel, and was provided with a complete overview of the programs in place. Members of the Panel, both individually and as a group, rode rail vehicles, motor coaches and trolley coaches in order to experience actual vehicle operation with specific attention to safety, operator conduct, and customer service.

During the exit conference the Panel provided senior MUNI management, CPUC representatives, and a representative of the NTSB with a detailed verbal summary of its findings and recommendations. It must be emphasized that the efforts of the Panel were concentrated on MUNI's light rail operations and maintenance organization. Specific attention was given to management and system safety oversight, employee training and certification, control center operations, and preventive maintenance programs as the key elements which will support and ensure safety in MUNI's light rail operation.

**PART II. AN OVERVIEW OF PANEL ACTIVITY**

February 2, 1998

The Panel formally convened on the morning of February 2, 1998. MUNI's Director of Public Transportation, Emilio R. Cruz, reaffirmed the purpose of the peer review. Mr. Cruz provided an overview of the proposed reorganization of MUNI's management structure with special emphasis on enhanced safety and oversight of operations. Mr. Cruz also explained the relationship between the City of San Francisco and MUNI, as well as the City's Civil Service system and its application to MUNI.

Mr. Robert Campbell, Western Region Railroad Division Investigator for the National Transportation Safety Board, then provided the Panel with background information on the NTSB investigation of the LRV accident of April 26, 1997, as well as the rationale for its Recommendation R-97-46. California Public Utilities Commission (CPUC) representatives Don Johnson and Gary Rosenthal followed with an overview of CPUC's role in state safety oversight of MUNI's light rail operations as well as the CPUC's role in this review. Panel Chair Anthony J. Schill explained what the Panel envisioned its activities would encompass. The CPUC staff concurred with the Panel's projected schedule and sequencing of activities.

Panel activities on the first day consisted primarily of a series of in-depth briefings by MUNI staff. These briefings were conducted in the MUNI General Offices at Presidio. Each briefing included an extensive question and answer period.

David Stumpo, Chief Operating Officer, provided a thorough overview of MUNI's light rail operations and maintenance programs. Peg Devine, MUNI's Deputy Director of Capital Projects, then briefed the Panel on MUNI's programmed capital projects. Tanya Meyers, Director of Human Resources, provided supplemental information on MUNI's proposed management organization, as well as various personnel/administrative functions.

Following a working lunch, the Panel was first provided with a briefing on transportation-related activities. Personnel involved in the briefing were: Louis Johnson, Deputy Chief Operating Officer; Kenny Rodriguez, Metro Operations Superintendent; Thomas Piggee, Superintendent of Operations Training; Joyce Garay, Assistant Superintendent, Rail Operations Training; Mick Rakestraw, Division Superintendent, Metro Operations; and Robert Louie, Superintendent, Central Control.

The transportation briefing covered the accident investigation and review process, MUNI's Accident Review Board, the duration and types of training provided for LRV operators and supervisors, mobility process and frequency by which operators can move from bus mode to LRV, and the process employed by the Transportation department for overseeing the quality and safety of service.

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A review of the Vehicle Maintenance department's responsibilities and activities was presented by Jon Miller, General Superintendent, Electrical Vehicle Maintenance; Robert Olson, Superintendent, LRV Running Repair; and George Manassis, Superintendent LRV Heavy Overhaul. The vehicle maintenance presentation covered the types of light rail vehicles MUNI operates, the frequency of inspections performed, and the type of vehicle inspections. The Panel also discussed with the maintenance managers the process employed for tracking vehicle and equipment failures. Some points that surfaced in this initial discussion included: the age of the older LRVs; that 45 to 50 LRVs out of a fleet of 140 are typically out-of-service; there are fewer people employed to perform LRV maintenance than in the late 1970s to early 1980s; there is insufficient storage space in the yards to house all the LRVs; there are reliability issues with the new Breda LRVs; there is deferred maintenance on non-vital items on the LRVs (i.e., windows, signs, seats, etc.); and there is a large use of overtime to address maintenance issues which causes employee fatigue.

The next presentation was by the management of the Track Maintenance Department including Win Hobilzenlle, General Superintendent Facilities Maintenance and Susan Krichner, Supervisor Track and Switch Repair. This briefing covered the frequency of track inspections conducted by the MUNI track crews, the review of that work by Track Maintenance management, and records maintenance. It was learned that this department, despite a vacancy rate of 10%, is performing a high volume of regular maintenance. In discussions about derailments, the Panel learned there are large numbers of derailments at switches with specific causes going undetermined for many of those switch derailments. It also was learned the track department is not notified of derailments in all instances.

An overview of the Overhead Lines Maintenance department concluded the briefing held on February 2. MUNI managers from this department included: Ray Favetti, General Superintendent Facilities Maintenance; Vic Lameyse, Superintendent Overhead Lines Maintenance; Rich Hahn, Assistant Superintendent Overhead Lines Maintenance. The Panel sensed that while a significant level of maintenance was being performed by the department's employees in accordance with the prescribed schedule, it was apparent that there was a "disjoint" between maintenance and MUNI's safety organization. None of the maintenance personnel were conversant about MUNI's System Safety Program Plan (SSPP), although it was learned later that all Senior Operations/Maintenance managers had been afforded an opportunity to review and comment on the SSPP. Additionally, maintenance procedures and rules were in need of revisions.

Following the Overhead Lines Maintenance briefing, the Panel utilized MUNI service and made informal safety observations and evaluations of service delivery.

February 3, 1998

The second day of the Review began with a tour of Central Control at West Portal. The tour was conducted by Robert Louie, Superintendent, who provided a summary of the control center's capabilities. The Panel's consensus was that the control center's technology was largely that of the 1970s era and that structurally and institutionally Central Control served a "communication" role as opposed to the "coordination and control" function more typically found in contemporary multi-modal and rail systems. The Panel discussed operating and emergency procedures applicable to a variety of scenarios with control center personnel, and reviewed special operating procedures (SOPs), operating bulletins, accident incident logs, MUNI's daily log, and other report forms used by MUNI's control center personnel.

The Panel also discussed at length the current role and degree of control the MUNI Operations Control Center (OCC) has with regard to its service operation. The Panel also discussed how OCC staff are selected and trained.

The Panel observed that MUNI's OCC did not function as a true operations control center. Emergency response procedures were not readily available to all OCC personnel. OCC personnel also appeared to have little control in the management of emergencies. Radio communications were found to be inadequate, with very limited ability to supervise control of ongoing operations. The facility was congested and housekeeping appeared to be poor. MUNI's safety program was not a part of OCC day-to-day operation.

It was also a perception by the Panel that there was a significant lack of exposure of Central Control staff to state-of-the-art technology available elsewhere.

The Panel used MUNI's service to travel to the Curtis Green Maintenance Facility. MUNI's safety programs and the oversight process planned under the new MUNI organization were discussed with Brian Cunningham, Acting Safety Administrator. The Panel shared their experiences with Mr. Cunningham and discussed approaches employed to accomplish effective system safety oversight in other rail systems throughout North America. In its discussions with other MUNI employees relative to system safety, the Panel related that there was a question of the Safety Administrator's actual authority within the proposed MUNI reorganization, as well as a questionable sense of mission and vision for the new office. There appears to be no formal accident prevention orientation for supervisors as part of their training, nor any procedures for developing system-wide input for new "systems" such as LRVs, from operators, maintainers, supervisors, etc., as well as analysis and integration functions that would benefit such new systems integration into MUNI. Mr. Cunningham concurred with these initial observations and findings by the Panel, adding these were some of the issues that MUNI and its new safety office have as priorities for the near future.

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In the afternoon, the Panel traveled to MUNI's Systems Maintenance Training Center at the Training Academy Building. There, General Superintendent of Facilities Maintenance, W.B. (Win) Hobilzenlle, and Robert M. Ramirez, Track Superintendent, discussed Track Maintenance issues that addressed areas of concern from better track maintenance approaches and practices to staffing, documentation, standard operating procedures and training. The members also identified the need for a solid Maintenance Management Information System (MMIS) that would help MUNI by using reliable data for track maintenance applications through a failure trend analysis process.

The Panel also interviewed Richard J. Dale, Jr., Manager of Training and Development, and discussed MUNI's training programs and projects, present and future. Issues included training materials configuration and document control; lesson plan structure and development processes; instructor qualifications; training standards; on the job training (OJT) documentation; departmental standard operating procedures; the Breda new car training program; and support documentation.

Training appeared fragmented in some of the crafts. Curriculum development to support MUNI's training needs was not coordinated with the training function. Personnel assigned to support the training function were not fully qualified to teach current state-of-the-art technology. Training functions had very little input on training curriculum. Training sessions, training manuals and technical support by LRV contractors was unsatisfactory. The centralization of training under Human Resources can be a significant improvement provided maintenance and operational personnel define their training needs and the levels of training required. Additionally, training personnel must be a cross-section of professional trainers with a mixture of seasoned operational and maintenance personnel properly integrated into the system.

After the Panel returned to Presidio, Phil Chin, Manager of MUNI's Transit Police and Security, described how MUNI provides security and transit police coverage for bus and rail services. Hours of coverage, deployment of police resources, the perception of MUNI's customers regarding the safety and security of services, and the need for a comprehensive security analysis of the MUNI system for both vehicles and facilities were covered in this discussion.



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To conclude the formal activities of February 3rd, the Panel met with the President of the Transport Worker's of America, AFL-CIO, Local 250-A, Ray J. Antonio, and also the Union's Executive Vice President, William K.Y. Jung. A variety of issues were covered in the discussion, including the overall labor relations climate, institutional issues, the Union's role in MUNI's accident review board, union involvement in the development or modification of operating rules and procedures, and employee development. The Union indicated concern with accident control programs that are primarily focused on the disciplining of employees, but also mentioned there were many opportunities for MUNI management to work with the Union in resolving issues, especially regarding reducing accidents and enhancing safety awareness. They also cited the Joint Labor Management Board (JLMB) as an example of a process that could work well for all parties.

A malady impacting MUNI, felt by both management and the Union in recent years, has been the reduction in financial support. According to the Union, that situation is usually first felt in the form of reduced preventive maintenance and deferred re-instruction of transit operating employees. This is experienced by MUNI customers on the street in the form of trips dropped and accidents, as well as in the form of stress for both employees and managers who are "stretched to their limits." Mr. Antonio commented that this is a problem for most transit systems across North America, but that MUNI has been particularly hard hit. He credited the Mayor of San Francisco, however, for recently providing an additional \$17 million to improve MUNI's service.

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February 4, 1998

On Wednesday morning, the Panel broke into groups to meet with representatives of MUNI's Catenary, Power Distribution, Facilities as well as Signals and Train Control maintenance departments to review maintenance operations. A group of panelists also met with representatives of the City of San Francisco's Chief Trials Attorney's office.

Those panelists involved with the maintenance functions met initially with those managers at Presidio. The discussion focused on current preventative and corrective maintenance programs, the availability and status of system "as built" drawings, maintenance recruitment, and training and staffing requirements.

Most of the maintenance personnel with whom the Panel met were very conscientious about safety. However, the lack of formal detailed procedures, reliability and safety analysis of failing components hampered their ability to keep up with system failures. There was very little system safety interface or input into their operation. Each maintenance organization operated in a stand-alone capacity with a lack of uniform MUNI policy instruction for maintenance.

At the City of San Francisco Trial Attorney's office, members of the Panel met with Patrick Mahoney, Chief Trials Attorney, and Randall Camacho, who are responsible for handling MUNI claims. They discussed how MUNI accidents were investigated, utilizing reports from LRV operator and inspectors, San Francisco police, city claims investigators, and medical investigators. This office, as part of regular analysis, identifies MUNI operators who may seem more prone to accident involvement. Accident analysis information, including any trends as regards to specific employees, is forwarded to the MUNI Director of Public Transportation's office for further action by MUNI management. Messrs. Mahoney and Camacho maintained that more analyses might and should be done of relevant accident data by MUNI, but that MUNI management also had made major efforts of late to ensure operator accountability for preventable accidents - something that was lacking in the past. It was not clear to the San Francisco Trials Attorney's office or to the Panel who currently gets involved in performing accident data analysis within MUNI at present.

Also discussed was the fact that MUNI was self-insured. Although no liability or property insurance is carried, the City does maintain a reserve for handling "large" lawsuits.

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It also was stated that there is a significant workers' compensation problem within MUNI, because the process tends to allow employees to stay away from work as long as possible. It was indicated, too, that the problem appears to be greater within MUNI than with other City department functions. The Panel believes that MUNI needs to establish accountability for the Workers' Compensation Program at the MUNI management level. This program cannot be successfully managed at the city level alone. Reductions in, and control of, first-time injuries must be managed by MUNI, although the City controls the risk management aspects.

In the afternoon, the Panel met with managers from the Heavy Maintenance Repair section. During a tour of their facility, maintenance managers discussed the new Breda vehicles and the current issues associated with vehicle maintenance support, documentation, and spare parts availability. The tour also included a summary of MUNI's light rail vehicle heavy maintenance support programs.

During this tour, attention was directed to the lack of Quality Assurance spot checks on the overhaul of equipment/parts and for the procedures and updates for such overhauls. Also covered in the tour were the electronic repair labs and the electrical repair shop. This tour brought out the evident need for a system maintenance calibration program of tools and test equipment used to adjust/repair safety-critical parts/components.

The Panel noted that general industrial safety efforts were unsatisfactory. Personal protective equipment was not properly utilized. Maintenance employees performed hazardous tasks at heights without appropriate protection against a fall. The Panel inquired about this and was told that the condition had been present since the facility existed. Managers with whom the Panel discussed these issues, however, were receptive and willing to take corrective actions. Additionally, the Panel was impressed by the productivity in the maintenance overhaul shop.

Late in the afternoon, during the maintenance repair facility tours and discussions, some Panel members separated from the primary group to form a subgroup who toured MUNI's Power Control Center. Superintendent Hoy Wong and Senior Powerhouse Operator Robert Hixson provided the Panel with a thorough overview of the traction power operation. Questions concerning the removal of power and its restoration in emergencies, as well as basic maintenance and safety related housekeeping procedures for power control employees, were addressed in detail. That subgroup reconvened with the full at the end of the day and spent the evening "on the system," reviewing the day's activities and talking with MUNI employees.

February 5, 1998

On Thursday the Panel met with Len Olsen, Operations Superintendent - Training and Special Projects. Detailed discussions of the training programs focused on routine report writing; line management duties and responsibilities; overhead lines introductory programs; coach troubleshooting techniques; ADA issues; LRV and PCC personal safety requirements; cable car system training; and line management techniques, as well as Control Center and Field Supervision procedures.

Revising the role of Central Control to more of a "coordination and control" function was explored in detail. Mr. Olsen shared his views on the technology that could be employed to enhance the operation of Central Control, either at the existing site or, preferably, an alternative and less constrained location.

The Panel also met with an LRV operator, James Holland, who had been identified as very experienced in LRV operation. He proved to be very knowledgeable about operating procedures and light rail equipment and presented a balanced perspective on what both MUNI management and the Transit Workers' Union were trying to accomplish.

The Panel next met with Mr. David Banbury, a provisional manager for MUNI, and Kenny Rodriguez, Metro Operations Superintendent. Both confirmed many of the observations made by "front line" operating employees, but they also stated the desire by most managers throughout MUNI to be more proactive and more results-oriented. The Panel also felt that management within MUNI has to be equipped with the right tools and support if it is to be effective and held accountable. Messrs. Banbury and Rodriguez both felt that the talent exists but that it needs to be encouraged and challenged. The lack of quality assurance programs within MUNI is but one example of a currently unmet need, and the strong, readily apparent "politicization" of management and employees within MUNI is an example of a condition that needs to be corrected. The Panel did take note, however, of the F-Line (historical streetcars) having a demonstration quality assurance program in place since its inception.

The Panel then met with Ms. Barbara Allan Conway, Manager of MUNI's Drug Testing Program. Ms. Conway discussed the FTA's 1997 audit of MUNI's drug testing program, as well as how MUNI's program works. The Panel was able to share their experiences with the implementation of their own agencies' drug testing programs. After a question and answer period, the Panel adjourned for lunch, preparatory to spending the remainder of the day conducting field observations of LRV service and meeting informally with LRV operators and street and station supervisors.

In the afternoon, the Panel completed its interview with Ms. Peg Divine, Deputy Director capital projects that had been initiated on Wednesday. Ms. Divine provided the Panel with an overview of the current projects, the organization and the lessons learned from past capital projects. The discussion focused on current capital program issues that required technical input from operating departments and system safety interface. The discussion brought to light the difficulties involved in interfacing with Breda on the LRV project. There are serious issues in the logistics of training and documentation concerning the new LRV contract that should be addressed. The Panel recommended to Ms. Divine that the Capital Project section should develop a system-wide configuration management and document control policy; this should also be incorporated into their future Safety Certification Program

#### February 6, 1998

Much of February 6, the fifth day, was spent in caucus with the Panel developing its comments and recommendations for the exit conference held that afternoon presided over by David M. Stumpo, acting on behalf of Emilio R. Cruz, MUNI's Director of Public Transportation, who was away from San Francisco.

#### Summary of Activities

Throughout the week and during its meetings and discussions with MUNI managers, staff and employees, the Panel had occasion to extensively use MUNI's LRVs, motor coaches, trolley coaches and cable cars. The Panel found the transit vehicles to be operated in a safe and responsible manner. Furthermore, MUNI employees were found to be very customer-oriented, friendly, and focused toward safety. In our discussions with MUNI's employees and supervisors, our initial approach to an individual was usually to ask for directions. These being received, the Panel frequently introduced themselves and provided an overview of our mission. The employees we engaged in this matter were generally open to our questions and observations. They were surprisingly understanding and well informed as to the state of current morale within MUNI and had explanations as to why this morale had come about. All had views of how safety might be corrected and focused upon, especially if adequate financial resources could be provided. We did not find any specific anti-management or pro-union ethos in our on-street or in-station discussions with MUNI employees. Instead, we found a desire to make things right and a "let's get with making MUNI a "world-class" transit system once again" attitude.

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In summary, the Panel found evidence of a positive and professional attitude at all levels within MUNI, with managers and employees who fully understand the importance of providing safe and reliable on-time service. The MUNI managers the Panel met, without exception, were positive and open about their roles and contributions to MUNI's big picture. Rather than adopt a defensive stance when asked a question about why, how or when something was or was not done, or who was responsible for doing it, the Panel found the managers knowledgeable and straightforward in their responses. They also were willing to show examples of and reference materials to the Panelists to view how an actual activity was performed or conducted. Employees also were receptive to suggestions made by Panel members, based on their own professional experiences, for ways to improve MUNI's practices and procedures. In fact, there was eagerness by all MUNI managers to learn from the experiences of the individual panel members' views on how to enhance MUNI's LRV operations and operational safety.

The experience was extremely beneficial to the Panel also for in the process of reviewing another transit system's programs, there is a mutual sharing of ideas. This "learn and return" experience enables the panelist who participates in such a review to return to his agency and share the many excellent ideas acquired from the five days of discussions with MUNI managers and employees. Those ideas, in turn, will be put to use in his or her own system.

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**PART III. RECOMMENDATIONS**

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**1.0 General Management Issues**

**1.1 Develop a system safety policy that assigns responsibility, authority and accountability.**

This needs to be clearly defined in MUNI's System Safety Program Plan (SSPP), and accountability for attainment of system safety objectives needs to be shared and defined for each department's managers and employees throughout the SSPP document.

**1.2 Update system safety program plan.**

The plan is a good base line document but needs to be made more useful by emphasizing who is responsible and for what, as well as how to accomplish specific system safety objectives. Also refer to Appendix B System Safety Plan Guide SF-Plan for MUNI.

**1.3 Develop and implement system-wide business plans; i.e. equipment condition, availability, service level performance, and staffing that support implementation of System Safety Program Plan.**

This achieves "buy-in" by management and employees throughout an organization and insures an understanding of each other's role. Business plan development involves managers and employees at all levels and provides them with an opportunity to be "stake holders" in the success and future of an organization such as MUNI. MUNI staff would identify, through individual departmental business plans, appropriate programs; i.e. preventive maintenance, training, etc. that would enable MUNI to more effectively and safely meet MUNI's customer service requirements. These, in turn, would be factored into the next fiscal year budget development cycle as legitimate programs aimed at bringing about safety-focused, cost-effective service enhancements. Such business plan involvement promotes "buy-in" by managers at all levels and creates an enhanced awareness of their role and contributions to MUNI's end product: safe, reliable, clean, on-time, customer-focused service that is professionally provided by MUNI staff at all levels.

**1.4 Identify, provide and prioritize resources necessary to accomplish MUNI's service mission.**

This is an in-house exercise that is tied to the business plan development process mentioned previously. It also can include development and implementation of a system-wide Configuration Management/Document Control section with the aid of a suitable Management Information System to include the needs of Transportation and Maintenance.

- 1.5 Establish enhanced communications among all departments.**  
This is absolutely essential for bringing about a safety culture change within MUNI and a good opportunity for MUNI's new organization.
- 1.6 Improve employee efficiency and productivity; i.e., review absenteeism controls and extra board's adequacy and applications.**  
Management should review the controls at their disposal for addressing absenteeism. MUNI's extra board utilized to cover trips that would not be run due to operator illness, jury duty, unauthorized absence, etc. should also be reviewed for adequacy and/or potential savings.
- 1.7 MUNI management needs to play lead role with City of San Francisco in all labor contract negotiations.**  
Managers need to be given the tools, authority and support to do their job. They also should be held accountable for their job-related performance.
- 1.8 Empower managers with decision-making authority.**  
This relates to the "stake holder" benefit mentioned in Recommendation #3.

**2.0 System Safety Management**

- 2.1 Director of Transportation must be responsible for safety; this must be stated in policy statement.**  
This was not the case at the time of the review. This is critical for effective implementation of a System Safety Program Plan. By saying "I'm responsible for safety ...", it sends a clear message to all managers and employees that safety starts at the 'top'." It also sets the stage for safety responsibility not ending at the top. Through the System Safety Program Plan (SSPP), clear definition for safety at all levels, by all employees, would be defined, as well as the methodologies for accomplishing safety and hazard containment.
- 2.2 Define appropriate authority for the various components of the organization.**  
It is essential that system safety responsibility and authority be clearly defined in the plan and understood by managers throughout the MUNI organization.
- 2.3 Rewrite System Safety Program Plan.**  
The current SSPP is not known nor was it referenced in discussions with managers within the MUNI organization. The rewrite process will provide management in all departments with an opportunity to become knowledgeable and conversant in the purpose of the SSPP, as well as their department's role in system safety management.



**2.4 Develop and implement MUNI safety policies and procedures.**

This goes hand-in-hand with the rewrite of the SSPP.

**2.5 Establish safety-conscious culture within MUNI.**

Absolutely essential and, as stated previously, it begins at the top with a clearly stated policy emphasizing "pro-active" accountability within a System Safety Program Plan document as well as in all system safety - support training.

**2.6 Hire highly skilled professional staff.**

MUNI would benefit significantly through an investment in knowledgeable safety staff and resources to assist management in accomplishing system safety attitudinal changes within the organization.

**2.7 Establish a comprehensive quality assurance function.**

Currently, the quality assurance function, per se, is non-existent or, at best, is very limited within MUNI.

**3.0 Training**

**3.1 Retrain all employees on updated rules and procedures.**

This is where MUNI's investment in its employees will always pay off in reduced accidents, incidents, service delays, and confrontations with MUNI customers.

**3.2 Re-assess training and certification programs for all employees, with an eye to formalizing and enhancing lesson plans.**

Many of the training programs and lesson plans appear dated or in need of revision. Some common questions that should be asked by operations and maintenance managers of the training programs are: What are we trying to impart? What is our mission? Are we accomplishing that mission through these training programs, etc.? There also needs to be a process by which such training lesson plans can be reviewed and kept current and consistent with MUNI's customer service goals and technological advances.

**3.3 Develop and implement training programs for point-of-customer contact employees in *customer sensitivity, confrontation avoidance, verbal job skills, etc.***

Employees with whom the Panel talked felt a strong need for such skills training. They felt that it would raise their own self-esteem levels, reduce confrontations between customers and themselves, heighten appreciation of MUNI employees by the customers, and significantly reduce incidents and accidents that result in lost time injuries and costly court settlements. Employees and the Union officers referred to such training as an investment by MUNI management in its most critical resource.

**3.4 Hold contractors/vendors accountable for training deliverables.**

There were numerous examples cited by maintenance employees in which training by contractors was either not provided or seriously deficient in quality. Also see Capital Program Management Recommendations.

**3.5 Develop and implement preventive maintenance training for all safety critical equipment.**

Currently MUNI does not have formal training programs in track and catenary inspections and repairs, ATCS, vital relays certification, vehicle systems preventive maintenance, carborne vital relays & vital circuits, and Power Distribution System.

**4.0 Operations and Maintenance Issues**

**4.1 Update all operating rules and procedures.**

The rulebook was out-of-date causing the Panel to question how seriously it is viewed and used by transportation managers and employees. The same applied to many of the operating procedures. The Panel felt the concept of a "Handbook for Employees" should be considered during any planned rewrite. Such a handbook, increasingly favored by many transit systems in North America, should incorporate all essential rules for employee conduct and behavior and provide user-friendly information for employees on important San Francisco points of interest, etc. It could also incorporate guidance that could be referred to by employees in dealing with unusual situations. MUNI also needs to ensure that such rulebooks and handbooks are systematically updated through a process achieved through configuration management and document control.

**4.2 Communicate rules and procedures and retrain all employees.**

Undertaking the rewrite of rulebooks and procedures also provides management with an opportunity to show employees the importance of their roles. Simply reissuing a new rulebook or handbook and revised or updated procedures creates a missed opportunity. Again, it is an investment in the human resource.

**4.3 Establish enhanced Operations Control Center that more effectively *controls, communicates and coordinates* all relevant issues pertaining to service operations and safety.**

The current Control Center is focused more towards a limited message dissemination and information gathering mission. This is not so much a criticism of existing staff as it is an indication of where the deficiencies in focus lie. MUNI's Control Center should be functioning more as a Control Center in coordinating, controlling and communicating normal transit activities as well as extraordinary incidents and events that frequently can and do arise.

**4.4 Review and establish enhanced job testing and certification requirements for supervisory personnel (*central controllers, inspectors, etc.*)**

The position of central controller at other rail transit systems, with their attendant control responsibilities, is a very demanding position which requires a candidate that is service and people-focused and of good judgement capability in stressful situations, while capable of handling multiple situations satisfactorily. Inspectors, too, in their on-the-street supervisory roles are critical point-of-employee and customer-contact managers whose skills need to be stressed and should not be under-estimated by key top management. Emphasis by management on the importance of these positions should be communicated to prospective candidates, and the competitive exams should reflect these responsibilities and management's expectations.

**4.5 Re-evaluate the desirability of current frequencies with which *job-to-job* movement is allowed.**

Although this inter-modal movement is viewed as a benefit to operating employees, there are traditional costs that recur when an employee moves from one mode to another (i.e., bus to LRV and vice versa). Frequently, the systematic knowledge which operators dedicated to one mode acquire is compromised and never fully realized by those operators who move from one mode to another. It may be in MUNI's short-term interest to continue this practice, but many rail/bus transit systems are moving towards dedicated operator groups for each mode to ensure customer service quality and operator professionalism.

**4.6 Establish a program of compliance checks for operations performance.**  
This is an essential oversight process by management to ensure operating rules and front-line employees are adhering to procedures.

**4.7 Evaluate the effectiveness and value of the "meet and greet" operation.**

**4.8 Develop and implement accident/incident management procedures in accordance with revised SOPs.**

Management needs to clearly define the roles of transportation and maintenance managers responding to an accident or incident and determine in advance who will be in charge of investigation and clearing the scene. Similarly, the "paper trail" of accident/incident reports needs to be better defined. The Control Center, as mentioned previously, needs to have a definite role in communicating, coordinating, and controlling activities in and around an accident scene, as well as in service restoration. Information pertaining to an accident should be logged in with more detail at the Control Center. A summary of the activities that were orchestrated (who was involved, when they arrived, and when the scene was cleared, as well as the location of after-action or investigative reports, etc.) could be provided for senior transportation and maintenance managers.

**5.0 Capital Program Management**

**5.1 Re-examine Capital Program Management process, including Capital Program development and prioritization; Role of Capital Program Management department - developers vs. implementers; and Responsibility and Accountability.**

This program appears to be operating under its own direction and largely without regular input from end-user departments within MUNI. As a result, the Capital Management Program section currently controls committees that should be controlled by transportation, safety and maintenance personnel on new equipment procurement and system modifications. Thus, the input of operational and maintenance personnel is not being integrated into the final products. The problems being experienced with the Breda LRV could be an example of this. Other projects that could benefit from leadership and input from operating departments within MUNI include: Track geometry; Signal system; Integration of LRV traffic with streetcars and the joint use of the catenary system by trolley buses, streetcars and LRVs; Integration of new technology with old systems and equipment.

**5.2 Enhance internal coordination among affected departments, including end-user.**

Capital Program Management should not be the regulatory or controlling organization on training related contracts. This has caused serious deficiencies in the Breda contract relative to delays in receipt of proper training and training documents required by the contract.

**5.3 Comply with Safety Certification Program (Equipment operational readiness and logistical support).**

**5.4 Define and direct the roles of Capital Program function to support end-user needs. Program Management should develop and implement a System-wide Configuration Management and Document Control program**

**5.5 Re-evaluate engineering staffing requirements in support of end-user.**

**6.0 Risk Management**

**6.1 Provide MUNI with authority and resources to directly manage workers' compensation program.**

**6.2 Fix responsibility within MUNI for collecting and analyzing all statistical data for all accidents and incidents to accomplish system safety goals.**

**6.3 Establish procedures to ensure that appropriate corrective actions are taken to prevent recurrences.**

**7.0 Human Resources**

**7.1 Assess departmental resources and capabilities to effectuate full staffing within MUNI. Human Resources needs sufficient staff to assist and support other departments in achieving full staffing in other departments.**

**7.2 Re-assess impacts of civil service system on MUNI staffing.**  
The Civil Service System needs to be reviewed in light of its effectiveness and timeliness in staffing MUNI vacancies.

**7.3 Evaluate and staff labor relations function within Human Resources to effectively accomplish contract negotiations, contract compliance, and pro-active employee relations inclusive of training, etc.**

**8.0 Labor Relations**

**8.1 Develop and expand system safety awareness among employees, beyond the current disciplinary measures, that will encompass more proactive program development and focus.**

In addition to the disciplinary measures established to hold employees accountable for preventable accidents, there is a need for pro-active programs recognizing and rewarding employees for safe driving records, as well as recognition of departments, managers, and employees for achieving significant reductions in industrial accident incidents and associated lost time, etc. There are numerous rail transit systems in the U.S. and Canada that have such programs in place.

**8.2 Renew commitment to improve labor/management relations.**

The Panel felt from their discussions with MUNI managers and Union officers that there are opportunities available for finding common ground on a wide variety of issues, but management must take the initiative.

**8.3 Strengthen supervisory skills for managers.**

The Panel found in their informal discussions with first-line supervisors, inconsistencies in the handling of what might be considered routine situations. This may be due to some supervisors being more creative than others, but it did "flag" this to be an area that warrants attention.

**9.0 Security**

**9.1 Pay attention to housekeeping (i.e., public perception) items such as: graffiti control; cracked windows; destination signs; interior lights; seat conditions.**

All these issues, while not appearing to be safety or security related, are very much so. Cracked windows, graffiti, interior lights, damaged seats, etc. all can convey an impression to MUNI's customers and employees that management does not see these housekeeping issues as being important. It then further raises in their minds "What else is being deferred?" Most important, when transit vehicles are visibly well maintained and there is a "zero tolerance" maintenance program in place and focused towards graffiti and vandalism, customer and employee perception of a transit system's safety environment is raised considerably.

**9.2 Assess and ensure that police resources are delivered and deployed properly.**

It appears that this program is working well, and the Panel would only encourage that senior transportation management reviews its deployment strategy on a regular basis with MUNI's security manager.

**9.3 Re-examine emergency response availability of documents at Central Control - bomb threat forms; tunnel ventilation; etc.**

**10.0 New Organization/Modifications**

**10.1 Consolidate all safety functions under System Safety Administrator.**

The Panel found many individuals throughout the MUNI organization have responsibility for various aspects of safety. Where possible and practical, it would be prudent to consolidate many of those functions under MUNI's newly identified System Safety Administrator's position.

**10.2 Re-evaluate how management can be strengthened within the civil service regulations/procedures.**

**10.3 Re-examine role of civil service as an asset/impediment to enhance MUNI's management capabilities.**

**10.4 Re-evaluate training structure as covered in new organization.**

MUNI should use "best practices" approaches taken by other transit systems in providing both line and non-line (corporate) training and incorporate same in a business plan approach to accomplish system safety objectives.

**10.5 Review organization with an eye towards enhancing system safety awareness, communications, and decision making among all managers and employees at all levels.**

## APPENDIX

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**APPENDIX A - DOCUMENTATION**

Documentation was requested and provided to the Panel in advance of its arrival in San Francisco. That information was further supplemented at the briefings during the week. The following is a complete list of the information provided to the panelist for their use and assistance during the course of the review:

Documentation Provided to APTA Safety Review Panel

- Facts and Figures - San Francisco Municipal Railway - 1997
- San Francisco Municipal Railway Rule Book (April, 1971)
- MUNI - Avoidable Accident Policy - General Bulletin 96-103, November 14, 1996
- Central Control Access and Safety Procedures, MMX Service, January 10, 1998
- Maintenance Division Monthly Management Report, October 1997
- MUNI System Safety Program Plan, November 15, 1997
- MUNI Metro Light Rail Operations, Rules & Regulations, March 1984
- MUNI Maintenance Division's Standard Operating Procedures - Revisions issued July 1997
- California Public Utilities Commission General Order 143A, Safety Rules Governing Light Rail Transit; and General Order 164; Rules and Regulations Governing State's Safety Oversight of Rail Fixed Guideway Systems.
- FTA Opinion Regarding Contractors and FTA's Drug and Alcohol Testing Regulations - December 12, 1994
- MUNI Memo to APTA's Conrad B. Santana regarding calibration of test equipment, February 5, 1998
- MUNI Overhead Lines Dept. - Confined Space Entry Procedures
- San Francisco Public Transportation Department Substance Abuse Program - Policy and Procedures.
- MUNI - Employee Training - Substance Abuse Training - Complying With the FTA Drug Regulation For Safety Sensitive Employees
- Management Audit of the San Francisco Municipal Railway - Prepared for the Public Transportation Commission of the City and County of San Francisco by the Budget Analyst of the City and County of San Francisco - July 1996
- Proposition J Audit Action Plan
- Public Transportation Commission and County of San Francisco Municipal Railway - Annual Report 1996/1997
- MUNI Switch Maintenance Documentation
- Public Utilities Commission City and County of San Francisco Utilities Engineering Bureau - Safety Training Program for the Construction Engineering Division.
- Excerpt from San Francisco Chronicle - Thursday, August 25, 1983 - "MUNI Accidents - It's Always Been That Way"

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- **MUNI Training Lesson Plan Overview for:**
  1. Report Writing Skills
  2. Line Management Skills
  3. PCC Training
  4. Overhead Lines Introduction, Power Control, Motor Coach Troubleshooting
  5. Trolley Coach Troubleshooting @ Potrero Division, ADA Discussion Explanation
  6. Cable Car Familiarization
  7. Final Review of Training
  
- **Public Utilities Commission City and County of San Francisco Utilities Engineering Bureau - Construction Site Safety Reporting Procedure**
- **MUNI LRV/LRV2 Operators Report (sample)**
- **MUNI LRV/LRV2 Operators Report (sample - completed)**
- **MUNI - VMS - LRV/LRV2 Running Repair Work Ticket**
- **MUNI Department of Safety and Training Green Light Rail Division LRV2 Pre-Operational Checklist**
- **MUNI major Property Damage/Personal Injury Accident Report Form**
- **MUNI Metro Derailment Report Form**
- **MUNI Central Control - Subway/Surface Trackway/Electrical Clearance Form**
- **San Francisco Municipal Railway - Proposed Reorganization 1/8/98 - Organization Chart**
- **Organization Chart - Public Transportation Department - Capital Projects Division**
- **National Transportation Safety Board - Safety Recommendation dated September 16, 1997**
- **MUNI Central Control Call Tag**
- **MUNI Central Control Application for Clearance**
- **MUNI Technical Specifications - Division 1: General Requirements 01500: Construction Facilities and Temporary Controls**
- **MUNI Capital Projects; Active Projects**
- **MUNI Central Control Daily Log (sample)**

**APPENDIX B - SYSTEM SAFETY PLAN**

**System Safety - Plan Guide For SF-MUNI**

- MUNI needs to develop, promulgate and implement a system safety policy that assigns responsibility, authority, and accountability for managers, supervisors and employees.
  - General Managers
  - Deputy General Managers
  - Directors
  - Managers
  - Supervisors
  - Employees
  - Contractor Personnel
- Revise System Safety Program Plan (SSPP) to reflect the true mission of MUNI.
- Develop, promulgate and implement a series of system safety policy instructions signed by the General Manager to address each critical element of the SSPP. The following areas are deemed to be important for MUNI:
  - Safety awareness
  - Accident investigation and reporting
  - Emergency response and notification
  - System safety design review
  - Risk assessment (hazard analysis) - Engineering and Operational
  - Safety evaluations and inspections
  - Fire protection, detection and suppression
  - Statistical and trend analysis
  - Safety awards
  - Safety training
  - Environmental protection
  - Industrial safety
  - System verification and certification
- Special emphasis programs to enhance safety awareness based on collected safety statistics and trend analysis.
- Evaluate the professional skill levels of personnel assigned to the safety office - existing and projected needs.
- Ensure that system safety is integrated into all phases of MUNI's activities:
  - Capital Program management
  - Field engineering modifications
  - Accident and incident investigation
- Ensure that the safety office is an independent organization with full authority to provide oversight compliance activities.



December 11, 1997

William W. Millar  
President  
American Public Transit Association  
1201 New York Avenue, N.W.  
Washington, D.C. 20005

Dear Mr. Millar:

As a follow up to our discussion in Chicago, this is a formal request to have the American Public Transit Association (APTA) perform an on-site safety peer review of the San Francisco Municipal Railway's (MUNI) operations and safety-oversight infrastructure.

Specific areas to be reviewed include, but are not limited to the following:

- Organizational structure, in terms of its authority, coverage, and adequacy to address the scope of responsibilities. The panel should focus on the MUNI reorganization effective January, 1998.
- Adequacy of personnel in terms of quantities to meet specific tasks required in the scope of responsibilities.
- Adequacy of procedures which have been developed in response to management policies. Aspects to be addressed in this include the conduct of and procedures for safety audits and investigations; enforcement of rules, regulations and procedures; follow-up actions relative to violations; documentation of findings and reporting.
- Adequacy of general safety, operations, and maintenance training provided for all MUNI personnel.
- Training and certification of vehicle operators, supervisors, and maintenance personnel. Operations and maintenance rules and procedures, oversight and enforcement.

All on site activity performed by the safety review panel would be subject to the oversight by the staff of the California Public Utilities Commission (CPUC). CPUC staff will work as first-hand observers, side-by-side with the APTA peer review panel members under conditions as directed by MUNI's Safety Review Coordinator.

William W. Millar, President  
December 11, 1997  
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Under these conditions, CPUC staff will be given free and total access to attend meetings and interviews, witness inspections, review plans, schedules, working papers, draft reports, and otherwise participate in such manner as to gain full understanding and provide input into every aspect of the APTA peer review.

MUNI will provide a briefing to the APTA panel and the CPUC on the first day of the review and on the fifth and last day, APTA panel will provide appropriate MUNI senior staff with the panel's findings and recommendations in their exit conference. This would then be followed by a final written report to MUNI sixty (60) calendar days thereafter.

I would like to have this review conducted in early to mid February 1998 and I anticipate that it would require the panelists to be on site for five days. MUNI's coordinator for this APTA Safety Peer Review is Brian Cunningham, System Safety Administrator, and he will work with Purl J. Lennon, of your staff, to develop the initial agenda for those five days. MUNI will make hotel arrangements for the panelists once the dates of the review and the panelists, themselves, are determined.

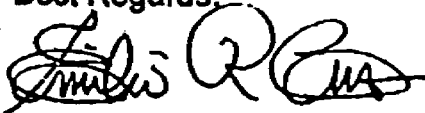
Each panelist, must be an experienced professional with a working knowledge in one or more of the following disciplines:

- Operations
- Maintenance
- System Safety
- Training

MUNI will, of course, pay the expenses associated with conducting this APTA peer review. It is understood that this will not include the salaries of the panel members or the APTA staff members, but will include normal travel, meals, lodging and incidental expenses directly related to this review.

This will be a very important project for MUNI and we are pleased to have APTA play such a key role. Please let us know if you need more information to begin this process.

Best Regards,



Emilio R. Cruz  
Director of Public Transportation

ERC:BC:bc

**SAN FRANCISCO MUNICIPAL RAILWAY  
APTA SAFETY REVIEW****Provisional Agenda  
Monday, February 2, 1998****Location: 949 Presidio Avenue, Main Conference Room, Second Floor**

- 9:00-9:30a.m.**      **Executive Briefing/General Overview**  
Emilio R. Cruz, Director of Public Transportation
- 9:30-9:45a.m.**      **Discussion of NTSB Safety Recommendations for MUNI**  
Robert Campbell, NTSB Investigator
- 9:45-10:00a.m.**      **California Public Utilities Commission (CPUC) Discussion of State Safety Oversight Responsibilities**  
Don Johnson, CPUC  
Gary Rosenthal, CPUC
- 10:00-10:30a.m.**      **Overview of MUNI Operations**  
David Stumpo, Chief Operating Officer
- 10:30-10:45a.m.**      **Break**
- 10:45-11:05a.m.**      **Overview of MUNI Capital Projects**  
Peg Divine, Deputy Director Capital Projects
- 11:05-11:25a.m.**      **Overview of MUNI Finance and Administration**  
Nancy Whelan, Deputy Director Finance and Administration
- 11:25-11:45a.m.**      **Overview of MUNI Human Resources**  
Tanya Meyers, Director of Human Resources
- 11:45a.m.-1:00p.m.**      **Lunch Break**
- 1:00-2:00p.m.**      **Transportation Overview**  
Louis Johnson, Deputy Chief Operating Officer  
Kenny Rodríguez, Metro Operations Superintendent  
Thomas Piggee, Superintendent of Operations Training  
Joyce Garay, Assistant Superintendent, Rail Operations Training  
Mick Rakestraw, Division Superintendent, Metro Operations  
Robert Louie, Superintendent, Central Control

**2:30-3:00p.m.**

**Vehicle Maintenance Overview**

Jon Miller, General Superintendent, Electrical Vehicle Maintenance  
Robert Olson, Superintendent LRV Running Repair  
George Manassis, Superintendent LRV Heavy Overhaul

**3:00-4:00p.m.**

**Track Maintenance Overview**

Win Hobilzenlle, General Superintendent Facilities Maintenance  
Robert Rameriz, Superintendent Track Maintenance  
Susan Krichner, Supervisor Track and Switch Repair

**4:00-4:30p.m.**

**Overhead Lines Maintenance Overview**

Ray Favetti, General Superintendent Facilities Maintenance  
Vic Lameyse, Superintendent Overhead Lines Maintenance  
Rich Hahn, Assistant Superintendent Overhead Lines Maintenance

**4:30-5:00p.m.**

**System Safety Overview**

Brian Cunningham, System Safety Administrator  
Michael Lonergan, System Safety Inspector

**5:00-**

**Caucus: Review of presentations and plans for the following day(s)**