

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	1	Element	Metro Track Inspection
Date of Audit	September 13, 2005	Department(s)	Track Maintenance
Auditors/ Inspectors	Roger Clugston	Persons Contacted	Bob Ramirez, Michael Kirchanski, Kartik Shah

REFERENCE CRITERIA

1. MUNI Track Maintenance Standards
2. San Francisco Municipal Railway System Safety Program Plan - November 2003
3. APTA Guidelines – Element 11
4. General Order 164-C – Section 3
5. General Order 143-B – Section 14.05

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

1. Review and evaluate MUNI's track maintenance program and track maintenance standards.
2. Select and inspect a representative sample of surface and subway mainline turnouts, as well as curved and tangent sections of track.
3. Select and inspect a representative sample of yard turnouts, as well as curved and tangent sections of track.

RESULTS/COMMENTS

Review and observation of track inspection procedures indicated adequate inspection activities and ability for proper remediation of defective conditions discovered. Review of track inspection records reflected adequate information for monitoring track deficiencies. Track components inspected in the field were well maintained, no track defects were noted. Incipient rail end mismatch was noticed at certain locations in the Muni Yard, but I discussed this issue with the Track Supervisor with a suggestion for continued close monitoring. Track inspectors and maintenance crews were knowledgeable and competent.

Recommendations:

None

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	2	Element	Cable Car Track Inspection
Date of Audit	September 14, 2005	Department(s)	Track Maintenance
Auditors/ Inspectors	Roger Clugston	Persons Contacted	Bob Ramirez, Michael Kirchanski, Ken Anderson

REFERENCE CRITERIA

1. MUNI Cable Car Track Maintenance Standards
2. San Francisco Municipal Railway System Safety Program Plan - November 2003
3. APTA Guidelines – Element 11
4. General Order 164-C – Section 3

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

1. Review and evaluate MUNI's cable car track maintenance program and track maintenance standards.
2. Select and inspect a representative sample of mainline turnouts, as well as curved and tangent sections of track.

RESULTS/COMMENTS

Findings:

Track inspection and track maintenance personnel proved to be knowledgeable and competent. No track defects were noted during field inspection for rail defects and signs of incipient geometry issues. Track inspection records reviewed were adequate, no exceptions taken.

Recommendations:

None

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	3	Element	LRV Inspection
Date of Audit	October 7, 2005	Department	MUNI Metro Vehicle Maintenance
Auditors/ Inspectors	Chris Ducote Don Miller	Persons Contacted	John Sadorra, Kartik Shah

REFERENCE CRITERIA

1. LRV2 and LRV3 Inspection Manuals
2. San Francisco Municipal Railway System Safety Program Plan - November 2003
3. APTA Guidelines – Element 11
4. General Order 164-C – Section 3
5. General Order 143-B – Titles 3, 4, 5, 6, and 14.04

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

1. Review and evaluate the adequacy of MUNI's LRV maintenance program.
2. Select a representative sample of LRVs and inspect from the following components for compliance with minimum maintenance requirements:
 - a. Propulsion controller assemblies and components;
 - b. Traction motors;
 - c. Truck, slewing, axle and wheel assemblies;
 - d. Friction, track and dynamic braking systems;
 - e. Lighting;
 - f. Coupler and drawbar assemblies;
 - g. Passenger doors and step assemblies;
 - h. Pantograph assemblies and related traction power components, and;
 - i. Public address and intercom systems.

RESULTS/COMMENTS

Findings:

There are comprehensive inspection and maintenance procedures in place for these cars. The car mechanics are very knowledgeable of the systems and maintenance procedures of these cars. Inspection revealed no problems with inspection and maintenance schedules and procedures and the cars inspected are in very good operating condition.

Recommendations:

None

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	4	Element	Historic Streetcar Inspection
Date of Audit	October 6, 2005	Department	Vehicle Maintenance
Auditors/ Inspectors	Chris Ducote Don Miller	Persons Contacted	John Sadorra, Kartik Shah

REFERENCE CRITERIA

1. PCC and Vintage Car Inspection Manual
2. San Francisco Municipal Railway System Safety Program Plan - November 2003
3. APTA Guidelines – Element 11
4. General Order 164-C – Section 3
5. General Order 143-B – Titles 8 and 14.04

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

1. Review and evaluate the adequacy of MUNI's historic streetcar maintenance program.
2. Select a representative sample of air cars and PCCs and inspect from the following list of components for compliance with minimum maintenance requirements:
 - a. Propulsion controller assemblies and components;
 - b. Traction motors;
 - c. Truck, axle and wheel assemblies;
 - d. Braking systems;
 - e. Lighting;
 - f. Coupler and drawbar assemblies;
 - g. Passenger doors and step assemblies, and;
 - h. Trolley pole assemblies and related traction power components.

RESULTS/COMMENTS

Findings:

1. PCC and other historic trolley cars have regular maintenance schedules in written form for the car repair mechanics to follow. Mechanics were very knowledgeable of these procedures and followed them properly.
2. Inspectors noted during inspection that there were defects that require follow up to determine if the maintenance schedules should be amended to shorter intervals on certain inspections. Flashing on the brushes in the traction motors and burnt contacts on the electric brake contactors on the PCC 1059 was noted during inspection.

Recommendations:

In addition to current scheduled maintenance inspections, MUNI should further monitor and evaluate the flashing on the brushes in the traction motors and burnt contacts on the electric brake contactors of PCCs to establish the necessary more frequent inspection intervals for those components.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	5	Element	Cable Car Inspection
Date of Audit	October 6, 2005	Department(s)	Vehicle Maintenance
Auditors/ Inspectors	Chris Ducote Don Miller	Persons Contacted	John Sadorra, Ken Anderson

REFERENCE CRITERIA

1. Cable Car Inspection & Maintenance Manuals
2. San Francisco Municipal Railway System Safety Program Plan - November 2003
3. APTA Guidelines – Element 11
4. General Order 164-C – Section 3

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

1. Review and evaluate the adequacy of MUNI's cable car maintenance program.
2. Select a representative sample of at least 4 cable cars and inspect from the following list of components for compliance with minimum maintenance requirements:
 - a. Grip Assembly;
 - b. Truck, slewing, axle and wheel assemblies;
 - c. Friction, track and slot braking systems;
 - d. Lighting;
 - e. Coupler and drawbar assemblies;
 - f. Stanchions, and;
 - g. Glazing and doors.

RESULTS/COMMENTS

Findings:

1. The repair and inspection mechanics were very knowledgeable of the components and wear limits. There are very few, if any, written guide lines for the maintenance inspections, i.e. wear limits or gauging the tolerances for mechanical parts and no written procedures for repair.
2. There are no written records of the operator's daily inspection before the car is placed in service.

Recommendations:

1. MUNI should formulate and adopt written maintenance standards and procedures for the inspection, maintenance and repair of cable cars.
2. MUNI should establish a policy requiring a written record of the cable car crew's daily pre operation inspection.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	6	Element	Train Control & Signal Inspection
Date of Audit	September 12, 2005	Department	MUNI Signal Department
Auditors/ Inspectors	Sherman Boyd Gerald Muffley Gary Rosenthal	Persons Contacted	Wai Tom, Michael Kirchanski, Kartik Shah

REFERENCE CRITERIA

1. MUNI train control and signal maintenance manuals
2. San Francisco Municipal Railway System Safety Program Plan - November 2003
3. APTA Guidelines – Element 11
4. General Order 164-C – Section 3
5. General Order 143-B – Title 7.06

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

1. Review and evaluate the adequacy of MUNI's train control and signal maintenance program and standards.
2. Perform detailed inspections of selected surface and subway mainline train control and signal systems and components.

RESULTS/COMMENTS

Findings:

1. A comprehensive maintenance program is in place. The signal personnel interviewed were found to be very knowledgeable in their field. There are no problems with their inspection and maintenance schedules and procedures. All switches and signals inspected were found in very good condition.
2. During inspections of automatic crossing protection operation on the E and F Lines, along the Embarcadero the inspector noted "train coming" flashing signals were operating when no train was approaching. The "train coming" signals were observed to be flashing in sequence with the motor vehicle traffic signals and independent of train operations. Automatic warning signals, which regularly provide incorrect indications to motorists and pedestrians, can result in their confusion and disregard of the intended safety warnings.

Recommendations:

MUNI should ensure that "train coming" flashing signals are modified to provide appropriate warnings at crossings, only upon the approach of trains. Muni should consider removal or "bagging" the "train coming" flashing signals until they can be modified to provide valid warning information.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	7	Element	Overhead Catenary Inspection
Date of Audit	October 5 – 6, 2005	Department(s)	Overhead Lines Department
Auditors/ Inspectors	Brian Yu Gary Rosenthal Claudia Lam	Persons Contacted	Kartik Shah Dan Murphy Tim Lipps Manuel Gonzales Mark Byers

REFERENCE CRITERIA

1. System Safety Program Plan, Dated December 1, 2003, Chapter 6
2. APTA Guidelines - APTA Guidelines Element 11
3. General Order 164-C – Section 3
4. General Order 95

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Using the services of a CPUC qualified GO 95 inspector:

1. Select at least four different locations on at least three different Muni Metro surface operating lines and inspect at least .25 miles of overhead lines at each location for compliance with the requirements of GO 95 and;
2. Select at least four different Muni Metro subway stations and inspect the overhead lines running through each of those stations' passenger platform areas for compliance with the requirements of GO 95.

RESULTS/COMMENTS

Findings:

The following locations were inspected for the GO 95 Compliance:

- N Line – from 6th Street Storage Yard to 2nd Street Crossing
- F Line – from Pier 26 to Folsom Portal
- F Line – around the Ferry Loop at Embarcadero
- M & K Line – around West Portal
- M & K Line – around the St. Francis Circle
- J Line – 17th Street to 20th Street
- J & K Line – around the Metro Yard
- L Line – L Line loop at SF Zoo
- N Line – near UCSF

The GO 95 violations found were:

GO 95 Rule 74.4F violation – breaking of a single “suspension” or fastening will allow the trolley conductor, or live span wire, or current carrying connections to come within 10 feet from the ground.

Locations:

1. Out of running contact wire over the switch point between Poles T163 and S44
2. Out of running contact wire over the switch point between Pole N211 and 4th Street Crossing
3. Out of running contact wire next to Poles S416 and T415
4. Out of running contact wire next to Poles T409 and N408
5. Out of running contact wire (connected to the metal beam of the station structure) next to the switch point – West Portal station agent booth area
6. Out of running contact from the runner on the out bound track of K & M Line at west of the Ulloa and West Portal
7. Contact wire for the cross over at St. Francis boarding station
8. Out of running contact wire connected to runners on F-Line TR and TL (west of Church & 17th Street crossing)
9. Out of running contact wire on J-Line IB and OB (north and south of Church & 17th Street crossing)
10. Out of running contact wire located on the west of switch over IB track (west of San Jose & Ocean crossing)
11. Out of running contact wire connected to a runner over a switch on M-Line (west of San Jose & Geneva) – 3 locations (2 on where M-Line merges onto the track from the Geneva Yard, 1 on M-Line on the west of Geneva Yard)
12. Out of running contact wire in front of 374 Carl Street

GO 95 Rule 37 (Minimum Clearance) Violations

Locations:

1. Out of running contact wire between S214 and N212 too close to tree branch **(Table 1, Case 13, Column C also refer to Rule 35)**
2. On Pole N23, a banner was placed too close to the feeder cable **(Table 2-A, Case 6, Column C)**
3. On Pole 39E (OB track near Folsom Station), a banner was placed too close to the feeder cable **(Table 2-A, Case 6, Column C)**
4. On Pole 514W, a banner was placed too close to the feeder cable **(Table 2-A, Case 6, Column C)**
5. On Pole E296, a banner was placed too close to the feeder cable **(Table 2-A, Case 6, Column C)**
6. First runner on OB track at St. Francis Circle was touching tree branches and leaves **(Table 1, Case 13, Column C also refer to Rule 35)**
7. Guy wire (connected to Pole 4/12 – feeder pole) holding the first runner on OB track at St. Francis Circle was pushing against a tree branch **(Table 1, Case 13, Column C also refer to Rule 35)**
8. At the entrance of M-Line exclusive right-of-way (St. Francis Circle), OB contact wire connected to the 1st feeder pole was too close to tree branches and leaves – 2

locations **(Table 1, Case 13, Column C also refer to Rule 35)**

9. Guy wire holding the OB contact wire at the entrance of the M-Line exclusive right-of-way was touching tree branches **(Table 1, Case 13, Column C also refer to Rule 35)**
10. Telephone line to 2667 47th Street had only 13 inches vertical clearance over the trolley contact wire **(Minimum 48 inches, Table 2, Case 3, Column D)**
11. Telephone lines to 2623 47th Street, 3532 Vicente Street and 2650 46th Street also did not have enough vertical clearance from the trolley contact wire **(Minimum 48 inches, Table 2, Case 3, Column D)**
12. Cable Service Drop to 277 Carl Street, 281 Carl Street, 289 Carl Street, and 259 Carl Street did not have enough vertical clearance from the trolley contact wire **(Minimum 48 inches, Table 2, Case 3, Column D)**

GO 95 Rule 74.4E Violations – OCS height for under bridges, tunnels, etc.

Locations:

1. OCS height at the Folsom Portal entrance was less than 14 feet (TL – 12 feet 6 inches, TR – 12 feet 7 inches)
2. OCS height at the West Portal entrance was less than 14 feet (OB – 13 feet 11 inches, IB – 13 feet 11 inches)
3. OCS under the Green Yard entrance bridge on Geneva side was less than 14 feet (12 feet 9 inches)

Comments:

There were no Commission authorized variances identified for the GO 95 violations noted in this checklist.

Recommendations:

MUNI should inspect its entire system, resolve the types of violations noted in this checklist, and bring the system into compliance with the Commission General Order 95 requirements.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	8	Element	Authority and Responsibility for System Safety Program
Date of Audit	October 25, 2005	Department(s)	SFMTA Executive
Auditors/ Inspectors	Vahak Petrossian Gary Rosenthal	Persons Contacted	Stuart Sunshine, Michael Hursh, Michael Kirchanski, Robert Hertan, Jill Friedlander, Audrey Chiu, and Jeff Lau

REFERENCE CRITERIA

1. Commission Resolution ST-59 dated August 21, 2003
2. System Safety Program Plan, Dated December 1, 2003
3. 2002 Safety Audit of the San Francisco Municipal Railway Rail Transit Safety Program dated July 2, 2003

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview appropriate senior executives of the San Francisco Metropolitan Transportation Authority and the San Francisco Municipal Railway concerning the scope and level of administrative involvement, coordination, and communication exercised in the implementation of corrective actions required by the Commission following the 2002 CPUC system safety and security audit. The auditor(s) should select and review, with the senior executives, at least five of the required corrective actions from the following list of the 2002 audit recommendations:

1. Develop a control document clearly establishing MUNI's responsibilities for the contractor safety program;
2. Modify the Metro Division track maintenance and inspection program to establish appropriate class of track speed requirements for all track maintenance conditions and review for compliance all other requirements addressed in the Commission's GO 143-B, Title 14.05 and referenced sections of 49 CFR Part 213. Collect and monitor data related to track wear conditions as part of its track maintenance program;
3. Establish requirements for gage, curve, and rail wear measurements in its cable car system track maintenance standards;
4. Prepare, adopt, and implement an approved Preventive Maintenance Program for the Advanced Train Control System;
5. Review the overhead lines inspection and preventive maintenance program and make the necessary modifications to better ensure the overhead clearances required by GO 95 are properly maintained;
6. Establish specific operating procedures, independent from the operator training manuals, for each type of historical streetcar;
7. Adopt the controls necessary to better ensure that: OCC and other affected MUNI departments regularly and actively participate in the system modification process;
8. Modify the training and certification program plans to include the formally detailed control information that is necessary to clearly identify each training and certification program's specific requirements;
9. Formally designate the position(s) or department(s) responsible for custody of all training records;
10. Adopt a policy requiring:

- a. The review of the SSPP at least annually to determine if an update is required;
 - b. The application of consistent and objective criteria when determining the need for an update and;
 - c. The prompt implementation of updates;
11. Formalize the process of scheduling timely implementation of the corrective action plans resulting from investigating accidents that are reported to the Commission. The implementation plan and schedule should include the signature of a MUNI manager with the authority to direct and ensure timely implementation;
 12. Incorporate requirements and responsibilities for corrective actions resulting from emergency response drills in Section 6.6, Emergency Response Planning/ Coordination/ Training of the System Safety Program Plan, and;
 13. Add a program of periodic, surreptitious observations of LRV, HSC, and cable car crews' performance to the existing program of operations evaluations;

RESULTS/COMMENTS

Findings:

Auditors interviewed the representatives listed in the Persons Contacted box above and reviewed documents concerning the executive administrative involvement, coordination, and communication exercised in the implementation of corrective actions resulting from the Commission staff's 2002 MUNI safety audit.

Five corrective actions from the thirteen listed in the Element/Characteristics and Method of Verification section above were examined. Those selected corrective actions included:

- 2. Modify the Metro Division track maintenance and inspection program. . .
- 5. Review the overhead lines inspection and preventive maintenance program. . .
- 8. Modify the training and certification program plans. . .
- 11. Formalize the process of scheduling timely implementation of corrective action plans. . .
- 13. Add a program of periodic, surreptitious observations of operating crews. . .

Findings from review of MUNI Operations Safety Review Committee (OSRC):

1. OSRC is primarily responsible for addressing and coordinating the corrective action plans associated with the 2002 CPUC system safety and security audit;
2. OSRC is chaired by the SFMTA Manager of Health and Safety on behalf of the Executive Director and is sometimes chaired directly by the Executive Director;
3. OSRC meets at least once each month, and often more frequently, to review the status of all MUNI safety related corrective action plans including those resulting from CPUC system safety and security audits and;
4. Following those meetings, prepares a report regarding the status of each open corrective action plan, which is sent to the Executive Director, the General Manager, Deputy Directors, and department managers for review and necessary action
5. The Executive Director and other agency executives were actively involved in monitoring, coordinating, and taking steps to implement the required corrective actions.
6. Despite being one of MUNI's more active, effective and longstanding safety committees, the OSRC function, scope, and procedures have not been fully formalized within the agency's system safety program.

Recommendations:

MUNI should formalize the function, scope, and procedures of the Operations Safety Review Committee.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	9	Element	System Safety & Security Program Plan Administration
Date of Audit	10/18/05	Department(s)	Health & Safety
Auditors/Inspectors	Mahendra Patel	Persons Contacted	Michael Kirchanski Arlene Eisen

REFERENCE CRITERIA

1. System Safety Program Plan, Dated December 1, 2003
2. APTA Guidelines – Goals, Objectives and Organization
3. General Order 164-C – System Safety Program Requirements
4. Resolution ST-59, Dated August 21, 2003

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview the responsible SFMTA representatives and review selected records to determine if:

1. Plans for the System Safety and System Security Programs have been reviewed and if necessary, updated or in the process of being updated, since 2002
2. Rules, procedures, reference manuals, training and other programs are required to be periodically reviewed and updated and;
3. Consistent and objective criteria, to determine the need for an update, have been adopted and implemented.

RESULTS/COMMENTS

Activities:

MUNI representatives were interviewed regarding System Safety & Security Program Plan Administration.

1. The following documentation was reviewed:
 - System Safety Program Plan (SSPP) – Document Number SY.PL.031, Revision Number 01, dated December 1, 2003
 - Rules & Instructions Handbook dated July 2000.
 - Procedure Development & Approval – Document Number A.PR.002, Revision Number 6, dated March 16, 2005.
2. Findings, comments, and recommendations were discussed with MUNI representatives and obtained their concurrence.

Findings:

1. Chapter 5 of the SSPP describes schedule, control and update procedures including annual review and three-year full review requirements and criteria that have significant impact on the relevance, feasibility, or effectiveness of SSPP.
2. Section 4.9 of Procedure Development & Approval stipulates that next review must occur no later than three (3) years from any document's adoption date and that the documents may be reviewed sooner, based on changes in law, system or environment, or, if specified specifically for frequent review.

3. The SSPP Revision 01 effective date (December 1, 2003) is earlier than the approval date (2/3/04).
4. MUNI representative stated that the documentation for the annual review of the SSPP consisted of various e-mails from the different departments and marked copies of the pertinent changes as applicable.
5. Rules & Instructions Handbook was last revised and approved in July 2000 and there have been no further updates.
6. MUNI still has not implemented the corrective action plan for the recommendation 9 of the 2002 triennial audit. Recommendation 9 states "MUNI should formally adopt procedures, using the existing Historic Air Car Operator's Manual, the Milan Streetcar Operator's Training Manual, and the Operator's Training Manual F-Line & PCCs, as appropriate. MUNI should also ensure, as part of its change control process, that these controlled documents are identified or referenced in the SSPP."
7. MUNI is in the process of revising and updating the SSPP.
8. MUNI is in the process of revising and updating the Rules & Instructions Handbook.

Comments:

1. The staff pointed out that the effective date of any document can not be earlier than the approval date.
2. The staff suggested that it would be helpful to keep a file documenting the results of the annual review of the SSPP.

Recommendations:

1. MUNI should revise and update the Rules & Instructions Handbook.
2. MUNI should complete, approve, and implement the F-Line Operator Training Manual, Operating Rules Historic Streetcars, Milan Historic Operating Procedures, Presidential Conference Car Operating Procedures, Historic Streetcar General Operating Procedures, and other related operating rules and procedures as required by recommendation 9 of the 2002 triennial audit.
3. The effective dates of documents should be either the same or later than the approval date.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	10	Element	Reporting and Investigating Accidents and Unacceptable Hazardous Conditions
Date of Audit	October 17 & 25, 2005	Department(s)	Office of Health and Safety
Auditors/ Inspectors	Vahak Petrossian Gary Rosenthal	Persons Contacted	Michael Kirchanski, Kartik Shah, Pino Medina, Julia Friedlander

REFERENCE CRITERIA

1. Rail Accident/Incident Investigation Procedures, Dated October 8, 2003
2. Office of System Safety - System Safety Program Plan, Dated December 1, 2003
3. APTA Guidelines - Element 8
4. General Order 164-C - Section 6

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

1. Interview the responsible MUNI representatives regarding the application of the current MUNI accident investigation procedures.
2. Select at least 4 accidents involving injuries or fatalities reported to the CPUC during the past 18 months.
3. Review the MUNI investigation activities and reports for the selected accidents to determine whether or not accident investigation procedures were followed.
4. Determine if the accompanying corrective action plan was properly adopted and addresses the identified causes and contains requirements, which can be expected to prevent or adequately reduce the probability of the accident from recurring.
5. Determine if the implementation schedule for corrective action has been completed, is up-to-date and being monitored, or appears to be unnecessarily delayed.

RESULTS/COMMENTS

MUNI representatives listed in Persons Contacted box were contacted regarding current accident investigation procedures and practices. Muni investigation files for six injury or fatality accidents, which had occurred in the most recent two year period, were reviewed. This review disclosed that the following actions had been performed as part of the Office of Health and Safety's investigations:

1. On scene inspections;
2. Interviews with train operators and other witnesses;
3. Detailed measurements of the accident scene recorded in detailed drawings;
4. Post accident equipment testing and inspections;
5. Post accident drug and alcohol testing;
6. Reviews of operator training, performance evaluations, and hours of service records;
7. Reviews of applicable operating rules, procedures, and other directives;
8. Reviews of maintenance records and procedures, and;
9. Reviews of police and, when appropriate, coroner records.

Findings:

1. It was also determined that MUNI's accident investigation reports were not being completed

and submitted to the Commission staff in a timely manner, even though the necessary investigation activities, in most instances, had been concluded. We learned that before the accident investigation reports can be completed, they must be reviewed by the San Francisco City Attorney's office. The City Attorney's office had not, until recently, returned any of the accident investigation reports for about two years.

2. On October 25, 2005, a representative of the San Francisco City Attorney explained that a reorganization and policy changes had resulted in the delays to the accident investigation report review process. According to the representative, subsequent changes should expedite the review process and also improve the flow of information to enhance the safety program efforts.

Comment:

The auditors support MUNI's and the San Francisco City Attorney's efforts to improve and make more timely the accident report review process.

Recommendations:

MUNI should comply with GO 164-C, Section 6, by submitting accident reports to CPUC within 60 days. In the event report cannot be furnished in this time frame, updates must be provided every 30 days.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	11	Element	Internal Safety Audit Program
Date of Audit	10/25/05	Department(s)	
Auditors/Inspectors	Dennis Reed	Persons Contacted	Michael Kirchanski, Kartik Shah and Audrey Chiu (Consultant)

REFERENCE CRITERIA

1. Internal Audit Program, August 1, 2005 (Draft?)
2. Internal Safety Audit Procedures, Dated December 15, 1999
3. System Safety Program Plan, Dated December 1, 2003, Chapter 6
4. APTA Guidelines - APTA Guidelines Element 9
5. General Order 164-C – Section 4

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview the MUNI representatives responsible for the internal safety audit program and review the audit procedure and selected records to determine if:

1. A standard operating procedure describing MUNI's internal safety audit program is current, approved and issued for use;
2. Internal safety audits were performed during the past three years in accordance with the requirements of the SOP above.
3. All of the required safety program elements identified for internal safety audit were addressed during the most recent three year cycle;
4. The current three year cycle is on schedule
5. MUNI's internal safety audit schedules for audits performed during the past 2 years were submitted to the CPUC staff before the audits were begun.
6. Summary findings of each internal safety audit were prepared and distributed to the people in charge of each activity that was audited as well as the Director of Transportation and;
7. Corrective action plans and schedules have been prepared, are being effectively implemented in a timely manner, and are being actively tracked.

RESULTS/COMMENTS

Findings:

1. The standard operating procedure describing the internal safety audit program has been revised. The effective date on the revised SOP was August 1, 2005. However, this document was not signed by MUNI management until October, 2005
2. The internal safety audits performed during the past three years are in conformance with the old SOP that was effective prior to August, 2005.
3. All required safety program elements identified for internal safety audits were addressed during the most recent three year cycle.
4. The current three year cycle began on January 1, 2003 and is due to be completed by December 31, 2005. Some reports are still in a draft format, including the Hazardous Material Program and Configuration Management. MUNI's Safety Department staff stated that these documents will be finalized before the end of December 2005 and the

three year cycle will be completed on schedule.

5. The internal safety audit schedules performed during the past two years have been submitted to the CPUC prior to the beginning of the audits.
6. Findings of each internal safety audit were prepared and distributed to the people in charge of each activity that was audited as well as the Director of Transportation.
7. Corrective action plans have been prepared and are in various stages of implementation as indicated by the CAP Master List for the ISA program. The Master List identifies key information like the issue date, subject, safety liaison, responsible person/unit the status and due date.

Comments:

The current three year cycle for the Internal Safety Audits was scheduled to be completed by the end of December, 2005. The completion of these audits was given a high priority and they were completed subsequent to audit.

Recommendations:

The effective dates of documents should be either the same or later than the approval date.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	12	Element	System Security Program - Audits, Evaluations and Reports
Date of Audit		Department(s)	MTA Security Programs
Auditors/ Inspectors	Dennis Reed Brian Yu	Persons Contacted	Robert Hertan, Scott Heagly, John Simon,

REFERENCE CRITERIA

1. Office of System Safety-System Safety Program Plan, Dated December 1, 2003
2. Emergency Operations Plan, Dated June 5, 2002
3. APTA Guidelines - APTA Guidelines Element 24
4. General Order 164-C – Section 3

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview the Chief of Security, and review and evaluate selected documents as indicated below:

1. Select at least four of the SFPD monthly statistical reports and determine if: They include information on criminal incidents by line, location, time of day and type of incident, and; The information contained in the SFPD monthly reports was used to prepare deployment plans and to assign SFPD officers to patrol any MUNI light rail, streetcar and cable car lines, based on the number and severity of incidents.
2. Select at least four of the monthly graffiti vandalism reports prepared by MUNI Transit Police and Security (MTPS) and determine if: The SFPD and MUNI Central Control provided the required information in the SFPD monthly reports, and; The MTPS graffiti vandalism reports show the number and location of incidents that occurred each month;
3. Determine if security threat assessments have been performed and any resulting recommendations have been implemented.
4. Determine if periodic training is provided to rail system employees on identifying and reporting suspicious behavior (anti-terrorism training).
5. Determine if FTA requested security measures, issued in response to security alerts, have been implemented.
6. Determine if the Security Plan has been reviewed and modified, as necessary and as prescribed, to address changing security needs.

RESULTS/COMMENTS

Findings:

1. Confirmed that the monthly statistical reports for the first nine months of 2005 includes information on criminal incidents by line, location, time of day and type of incident and this information was used to assign SFPD Officers.
2. Confirmed that SFPD has an anti-graffiti program in place and all incidents related to graffiti are channeled through one police officer who identifies the graffiti signatures, locations and number of incidents each month.
3. Confirmed that security threat assessments have been performed post 911 including a three volume assessment done through the Department of Homeland Security. As a result of

these assessments security improvements have been made in security surveillance, lighting and the allocation of security personnel.

4. Confirmed that training programs have been developed and implemented including:
 - MUNI employees have been shown videos and given training on things to look for that may create threats to the system, including suspicious behavior.
 - As a follow-up to the training, each MUNI employee has a security response card providing instructions on what to do in emergency situations.
5. Confirmed that FTA security measures are in place and that MTA works with SFPD and follows the FTA "Standard Protocols for Managing Security Incidents Involving Transit Vehicles".
6. Confirmed that the Security Plan has been updated four times since 2001:
 - May, 2002
 - April, 2004
 - August, 2004
 - August, 2005

Recommendations:

None

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	13	Element	Change Control Management
Date of Audit	10/20/05	Department(s)	Health & Safety, Facilities Engineering, Fleet Procurement and Maintenance Engineering
Auditors/ Inspectors	Mahendra Patel	Persons Contacted	Michael Kirchanski Mark R. Goldstein John M. O'Neill Elson S. Hao

REFERENCE CRITERIA

1. System Safety Program Plan, Dated December 1, 2003
2. MUNI Change Control Management SOP
3. APTA Guidelines - APTA Guidelines Element 15
4. General Order 164-C – Section 3

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview the responsible MUNI representatives and review records to determine if the change control management program:

1. Requires and assures that all proposed changes to MUNI rail systems' property, equipment, designs, programs, and procedures are properly reviewed and approved by the Office of Safety and other affected agency entities;
2. Incorporates an effective hazard identification and resolution procedure into the review and approval process;
3. Includes provisions for the adoption of interim hazard mitigations pending implementation of approved changes, and:
4. Ensures approved changes are forwarded to the appropriate agency offices for configuration management.

Select at least four configuration changes to MUNI property, equipment, designs, programs, or procedures, which have taken place in the past two years and determine if:

1. The proposed changes were submitted to the Change Control Board for review and approval;
2. The Change Control Board reviewed the proposed changes;
3. Comments and responses were addressed and documented;
4. The changes were formally authorized by the Change Control Board, and;
5. The approved changes were forwarded to the appropriate agency offices for configuration management.

RESULTS/COMMENTS

Activities:

1. Interviewed MUNI representatives regarding Change Control Management.
2. Reviewed the following documentation:
 - a. Rail Change Control Board (RCCB) Procedure – Document Number A.PR.015, Revision Number 01, dated May 4, 2004.
 - b. Rules & Procedure Committee (RPC) Procedure – Document Number A.PR.014,

Revision Number 01, dated June 3, 2003.

- c. Change Request Summary spreadsheet showing Change Request Number, Change Title, Originator, date submitted, Date approved and Status.
 - d. Records for the following Change Requests: CCR 070, Relocate breaker; CCR 071, Breda Change Spring; CCR 0125, Rail Accident Investigation SOP SY.PR.003; CCR 0132, Test Plan for E-Line boarding islands; CCR 0145R, Replace trackwork West Portal/Ulloa; and CCR 0146, Replace Intrusion Alarms.
 - e. 2005 Quarterly reports to the Executive Director.
3. Discussed findings, comments and recommendations with MUNI representatives and obtained their concurrence.

Findings:

1. Safety Certification Committee (SCC) reviews and approves changes associated with the major project, such as, new extension.
2. RCCB reviews and approves changes to the existing MUNI rail operating system. RCCB also reviews and approves rail-related documents (SOPs) that are transmitted by the RPC.
3. Health & Safety Department performs hazard identification and resolution analysis concurrently with the review and approval process of the change request and also provides for the adoption of interim hazard mitigations pending implementation of approved changes.
4. The RCCB meets on the third Monday of every month. The quorum for the meeting is fifty-one percent of all RCCB members. However, the MUNI representatives stated that all RCCB members approve the change request.
5. The RCCB Procedure effective date (May 4, 2004) is earlier than the approval date (6/15/04).
6. The RPC Procedure effective date (June 3, 2003) is earlier than the approval date (6/24/04).
7. MUNI representative stated that the records of the RCCB meetings and proceedings are not always kept and that they are spotty at best.
8. The quarterly reports to the Executive Director list only the approved change requests and nothing else. The RCCB procedure requires that these reports include all RCCB actions during the quarter including a list of all important safety and security action items not completed at the end of the quarter. Furthermore, copies of these reports are not sent to the Deputy General Managers and the Manager of Safety and Security as required by the RCCB procedure.
9. Notice of Action documenting the disposition of the change request is not generated and transmitted as required by the RCCB procedure.
10. Not all RCCB members signed off on the change request form for CCR 125 and CCR 0145R.
11. Old change request form was used for CCR 0146 – this change request was submitted to RCCB on 09/01/04 and was approved on 09/07/04.

Comments:

The staff suggested paying attention to detail in filling out the change request forms to ensure that they are completely filled out including all the required signatures.

Recommendations:

1. MUNI should ensure that all affected departments implement and follow the requirements of the RCCB and RPC procedures.
2. The effective dates of documents should be either the same or later than the approval date.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	14	Element	Configuration Management
Date of Audit	10/17/05	Department(s)	Health & Safety
Auditors/ Inspectors	Mahendra Patel	Persons Contacted	Michael A. Hursh Mark R. Goldstein

REFERENCE CRITERIA

1. System Safety Program Plan, Dated December 1, 2003
2. MUNI Configuration Management SOP
3. APTA Guidelines - APTA Guidelines Element 18
4. General Order 164-C – Section 3

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview the responsible MUNI representatives and review records to determine if the configuration management program:

1. Requires and ensures that all properly approved changes to MUNI rail systems' property, equipment, designs, programs, and procedures are accurately and completely documented;
2. Is effectively linked to MUNI's change control program and process;
3. Incorporates the changes into all appropriate documentation, and;
4. Formally notifies all necessary parties or other entities within or outside the agency about the changes.

Select at least four configuration changes to MUNI property, equipment, designs, programs, or procedures, which have taken place in the past two years and determine if:

- a. The changes were completely and accurately documented;
- b. The changes were formally authorized through the change control program and process;
- c. The changes were incorporated into all appropriate documentation, and;
- d. All necessary parties or other entities within or outside the agency were properly notified about the changes.

RESULTS/COMMENTS

Activities:

1. Interviewed MUNI representatives regarding Configuration Management.
2. Reviewed the following documentation:
 - a. Rules & Procedure Committee (RPC) Procedure – Document Number A.PR.014, Revision Number 01, dated June 3, 2003.
 - b. Rail Change Control Board (RCCB) Procedure – Document Number A.PR.015, Revision Number 01, dated May 4, 2004.
 - c. Records for the following configuration changes: L.PR.018, Calibration of LRV Maintenance MTEs; R.SM.PR.029, Signal Maintenance VETAG PM; R.SM.PR.011, Subway Station White Courtesy Telephone; R.OC.PR.028, OCC Compliance Check Program; and I.MR.PR.003, Rail Vehicle Movement at Switches without Signals – Surface Interlockings.

- d. E-mail dated July 19, 2005 from RCCB Administrator to RPC Configuration Controller approving SOP R.OC.PR.028, OCC Compliance Check Program, and SOP R.SM.PR.029, Signal Maintenance VETAG PM
 - e. E-mail dated October 11, 2005 from RPC Configuration Controller to various managers showing the distribution of recently approved SOPs.
3. Discussed findings, comments and recommendations with MUNI representatives and obtained their concurrence.

Findings:

1. MUNI personnel gave a brief description of the Configuration management Program. Safety Certification Committee (SCC) reviews and approves changes associated with the major project, such as, new extension. RCCB reviews and approves changes to the existing MUNI rail operating system and rail-related documents (SOPs) that are transmitted by the RPC. The RPC provides management review and approval for new and/or revised documents, such as, procedures, manuals, rule books, work instructions, etc.
2. The RPC meets on the first Monday of every month. However, all the members do not always attend the meeting. The document approval is by majority vote. However, since all members do not attend the meeting, the majority of attending members approving the document may not represent the majority of the RPC members.
3. The RCCB Procedure effective date (May 4, 2004) is earlier than the approval date (6/15/04).
4. The RPC Procedure effective date (June 3, 2003) is earlier than the approval date (6/24/04).
5. Section 4.5 of the RPC Procedure A.PR.014 states that all approved documents must be submitted by the RPC to the RCCB, in order to assess whether or not effectivity issues need to be addressed. This is in contradiction to Section 4.4 that states that the RPC transmits those approved documents that relate to rail systems issues to the RCCB. MUNI personnel stated that currently RPC complies with the Section 4.4 requirements.
6. The documents reviewed are in compliance with the RPC and RCCB procedures. All changes were authorized by the RCCB as applicable, completely and accurately documented, incorporated into all appropriate documentation, and approved documents were transmitted to all necessary parties.

Comments:

The staff suggested revising the existing RPC procedure as appropriate to reflect the current configuration management process and to better define the meeting attendance and document approval requirements.

Recommendations:

The effective dates of documents should be either the same or later than the approval date.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	15	Element	Safety Certification – Third Street Extension
Date of Audit	10/24/05	Department(s)	Health & Safety
Auditors/ Inspectors	Mahendra Patel	Persons Contacted	Michael Kirchanski Dan Rosen Jeffrey T. Lau

REFERENCE CRITERIA

1. MUNI Safety Certification Program Manual
2. System Safety Program Plan, Dated December 1, 2003
3. APTA Guidelines - APTA Guidelines Element 15
4. General Order 164-C

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview MUNI department representatives from the identified departments and review Third Street Extension project records to determine if:

1. A safety certification procedure or plan for the project has been established; implemented, and if necessary updated;
2. A safety certification committee with representatives from all affected MUNI departments is actively and regularly involved in the safety certification process including reviewing and commenting on project safety critical decision making activities;
3. The safety critical design elements are being tracked and verified with regular status reports being provided to the safety certification committee;
4. Members of the safety certification committee or their designated representatives regularly attend committee meetings and participate in the oversight of the safety certification process;
5. Safety design criteria specified for the safety critical design elements have been verified to be implemented in the project design and are being verified to be implemented into construction;
6. Audits have been and would continue to be performed to determine the validity of the safety certification verification process;
7. Appropriate hazards analyses of design and construction modifications are being performed;
8. The safety certification process formally addresses all changes to safety critical elements of the project.
9. Safety certification is administered by the MUNI System Safety Department or other safety professionals not subordinate to the project (Construction Division) management.
10. All safety certification activities are thoroughly documented throughout the life of the project to substantiate that safety elements, safety criteria, final design, construction, testing, operating and emergency procedures, and training aspects of the project would be implemented in the completed project.

RESULTS/COMMENTS

Activities:

1. Interviewed MUNI representatives regarding Safety Certification – Third Street Extension.

2. Reviewed the following documentation:
 - a. Safety Certification Program (SCP) Manual dated July 2000.
 - b. Safety Certification Committee (SCC) meeting minutes for the year 2004 and 2005.
 - c. Safety certification records, such as, various design and construction verification checklists, certifiable element certification forms, criteria conformance certificate forms, etc. for the Third Street Extension Project.
 - d. Safety Certification Status Report dated April 20, 2005 prepared by Booz Allen Hamilton.
3. Discussed findings, comments and recommendations with MUNI representatives and obtained their concurrence.

Findings:

1. MUNI personnel gave a brief description of the Third Street Extension Project and its Safety Certification Program. The project is divided into several segments and the Safety Certification Committee (SCC) reviews and approves safety certification documents as required by the Safety Certification Program manual (SCP).
2. Transit Manager routinely reviews checklists and associated documents to verify the accuracy and completeness as required by the SCP.
3. MUNI personnel stated that corrective action plans are generated and being implemented to address the recommendations contained in the safety certification status report dated April 20, 2005.
4. MUNI has completed Preliminary Hazard Analysis (PHA) and Operating Hazard Analysis (OHA) for the Third Street Extension Project.
5. The SCP was last approved in July 2000 and there is no update since then. Section 4.9 of Procedure Development & Approval (A.PR.002) stipulates that next review must occur no later than three (3) years from any document's adoption date and that the documents may be reviewed sooner, based on changes in law, system or environment, or, if specified specifically for frequent review. However, MUNI personnel stated that MUNI is in the process of revising the SCP manual.
6. There was no documentation to show that SCC has reviewed and assessed the SCP annually for the adequacy, completeness, and effectiveness as required by Section VIII of the SCP manual.
7. SCC has members from the all affected MUNI departments and is required to meet monthly to participate in the oversight of the safety certification process. However, The SCC does not meet regularly as required and the member attendance is not consistent. The lack of member attendance by responsible members suggests that all affected MUNI departments are not actively and regularly involved in the safety certification process including reviewing and commenting on project safety critical decision making activities.
8. The documents reviewed are in compliance with the SCP. The design and construction checklists are completed as required and the Open Items List (OIL) is generated to track the resolution of non-compliant issues.

Comments:

The staff suggested that it would be helpful to keep a file documenting the results of the annual review of the SCP.

Recommendations:

1. MUNI should ensure that representatives from all affected departments attend SCC meetings to actively participate in the safety certification process.

2. MUNI should ensure that the SCC meets regularly at the required monthly frequency.
3. MUNI should revise and update the Safety Certification Plan.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	16	Element	Measuring and Testing Equipment
Date of Audit	10-19-2005	Department(s)	MUNI Metro LRV and HSC Vehicle Maintenance
Auditors/ Inspectors	Joey E. Bigornia	Persons Contacted	Mike Ellis Rene Solomon Franklin Johnson Jeffrey Lau

REFERENCE CRITERIA

1. Calibration of Measurement & Test Equipment for LRV Maintenance, Dated June 1, 2005
2. Calibration of Measurement and Test Equipment, Dated 1999
3. System Safety Program Plan, Dated December 1, 2003, Chapter 6
4. APTA Guidelines – APTA Guidelines Element 11
5. General Order 164-C – Section 3

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview responsible MUNI representatives from the selected departments, review records, examine equipment storage facilities, and perform inspections of not less than eight pieces of measuring or testing equipment to determine if:

1. The selected gauges, micrometers, calipers, torque wrenches, multi-meters, etc are properly inventoried, stored, distributed for use, calibrated at prescribed intervals, and marked, tagged or otherwise identified to show current calibration status;
2. The next scheduled testing / calibration due date is shown on each instrument;
3. Tools and instruments requiring calibration are addressed in department procedures.

RESULTS/COMMENTS

Findings:

1. The following list of equipment, identified by model and serial number, was reviewed:
 - a. Two Pressure Gauges
 1. Wika – p/n 7, s/n MS10G from the Breda Test Rack location
 2. Ashcroft – p/n HS-0023g3, s/n MS3G from the Breda Test Rack location
 - b. Seven Torque Wrenches
 1. Proto – p/n WYA14509, s/n HO-010 from the Heavy Overhaul & HVAC location
 2. Proto – p/n WYH10904, s/n HO011 from the Heavy Overhaul & HVAC location
 3. Proto – p/n WBM82734, s/n PM-001 from the PCC location
 4. Proto – p/n WXB34619, s/n PM-002 from the PCC location
 5. Proto - p/n 6141, s/n 0-032 from the Tool Crib location
 6. Proto - p/n 6066A, s/n WA05817 from the Tool Crib location
 7. Proto - p/n 6072-2, s/n AO17559 from the Tool Crib location
 - c. One Insulation Megger Unit
 1. AVO – p/n 1945, s/n HO-009 from the Tool Crib location

Each piece of equipment listed above was inspected to determine if it had a fixed calibration sticker identifying when the device was due for the next calibration check. All equipment had the necessary stickers.

3. I reviewed copies of Metrological & Calibration Laboratory Services Certificates to confirm that the list of equipment selected for the review was calibrated within the required annual frequency. I confirmed that MUNI's Third Party vendor accomplished this task for all equipment selected for review. No exceptions were noted.
4. The standard operating procedure identifies all equipment shall be **annually** calibrated for use in LRV Maintenance. The records review and physical equipment inspection of each calibration sticker demonstrates MUNI has accomplished this task.

Recommendations:

None.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	17	Element	Subway Station and Emergency Equipment Maintenance
Date of Audit	10/20/05	Department(s)	
Auditors/ Inspectors	Dennis Reed Claudia Lam	Persons Contacted	Ted Aranas, Leo Martinez, Ernie Williams, Stephen Newman, Tom Wai, Jeff Lau (Consultant)

REFERENCE CRITERIA

1. MUNI Subway and Infrastructure Standard Operating Procedures
2. System Safety Program Plan, Dated December 1, 2003, Chapter 6
3. APTA Guidelines - APTA Guidelines Elements 11 and 14
4. General Order 164-B – Section 3

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

1. Interview the designated MUNI representatives responsible subway station and emergency equipment maintenance, review procedures and records to determine if procedures for preventive maintenance, inspection and testing programs are current and are being implemented for the following items:
 - a) Station emergency telephones
 - b) Station fire alarms, smoke and heat detectors
 - c) Station sprinkler systems
 - d) Under-car deluge system
 - e) Emergency trip switches
 - f) Trackway standpipes and associated pumps between stations
 - g) Emergency ventilation fans
 - h) Station battery room
 - i) Emergency lighting
 - j) SF Fire Dept. stored fire fighting equipment
 - k) Emergency exit doors
2. Select two or more subway stations, including the adjacent subway equipment, to determine if the above listed items were all inspected and tested, as specified by the SOP, during the past 24 months.
3. Determine if the required PM activities were documented on standardized report forms.
4. Determine if repairs to correct defects and deficiencies noted on the PM report forms were completed and signed off in a timely manner.
5. Determine if any safety critical equipment modifications were implemented and if so, were they approved by the Change Control Board.

RESULTS/COMMENTS

Findings:

1. Procedures for preventive maintenance, inspection and testing programs are current and are

being implemented for the following items:

- a. Station Emergency Telephones – The monthly checklists reviewed for the past year were found complete with the exception of three checklists that did not have dates on them.
 - b. Station fire alarms, smoke and heat detectors – The fire alarms are checked on a monthly basis. Currently, this is a contracted service that notifies MUNI two weeks before its inspections. The service verifies that the fire alarm system is working properly. These inspections are occurring on a monthly basis and are in compliance with all regulations.
 - c. Station Sprinkler systems – There are both daily and monthly inspections of the station sprinkler systems. The daily inspection is part of the daily watch and the sprinklers are checked on a monthly basis. The monthly checklists reviewed for the past year were found to be complete.
 - d. Under-car deluge system – This system is checked every 17 weeks and the records reviewed for the past year were found to be complete.
 - e. Emergency trip switches – The emergency traction power trips at all stations are locked to keep vandals from using them. Due to the rapid deceleration at low speeds in an emergency stop, there is potential for passengers in the trains to fall and sustain injuries. The operator on the train has the option of pushing the “mushroom” on the trains creating the same effect in an emergency situation. It was stated that MUNI is continuing to do preventative maintenance on the trip switches but the checklists were not reviewed since the system is not operational.
 - f. Trackway standpipes and associated pumps between stations – These are checked quarterly, annually and are certified every 5 years. The records reviewed were found to be complete.
 - g. Emergency ventilation fans -- The emergency ventilation fans are checked every 4 weeks, 12 weeks and on an annual basis. The records reviewed for the past year were found to be complete.
 - h. Emergency lighting – The emergency lighting is checked on a weekly and monthly basis. The records reviewed were found to be complete
 - i. SF Fire Dept. stored fire fighting equipment – MUNI is not responsible for monitoring the stored fire fighting equipment.
 - j. Emergency exit doors – The emergency exit doors are checked on a monthly basis. The records reviewed were found to be complete.
2. Two subway stations Van Ness and Church were selected to determine if the above listed items were all inspected and tested, as specified in the SOP's. We reviewed the records from January 1, 2004 through September 30, 2005 and found them to be complete.
 3. A review of the required PM activities confirmed that these activities are being documented on standardized report forms.
 4. A review of the repair activities that were noted on the PM report forms confirmed that these activities were completed and signed off in a timely manner.
 5. There were no safety critical equipment modifications identified in the past 18 months to go to the Change Control Board.
 6. The SOP's were reviewed in August, 2005 and are in the process of being revised. These are:
 - Subway emergency lightning

- Subway sprinkler systems
 - Subway portable fire extinguisher systems
 - Subway Fire Department Hose Connection Systems
 - Subway Emergency Ventilation Fan System Inspection and Maintenance
 - Subway Fire Telephone System
 - Subway Under Train Deluge Fire Systems
7. Work Orders – Ten original work orders were requested for review to determine if they are complete. These are:
- WO# 0402542
 - WO# 0401984
 - WO# 0500921
 - WO# 0400037
 - WO# 0402148
 - WO# 0400038
 - WO# 0401106
 - WO# 0400625
 - WO# 0400626
 - WO# 0400039 – Electronic copy only
8. Copies of all of the original work orders are complete with the exception of WO # 0400039 which was not found. In this instance an electronic copy was provided for review.
9. Three PM checklists were found not to have dates on them. Although this was a small number, we agree with MUNI's internal safety audit (February, 2003) of the Rail and Fire Protection System that stated management review "is the main tool MUNI has to ensure that employees have completed preventive maintenance fully and accurately".

Recommendations:

1. MUNI should ensure that the original subway station and emergency equipment work orders or facsimiles are accessible for review for at least four years as required by GO 143-B.
2. MUNI should ensure that each PM checklist is fully and accurately completed with the proper dates and signatures.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	18	Element	Drug and Alcohol Program
Date of Audit		Department(s)	
Auditors/ Inspectors	Dennis Reed	Persons Contacted	Barbara Conway

REFERENCE CRITERIA

1. MTACCSF Policy and Procedure Manual, Revised July, 2002
2. System Safety Program Plan, Dated December 1, 2003, Chapter 6
3. APTA Guidelines - APTA Guidelines Element 21
4. General Order 164-C – Section 3
5. 49 CFR Part 655
6. 49 CFR Part 40

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

1. Interview the program manager and review the report from the most recent FTA audit of the MUNI Drug Prevention and Alcohol Misuse Program and determine if any corrective actions resulting from FTA recommendations are still open.
2. For each rail transit employee who tested positive for drugs or alcohol in the past three years and who is also currently employed in a safety sensitive position, review the appropriate records to determine whether or not:
 - a. The employee was evaluated and released to duty by a Substance Abuse Professional (SAP)
 - b. The employee was administered a return-to-duty test with verified negative results
 - c. Follow-up testing was performed as directed by the SAP according to the required follow-up testing frequencies of the reference criteria after the employee has returned to duty.
 - d. Consequences for repeat offenders were carried out as required by the D&A policy of SRTD.
3. Determine if random testing of safety sensitive rail employees is performed within the allowed period without excusing individuals for illegitimate reasons.

RESULTS/COMMENTS

Findings:

1. The most recent compliance letter from the FTA regarding Substance Abuse Management Oversight Audit Compliance (July 29, 2002) and is in compliance with the federally mandated Drug and Alcohol Testing program.
2. During the past three years 24 persons tested positive and of these 10 persons were either dismissed, retired or resigned their positions. The documentation for those persons who are in safety sensitive positions and currently employed was reviewed and it was ascertained that:
 - a. These employees were evaluated and released by a Substance Abuse Professional (SAP).

- b. These employees were evaluated and administered a return-to-duty test with verified negative results.
 - c. The follow-up testing program, for employees that are currently employed by MUNI, conform to the return to duty policy.
 - d. Employees who did not conform to the testing and counseling program are no longer employed with MUNI.
3. During the past year more than 1400 random tests were administered to safety sensitive employees and contractors. The pool of prospective employees is approximately 3400. Between January 1, – October 26, 2005 a total of 2,249 tests was administered. These include follow-up, post accident, pre-employment, reasonable suspicion/cause, random and return-to-duty. MUNI uses a mobile testing facility that goes to the job sites to collect specimens. Additionally, 172 were excused by the mobile testing contractor from taking the tests for various valid reasons.

Recommendations:

None

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	19	Element	Employee Safety Program
Date of Audit	10/26/05	Department(s)	Safety Department
Auditors/Inspectors	Dennis Reed	Persons Contacted	Michael Kirchanski (Manager) and Staff

REFERENCE CRITERIA

1. Site-Specific Division Safety Committees in Transportation and Maintenance, January 1, 2002
2. Hazard Communication Program, April 1, 2002
3. System Safety Program Plan, Dated December 1, 2003, Chapter 6.13
4. APTA Guidelines - APTA Guidelines Element 19
5. General Order 164-C – Section 3

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview the responsible MUNI representatives and at least two safety committee employee representatives and also review the employee safety program records to determine if:

1. MUNI's Hazard Communication Program has been regularly reviewed and updated;
2. The use of an appropriate procedure and reporting form is being implemented and is periodically distributed to all employees to effectively report safety hazards in the work place;
3. MUNI Safety Committees have addressed all employee identified safety hazards reported in the last 24 months by developing and implementing appropriate corrective action plans and schedules;
4. Required corrective actions have either been satisfactorily completed or are being actively tracked and documented, and;
5. MUNI Safety Committees held regularly scheduled meetings during the past 24 months to facilitate implementation of the Employee Safety Program, and to perform joint safety inspections of the facilities;

RESULTS/COMMENTS

Findings:

1. Documentation and Procedures --
The Hazard Communication Program communication procedures have been revised. These procedures outline the hazard management process and provides compliance to the Cal/OSHA Hazard Communication Standard (CCR 5194) which implements the Worker Right-To-Know statute and federal OSHA Hazard Communication Standard (29 CFR 1910.1200). It also incorporates Proposition 65 (California) that requires labeling of hazardous chemicals. MUNI's program is in compliance with these standards. This training is required for all MUNI employees who handle chemical products or work in proximity to chemical products.
2. A procedure is in place for reporting safety hazards. These hazards can be resolved at several levels within MUNI that includes the Safety Department, Safety Committees or at the supervisor's level.
3. There are 22 Division, site specific, and program specific Safety Committees that meet on a

monthly basis. The corrective action procedure was reviewed and two hazard related issues were tracked. These were:

- a. A tripping hazard was reported at meeting #1 (1/05) due to pipes, brushes, and debris located at the Geneva Wash Rack. This hazard was reported as corrected at the next Division Safety Committee meeting.
- b. Grease debris in the northwest side stairwell that leads from the garage to support shops (Green). Corrective actions were followed to conclusion. At the Green Electronics and Green Running Meeting #5 (5/05) a potential exposure to slip, trip, and fall hazards due to poor housekeeping in the location was reported. At meeting #7 (7/05) this hazard was reported as clean-up completed.

Corrective action procedures are in place for the Safety Committees to develop plans and implement corrective actions.

4. All corrective actions have either been corrected or are being tracked to completion.
5. The Safety Committees are having regularly scheduled meetings to facilitate the implementation of the Employee Safety Program. They are required to meet on a monthly basis.
6. The tracking of the mandated Hazard Communication Program training for new and transferring personnel and other training activities related to hazard management is incomplete. The database used by the Safety Department is currently being updated to resolve this deficiency.

Recommendations:

MUNI should complete the update of its Hazard Communication Program training database to ensure that all MUNI employees that handle chemical products or work in proximity to chemical products are being identified for the appropriate Hazard Communication Program training and receive training in a timely fashion. See recommendation on Checklist #22 (Hazardous Materials Management Program).

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	20	Element	Operating Rules and Procedures - LRVs
Date of Audit	October 17, 2005	Department(s)	Operations
Auditors/ Inspectors	Brian Yu	Persons Contacted	Joyce Garay

REFERENCE CRITERIA

System Safety Program Plan, Dated December 1, 2003, Chapter 6
 APTA Guidelines - APTA Guidelines Element 12
 General Order 164-C – Section 3

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Review operating rules and procedures and examine records to determine if:

1. Interim mandatory operating directives (“bulletins”) are issued separately from non-operating directives or informational notifications (“notices”);
2. There is a procedure describing the purpose of each, limitations of use, and how each is prepared, approved, distributed, signed for, posted and recalled or annulled, etc.
3. The bulletins and notices, when issued, are entered on a master log to control issuance and distribution as well as to track the active / inactive status of each notice and bulletin;
4. That a record is maintained for each bulletin issued and each employee receiving a copy of that bulletin;
5. The active bulletins and notices are posted at MUNI specified locations and;
6. Inactive bulletins and notices are removed from those posting locations.

Select a sample of six or more mandatory directive operating “bulletins” issued to operating personnel within the last two years. Review records to determine whether or not each required operating employee has received those bulletins.

RESULTS/COMMENTS

Findings:

1. The MUNI SOP *Master File for All Rules* definitions (section 3.0) had a discrepancy with the current practices in issuing several kinds of Bulletins, Notices, and Orders. According to the MUNI Master File Administrator (MFA), MUNI currently issues General Bulletins, Divisional Bulletins, General Orders, Special Orders, and Notices for the topics that affect all of the MUNI Divisions. The definitions for these various forms indicate that they are redundant and also allow a variety of positions in the organization to issue potentially conflicting “written instructions” for modifying rules and procedures. The General Bulletin files that I reviewed had “Bulletins” and “General Bulletins” filed together with the same filing number sequence. Some of the “Bulletins” found in the General Bulletins file folder should have been Divisional Bulletins, but since the bulletin was originated by the MFA and signed by the General Manager, they were filed in the General Bulletins file. I’ve also noticed that most of the Divisional Notices filed should have been labeled as Divisional Bulletins according to the MUNI SOP *Master File for All Rules* Section 3.0.
2. MUNI SOP *Master File for All Rules* is the procedure describing the purpose of each,

limitations of use, and how each is prepared, approved, distributed, signed for, posted and recalled or annulled, etc.

3. MUNI MFA tracks the issued bulletins and notices manually and the active/inactive status of the bulletins and notices could not be tracked.
4. The MUNI Cable Car Division's master log for the bulletins and notices was a very good example of tracking the issuance and status of each bulletin or notice.
5. All of the Bulletins and Notices (including General Bulletins and Divisional Notices) were filed at a central location – MUNI Presidio Office Building.
6. MUNI MFA utilizes the distribution matrix to keep track of the bulletins and notices distribution down to the dispatchers' level. However, MFA could not track if each employee is receiving a copy of bulletins or notices. MUNI MFA should develop a mechanism that ensures and verifies each employee receives the required bulletins and notices.
7. MUNI Green Division's bulletin board at the entrance of the operators' lounge had active bulletins and notices displayed but it was not determined who is responsible for maintaining the bulletin board and documents.

Recommendations:

1. MUNI should reexamine and revise the SOP Master File for All Rules to simplify and limit authority to issue written instructions in the form of Bulletins, Notices, and Orders and ensure compliance with the revised procedure.
2. MUNI should develop a bulletins and notices master log for Green Division, which would be similar to the Cable Car Division's Master Log that is able to track the distribution and the active/inactive status of bulletins and notices.
3. MUNI should develop a mechanism that ensures and verifies each employee receives bulletins and notices and formally establish who is responsible for removing non-current bulletins and notices.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	21	Element	Hours of Service Train Operators, Train Controllers and Supervisors
Date of Audit	October 21, 2005	Department(s)	Muni Rail Operations
Auditors/ Inspectors	Claudia Lam Dennis Reed	Persons Contacted	Michael Kirchanski, Manager of Health and Safety Section George Louie, Transit Manager II, Green LRV David L. Banbury, Muni, Superintendent, Central Control

REFERENCE CRITERIA

1. Hours of Service Draft, Dated March, 2005
2. System Safety Program Plan, Dated December 1, 2003, Chapter 6
3. General Order 143-B – Section 12.04
4. General Order 164-C – Section 3

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Select ten individuals from the rosters of HSC and LRV operators, central controllers and rail inspectors. Review the “time on duty” records prepared during a six-month period within the past two years for the selected operating employees and determine if:

1. They complied with the requirement that employees in safety sensitive positions may not remain on duty for more than 12 consecutive hours, or for more than 12 hours spread over a period of 16 hours, and;
2. The initial on duty status for each only began after 8 consecutive hours off duty.

RESULTS/COMMENTS

Activities:

1. Interviewed Muni representatives regarding Hours of Service Train Operators, Train Controllers and Supervisors.
2. Randomly sampled for the following areas: Light Rail Vehicle Operators, Supervisors and Controllers
3. Went through the hours of service for 2004 for Train Controllers, Train Operators and Supervisors, looked at the hourly segments for Train Operators whose hours of service exceeding 10 hours.
4. Reviewed the following documents:
 - Rail Hours of Service Draft
 - Computer system called TESS that shows the hours of service for Train Operators and Controllers.
 - Timesheet of supervisors for 2004
 - Weekly LRV Metro Regular Full-Time Runs Hourly segments.

Findings:

1. The records of Supervisors were reviewed and they showed that several of them worked double shifts of 16 hours totally which violated the 12 hours maximum rule. Muni representatives responded that they were short of staff to cover absences and they are now

in the process of training new supervisors.

2. The records of LRV operators, covering a six month period, were reviewed and no MUNI or Commission hours of service violations were identified.
3. The records of train controllers, covering six months, were reviewed and no hours of service violations were found.

Recommendations:

Muni should identify the causes and take specific steps to ensure that supervisors and other employees strictly comply with the Commission's hours of service requirements.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	22	Element	Hazardous Materials Management Program
Date of Audit	October 24, 2005	Department(s)	Office of Health and Safety
Auditors/Inspectors	Dennis Reed Claudia Lam	Persons Contacted	Phil Calhoun, Richard Green, Audrey Chiu (Consultant)

REFERENCE CRITERIA

1. Hazard Communications Plan for MTA Employees, April 1, 2002
2. Hazardous Materials/Hazardous Waste Management Program, June 28, 2000
3. System Safety Program Plan, Dated December 1, 2003, Chapter 6
4. APTA Guidelines - APTA Guidelines Element 20
5. General Order 164-C – Section 3

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview the MUNI representatives in charge of hazardous materials management at the LRV and HSC vehicle maintenance shops and review records to determine if:

1. Standard operating procedures describing MUNI's program for identifying, handling, storing, using and disposing of hazardous materials in the LRV and HSC vehicle maintenance shops have been regularly reviewed, modified if necessary, and approved for use;
2. Training emphasizing the safe handling of hazardous materials has been provided to all affected employees;
3. Weekly inspections were performed and documented during the past 12 months to ensure that all hazardous materials in the shops are properly identified and stored in designated areas and;
4. Hazardous materials discharge/spill reports for incidents, which occurred during the past 2 years, have been prepared and are on file at the LRV and/or HSC maintenance shops.

RESULTS/COMMENTS

Findings:

1. MUNI has a process in place for identifying, handling, storing, using and disposing of hazardous materials.
 - a. MUNI has a written SOP for hazardous waste, but is expected to develop a comprehensive revised procedure within the next 6 months.
 - b. A Material Safety Data Safety Sheet (MSDS) procedure is in place that provides a wide variety of information about the physical properties of chemical products, including health, physical and fire hazards, as well as storage and disposal recommendations. Copies of all MSDS worksheets are in binders that are readily accessible at each facility. The supervisors are responsible for maintaining these binders and the hazardous materials coordinator has overall responsibility for the program.
2. A training program is in place for employees who handle hazardous materials. This includes:
 - a. The Hazard Communication Program that is in compliance with the Cal/OSHA Hazard Communication Standard (CCR 5194) which implements the Worker Right-To-Know

statute and federal OSHA Hazard Communication Standard (29 CFR 1910.1200). It also incorporates Proposition 65 (California) that requires labeling of hazardous chemicals.

- b. Tailgate meetings – Issues related to handling of hazardous materials is provided at these meetings.
3. Weekly inspection reports were reviewed for the past 12 months and found to be in compliance with MUNI requirements.
4. There was no hazardous materials discharge/spill, according to MUNI, in the last two years. There were no hazardous materials discharge/spill reports for the past two years.
5. Currently, it is difficult to track the training of employees because the database to track employee training is incomplete.

Recommendations:

1. MUNI should complete and implement the revised SOP for hazardous waste.
2. MUNI should complete the update of its Hazard Communication Program training database to ensure that all MUNI employees that handle chemical products or work in proximity to chemical products are being identified for the appropriate Hazard Communication Program training and receive training in a timely fashion. See recommendation on Checklist #19 (Employee Safety Program).

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	23	Element	Training and Certification of HSC and LRV Operators, Rail Inspectors, On Track Equipment Operators and Train Controllers
Date of Audit	October 20, 2005	Department(s)	
Auditors/ Inspectors	Raed Dwairi	Persons Contacted	Jim Kelly, Senior Operations Manager David Banbury, Superintendent Central Control Srecko Kahvedzic, Operations Analysis

REFERENCE CRITERIA

1. Various MUNI training and certification program plans
2. System Safety Program Plan, Dated December 1, 2003, Chapter 6
3. APTA Guidelines - APTA Guidelines Element 13
4. General Order 164-C – Section 3
5. General Order 143-B – Section 13.03

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview the department representatives and review the appropriate documents and records to determine if:

1. The training plan, as well as corresponding refresher training plan, and certification program plans for HSC and LRV Operators, Rail Inspectors, On Track Equipment Operators and Train Controllers specify:
 - a. The purpose, scope and objectives of each training and certification program;
 - b. The elements (applicable MUNI rules and procedures) to be addressed and the presentation sequence;
 - c. The minimum number of hours for the entire training program as well as each segment;
 - d. The requirement for ensuring lesson plans and information are current.
 - e. The requirements for the number of periodic examinations to be given, when each should be given as well as the type and the scope of information assessed by each;
 - f. Which examinations assess the employee's knowledge about rules and procedures as well as those that assess the ability to perform required tasks according to rules and procedures and;
 - g. The minimum requirements, including both knowledge and performance, which must be demonstrated by the employee to attain certification.
2. There are designated position(s) or department(s) responsible for custody of all training and certification records.
3. That refresher training and re-certification of each operating employee is performed at least once every two years.

Select ten or more individuals from the rosters of LRV and HSC operators and two or more employees for each of the other classifications. Review the training and certification records for each employee selected to determine whether if:

1. Each successfully completed the required initial operations training for their position;
2. Each successfully passed the testing for knowledge and ability to perform the operating duties

required for certification and:

3. Each successfully completed refresher training and re-certification, as appropriate, within the past two years.

RESULTS/COMMENTS

Findings (Metro Rail Operations):

1. Training and certification records of three randomly selected MRO Inspectors and one manager were found all to be complete.
2. Individual evaluation forms were completed by different trainers but there was no record, such as a summary evaluation form that captures all the comments and recommendations, to show that deficiencies were corrected prior to granting certification to the MRO trainee. The manager in charge of the MRO training program agreed that such a summary evaluation should be created and a final review of this form should be performed prior to granting certification to make certain that all comments and recommendations have been appropriately addressed with the MRO trainee.

Findings (LRV Operators):

1. LRV Operator training and certification records were well organized.
2. MUNI has a mature and organized program to track training required of LRV Operators after their involvement in avoidable accidents.
3. Training and certification records of six LRV and four F-Line operators are complete except for some gaps in the refresher training of some operators. These gaps could not be explained by the MUNI representatives in charge of the LRV Operator Training Program.

Findings (Train Controllers):

1. Controllers training and certification files were well organized.
2. Very few Controller compliance checks were being performed in 2003.
3. There were 13 controllers and 2 new hires (in training).
4. All required training and certification requirements for train controllers were being met. No exceptions were noted.

Findings (On Track Equipment Operators):

1. All required training and certification requirements for On Track Equipment Operators were being met. No exceptions were noted.

Recommendations:

1. MUNI should create a summary evaluation form for training and certification to address all comments and recommendations noted on the individual MRO trainers' evaluation forms, to use as part of the training assessment prior to granting certification to MRO trainees.
2. MUNI should ensure that all required training and certification is provided for LRV operators within the required periods of time.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	24	Element	Training and Certification of Cable Car Grip Person, Conductors and Inspectors
Date of Audit	10/18/05	Department(s)	Training & Development
Auditors/ Inspectors	S. Feyl	Persons Contacted	Brendan Scanlan Wayne Gilles Kenneth Anderson Ray Rezos Paul Petersen

REFERENCE CRITERIA

1. Cable Car Operator Training Program
2. System Safety Program Plan, Dated December 1, 2003, Chapter 6
3. APTA Guidelines - APTA Guidelines Element 13
4. General Order 164-C – Section 3

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview cable car training representatives and review the appropriate training and certification program plans to determine if they specify:

1. Certification requirements for the cable car Grip Person, Conductors, and Inspectors and include minimum requirements for experience, training and testing to confirm appropriate knowledge of rules and procedures and the ability to perform operating duties in conformance with those rules and procedures;
2. Refresher training and re-certification for the same positions and include comparable training program and testing requirements and;
3. That refresher training and re-certification of the operating employee is performed at least once every two years.

Select the names of four or more employees assigned to each of these cable car classifications. Review the training and certification records for each employee selected to determine if they:

1. Successfully completed the required initial skill and safety related training;
2. Are currently certified to perform their assigned operating duties and;
3. Have successfully completed a refresher training and re-certification program within the past two years.

RESULTS/COMMENTS

Findings:

1. The Cable Car Training Program specifies the training type - classroom, stationary equipment, and revenue service experience, the required passing grade on a written test, the training materials, and daily training synopsis that is required by the grip person, conductor, and inspector.
2. The refresher training is outlined on page 4 of the Car Operator Training Program manual and requires classroom attendance and the passing of a written examination.

Recertification training is performed on an individual basis, with consideration given to time away from the job and any accidents the individual may have been involved in that were determined to be avoidable.

3. Refresher training is required within 2 years of successful completion of Cable Car training as stated on page 4 of the Cable Car Operator Training Program.

Five employee names were randomly selected for review of training records with the following findings:

1. All five successfully completed the required initial training.
2. All five were currently certified to perform their assigned duties.
3. All five had completed a refresher training class in 2005. However, training between 2001 and 2005 was not conducted. MUNI representative stated the internal Corrective Action Plan of Spring 2004 discovered this same problem and that it was addressed. It was also reported that training was not performed between 2001 and 2004 because resources were not allocated.

Comment:

It is suggested that MUNI examine and ensure the adequacy of resources allocated for training.

Recommendations:

None

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	25	Element	Training and Certification of LRV & HSC Mechanics and Technicians
Date of Audit	October 17, 2005	Department(s)	Training
Auditors/ Inspectors	Raed Dwairi	Persons Contacted	David Chan, Maintenance Training Superintendent Doris Lanier, Senior Operations Manager Mike Ellis, CMO Rails Representative

REFERENCE CRITERIA

1. LRV Maintainer Training Program Plan, Dated December 3, 2002
2. Resolution ST-59, Dated August 21, 2003
3. System Safety Program Plan, Dated December 1, 2003, Chapter 6
4. APTA Guidelines - APTA Guidelines Element 13
5. General Order 164-C – Section 3

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview the vehicle maintenance training representatives and review the training and certification program documents and records to determine if they specify:

1. Training and certification requirements for each vehicle maintenance position;
2. Minimum requirements for experience, training and testing to confirm appropriate knowledge of rules and procedures and the ability to perform vehicle maintenance duties in conformance with those rules and procedures and;
3. The maintenance of records, including test scores, training dates and certification status for each vehicle maintenance employee.

Select at least four employees from each vehicle maintenance classification, and review the training and certification procedures and records for the persons sampled to determine if:

1. There is a training and certification program and procedures describing MUNI's requirements for training and certifying the selected employee's position;
2. Each employee has successfully completed the training and certification program;
3. Training, certification and refresher training records for each selected employee is complete and in compliance with MUNI's requirements and;

The training each employee received corresponds to the maintenance activities the person is certified to perform.

RESULTS/COMMENTS

I interviewed department representatives in charge of the maintenance training program and selected several vehicle maintenance employees from the roster of Light Rail Vehicle (LRV) Fleet Maintenance provided by the department.

Findings:

1. The department has introduced noticeable improvements to the vehicle maintenance training and certification program the CPUC Triennial Audit in 2002.
2. The training and certification records of the employees, the agency's accident prevention and investigation programs, which were randomly selected from each one of the

classifications in the roster of LRV Fleet Maintenance provided by the department, were incomplete. For example, one of the Electrical Trans System Mechanics received rulebook training in 2002 and has not gone through the Vehicle Familiarization Training. Muni representative stated that this employee did receive the unrestricted training but the department has not yet received his file back.

3. From the 2004 data provided, approximately 70% of employees have not received the Vapor Door and Step Training.
4. The training file for one employee showed that he received the Lock Out-Tag Out and High Voltage Safety Training but there were no records in his file to show that he received the Rules & Instructions Test and Yard Speed Limits training. The manager in charge of the program found additional training records for this employee that indicated he had received the unrestricted certification, but there was no documentation to show the employee score on the rulebook training test.
5. The required training corresponding to each vehicle maintenance employee classification, as shown in Appendix A: LRV Maintainer Training Plan of the LRV Maintainer Trainer Program Plan is in need of further revision to provide more complete records as was agreed upon by the department managers in charge of the program.

Recommendation:

MUNI should revise the LRV Maintainer Training Program Plan (Document No. L.PL.021) to further specify the required training for each of the LRV Maintainer classifications shown in Appendix A. of the document and ensure the completeness of the training and certification records for all affected employees.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	26	Element	Track Maintenance Training and Certification
Date of Audit	October 18, 2005	Department(s)	
Auditors/Inspectors	Raed Dwairi	Persons Contacted	Ken Butori, Assistant Track Superintendent of LRV Track Maintenance.

REFERENCE CRITERIA

1. Track Maintenance Training Program Plan, Dated November 20, 2002
2. Resolution ST-59, Dated August 21, 2003
3. Office of System Safety-System Safety Program Plan, Dated January 7, 2000, Chapter 6
4. APTA Guidelines - APTA Guidelines Element 13
5. General Order 164-B – Section 3

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview the track maintenance training representatives and review the training and certification program documents and records to determine if they specify:

1. Training and certification requirements for each track maintenance position;
2. Minimum requirements for experience, training and testing to confirm appropriate knowledge of rules and procedures and the ability to perform track maintenance duties in conformance with those rules and procedures and;
3. The maintenance of records, including test scores, training dates and certification status, etc. for each vehicle maintenance employee.

Select at least four employees from each track maintenance classification and review the training and certification procedures and records for each employee selected to determine if:

1. There is a training and certification program and procedures describing MUNI's requirements for training and certifying the selected employee's position;
2. The training each employee received corresponds to the track maintenance activities the employee is certified to perform.
3. Each selected employee has successfully completed the appropriate training and certification program and;
4. Training and certification records for each selected employee are complete and in compliance with MUNI's requirements.

RESULTS/COMMENTS

I interviewed department representatives in charge of track maintenance training & certification program and selected several track maintenance employees from the roster of track maintenance provided by the department.

Findings:

1. All track maintenance employees received track maintenance certification from rail consultant and training provider CANAC Inc. in October 2004.
2. All randomly selected track maintenance employees received on track equipment operator (OTEO) training and certification. Memos were placed in the training files of employees stating that the employee is qualified to operate Hi-Rail equipment. In addition to the memos

OTEO written examinations were also in the training files.

3. All randomly selected track maintenance employees received on track safety training, track inspection and maintenance, track switch (T-3 switch), and track maintenance rulebook tests.
4. The welder classification #7390 does not need OTEO training since employees in this classification are not allowed in the subway. Similarly, track maintenance supervisors (classification #7251) do not need OTE training if they are assigned to the day shift. The track maintenance training program plan requires OTEO operation for these two classifications regardless of their specific assignments.
5. Day shift supervisors did receive the OTE training. This was also the case for welders who are allowed in the subway.
6. One employee in the track maintenance worker (classification #7540) who failed the required OTE training had a memo placed in his file stating that he is not allowed to operate Hi-Rail equipment.

Comments:

It is suggested that the training matrix on page 5 of the track maintenance training program plan would be more useful if based on assignments rather than on classifications only.

Recommendation:

None

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	27	Element	Signal Maintenance Training and Certification
Date of Audit	October 19, 2005	Department(s)	Signal Maintenance Training
Auditors/ Inspectors	Raed Dwairi	Persons Contacted	Wai Tom Dale Duncan Richard Chan

REFERENCE CRITERIA

1. Signal & Communications Maintenance Training Program Plan, Dated November 20, 2002
2. Resolution ST-59, Dated August 21, 2003
3. System Safety Program Plan, Dated December 1, 2003, Chapter 6
4. APTA Guidelines - APTA Guidelines Element 13
5. General Order 164-C – Section 3

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview the appropriate signal maintenance training representatives and review selected training and certification program documents and records to determine if they specify:

1. Training and certification requirements for each signal maintenance position;
2. Minimum requirements for experience, training and testing to confirm appropriate knowledge of rules and procedures and the ability to perform the signal maintenance duties in conformance with those rules and procedures and;
3. The maintenance of training and certification records, including test scores, training dates and certification status, for each vehicle maintenance employee.

Select at least four signal maintenance employees from each signal maintenance classification, and review the training and certification procedures and records for the employees sampled to determine if:

1. There is a training and certification program and procedures describing the requirements for training and certifying the selected employee's position;
2. Each selected employee has successfully completed the training and certification program;
3. Training, certification and refresher training records for each selected employee is complete and in compliance with MUNI's requirements and;
4. The training each employee received corresponds to the signal maintenance activities they are certified to perform.

RESULTS/COMMENTS

I interviewed the department representatives in charge of the signal and communication maintenance training program and selected all 3 supervisors and 3 technicians from the signal & communication maintenance employees from the roster provided by the department.

Findings:

1. The document provided to me prior to the audit entitled Signal & Communications Maintenance Training program Plan with an effective date of November 20, 2002 was updated with a newer version which had an effective date of September 9, 2005.
2. The training and certification records of the employees who were randomly selected from

each one of the classifications in the roster of the Signal & Communication Maintenance provided by the department showed that these records were incomplete. The department representatives stated that this is because they are short of trainers.

3. The scope of required training in the Signal & Communication Training Program Plan is not clear and was difficult to audit.

Recommendation:

MUNI should revise the Signal & Communication Training Program Plan (Document No. R.SM.PR.001) to reflect the scope of required training and ensure the completeness of the training and certification records for all affected employees.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	28	Element	Traction Power Maintenance Training and Certification
Date of Audit	October 21, 2005	Department(s)	
Auditors/ Inspectors	Raed Dwairi	Persons Contacted	David Chan, Maintenance Training Superintendent Doris Lanier, Senior Operations Manager

REFERENCE CRITERIA

1. Motive Power Department Training Program Plan, Dated February 7, 2003
2. Resolution ST-59, Dated August 21, 2003
3. Overhead Lines Department Training Program Plan, Dated July 6, 2004
4. System Safety Program Plan, Dated December 1, 2003, Chapter 6
5. APTA Guidelines - APTA Guidelines Element 13
6. General Order 164-C – Section

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview the overhead lines maintenance training representatives and review the training and certification program documents and records to determine if they specify:

1. The training, certification, re-training, and re-certification requirements for each overhead lines maintenance position;
2. Minimum requirements for experience, training and testing to confirm appropriate knowledge of rules and procedures and the ability to perform overhead lines maintenance duties in conformance with those rules and procedures and;
3. The maintenance of records, including test scores, training dates and certification status for each overhead lines maintenance employee.

Select at least four employees from each overhead lines maintenance classification, and review the training and certification procedures and records for the persons sampled to determine if:

1. Each employee has successfully completed the training and certification programs necessary for performance of job responsibilities;
2. Training, certification and refresher training records for each selected employee are complete and in compliance with MUNI's requirements and;
3. Complete training and certification records are in the custody of the specifically identified department or other entity responsible.

RESULTS/COMMENTS

The auditor interviewed department representatives in charge of the traction power maintenance training program and selected several maintenance employees from the roster of OCS and Motive Power Maintenance provided by the department.

Findings (OCS Maintenance):

1. Training records only exist for the Year 2005.
2. The department reclassified two positions for hiring purposes (Electrical Line Helper and Electrical Line Worker positions classifications 7432 & 7338 replaced with a new job

classification 7366).

3. All employees, regardless of their classification, receive the same training and certification.
4. One trainer is available who is also an OCS Maintenance employee. The trainer completed a Train-the-Trainer-Course in September 2001 through the American Marketing Association (AMA).
5. Modules have been created with tests to cover OCS training and certification. The auditor raised some concerns regarding the adequacy of tests covering these modules with the managers in charge of the training program. For example, Module 9 Test covering Subway & Surface Rail System (includes multi-gas monitor, safety practices for subway, line car inspection and emergencies, High Rail Vehicle, and Subway Feeder: gap breakers, electrical clearance procedures, grounding to track, sectionalizing insulator and runners) is only covered with 7 multiple choice questions the first two of which are whether or not the subway is considered a confined space and if a multi-gas meter is required in the subway.

Findings (Motive Power):

1. Training is being provided on a triennial basis.
2. Appendix A: Motive Power Department Training Plan of the Motive Power Department Training Plan needs further revision as was agreed upon by the department managers in charge of the program as the plan does not have the level of detail described in the procedure itself. For example, Sections 4.2 & 4.3 describe the training required for 7365/7364/7408 and 7318 classifications but the Training Plan in Appendix A only lists the required training regardless of the employee classification.
3. Rulebook training was provided in 2003.
4. Training on substations was provided in 2002 & 2005.

Recommendations:

1. MUNI should evaluate the adequacy of the OCS maintenance training and certification program including its trainer qualifications and then revise the program to address any deficiencies identified as a result of such evaluation.
2. MUNI should revise the Motive Power Training Program Plan (Document No. W.MP.PR.157) to incorporate the change to the triennial frequency of training and further specify the required training shown in Appendix A. of the document.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	29	Element	Operating Rules and Procedures for Historic Streetcars
Date of Audit	October 19, 2005	Department(s)	Training
Auditors/ Inspectors	Anton Garabetian	Persons Contacted	Michael Kirchanski, Manager, Office of Health and Safety, MUNI Paul Peterson, MUNI Mark Goldstein, MUNI Jeff Merchant, MUNI Paul Peterson, MUNI Audrey Chiu, Booz Allen Hamilton

REFERENCE CRITERIA

1. System Safety Program Plan, Dated December 1, 2003 Chapter 6
2. Resolution ST-59, Dated August 21, 2003
3. Rules and Instruction Handbook, Dated July 2000
4. APTA Guidelines - APTA Guidelines Element 13
5. General Order 164-C – Section 3
6. General Order 143-B – Sections 8 and 1

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview the responsible operating rules and procedures representative and review the applicable documents to determine if:

1. Operating rules and procedures for historical streetcars have been prepared, approved for use and issued to all historical streetcar operators, rail inspectors and central control operators;
2. The appropriate change control activities and processes were followed for updating the rules and procedures;
3. The rules contain a listing of the maximum authorized speeds for each section of right-of-way where historical streetcars may be operated.
4. MUNI established the use of specific operating rules and procedures, in a form separate from its historic streetcar operations training manuals, for each type of historical streetcar.
5. The historic streetcar rules and procedures have been reviewed, updated and administered consistent with MUNI's existing practices for other operating rules and procedures.

RESULTS/COMMENTS

Findings:

1. MUNI has drafted an F-Line Operator Training Manual, Operating Rules Historic Streetcars, Milan Historic Operating Procedures, Presidential Conference Car Operating Procedures, and Historic Streetcar General Operating Procedures. According to MUNI representatives, the St. Luis Historic Car operation is identical to the Milan Historic Cars. All these procedures and manuals are in the approval process and MUNI anticipates approval by March 1, 2006. The MUNI 2002 Triennial Safety Audit Recommendation No. 9 states, "MUNI should establish the use of specific operating procedures, separate from its training

manuals, for each type of historical streetcar. Those procedures should then be administered consistent with MUNI's existing practices for operating rules and procedures." The above mentioned manuals and procedures were not finalized.

2. MUNI is following the appropriate change control activities and processes updating the rules and procedures. The updated rules and procedures are reviewed by MUNI Rules and Procedures Control Committee and Change Control Board. MUNI Safety Department follows the changes in the Change Control Board meetings.
3. The MUNI Operations Rule Book contains a listing of the maximum authorized speeds for each section of right-of-way where historical streetcars may be operated.
4. MUNI established the use of specific operating rules and procedures in a form separate from its historic streetcar operations training manuals for each type of historical streetcar.
5. The historic streetcar rules and procedures are in draft form. Hence, I could not establish that the rules and procedures have been reviewed, updated, and administered consistent with MUNI's existing practices for operating rules and procedures. MUNI, may establish the appropriate review, update, and administration of the rules and procedures as part of the next MUNI Internal Safety Audit.

Recommendations:

MUNI should complete, approve, and implement the F-Line Operator Training Manual, Operating Rules Historic Streetcars, Milan Historic Operating Procedures, Presidential Conference Car Operating Procedures, Historic Streetcar General Operating Procedures, and other related operating rules and procedures as required by recommendation 9 of the 2002 triennial audit.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	30	Element	Program of Operational Evaluations – Metro and Cable Car Divisions
Date of Audit	October 19, 2005	Department(s)	Cable Car Operations Green Operations
Auditors/ Inspectors	Anton Garabetian Gary Rosenthal	Persons Contacted	Brendan Scanlan, Superintendent Cable Car Operations, MUNI Ray Rezos, Training Instructor, MUNI Wayne Giles, Booz Allen Hamilton Paul Petersen, Training Manager, MUNI

REFERENCE CRITERIA

1. System Safety Program Plan, Dated December 1, 2003, Chapter 6
2. Resolution ST-59, Dated August 21, 2003
3. APTA Guidelines - APTA Guidelines Element 12
4. General Order 164-C – Section 3
5. General Order 143-B – Section 13.0

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

1. Interview the Operating Department representatives in charge of the subject program and review supporting documents and records to determine if a program of operational evaluations, with appropriate written procedures and record forms, has been developed and implemented for;
 - a. Cable car crews;
 - b. Historical streetcar operators and;
 - c. LRV operators.
2. Determine if the required periodic surreptitious observations of LRV, HSC, and cable car crews' performance has been formally added to the program of operations evaluations and is being properly implemented.
3. Determine if the results of those surreptitious observations have been analyzed to determine the need for improvements to:
 - a. MUNI's training programs, including clarifying meaning and application of rules and procedures, and;
 - b. The adequacy of operations supervision programs and existing rules and procedures
4. Select at least four cable car crewmembers, four historical streetcar operators and eight LRV operators and review the program records to determine:
 - a. The number of performance evaluations performed for each selected crew or operator;
 - b. The operating standards evaluated;
 - c. The performance observed and;
 - d. The findings and subsequent actions taken.

RESULTS/COMMENTS

Findings Cable Car Division:

Cable car operations superintendent and training instructor were interviewed. Supporting

and records were reviewed to determine if MUNI has developed and implemented a program of operational evaluations, with appropriate written procedures and record forms.

1. MUNI Cable Car Division developed a program of operational evaluations, with appropriate written procedures and record forms and is implementing it for cable car crews. MUNI developed Cable Car Observation Check forms for both gripman and conductor.
2. MUNI Cable Car Division formally added periodic surreptitious observations of cable car crews' performance to the program of operations evaluations and is implementing it properly. The Cable Car Division Superintendent issued a Divisional Bulletin dated November 9, 2005 for Observation Checks. MUNI SSPP and Rail Transit Operator Compliance Program do not include the newly adopted observation check procedures that the Cable Car Division follows.
3. MUNI analyzes the results of those surreptitious observations to determine the need for improvements. If training instructor observation evaluation of the cable car operators requires operation improvement, the training instructor communicates with the operator (gripman or conductor) to improve the operation. If the evaluation is unsafe, the instructor fills a T-1 form, which is a notice of unsafe operation, and sends it to the superintendent. The superintendent prescribes the appropriate corrective action.
4. Observation evaluation records of four cable car crew members were checked:
 - a. A gripman and conductor had several observation checks throughout 2005. The Cable Car Observation form included comments. The instructor talked to him to improve the operation.
 - b. A gripman had several observation checks throughout 2005. The MUNI instructor did not observe any violations.
 - c. A gripman and conductor had several observation checks throughout 2005. The MUNI instructor did not observe any violations.
 - d. A gripman and conductor had several observation checks throughout 2005. The Cable Car Observation form included comments. The instructor talked to him to improve the operation.

Findings Green Division LRV and Historic Streetcar Program:

The Green Division LRV and historic streetcar program of operational evaluations were reviewed and the training manager was interviewed. The Rail Vehicle Transit Operator Compliance Program, revised in 2004, was also reviewed.

1. The program has been implemented with appropriate and adequate written procedures and record forms developed for HSC and LRV operators;
2. Periodic surreptitious observations of LRV and HSC performance were formally added to the program of operations evaluations in 2005 and are being properly implemented;
3. The results of the surreptitious observations for LRV and HSC operators are analyzed to determine the need for improvements to individual operator training and additional operational observations;
4. The surreptitious observations regularly identify operator rule compliance failures, which can be used to improve operator performance and operating safety.
5. The surreptitious observations have, so far, been carried out with only a relatively small number of the LRV and HSC operators.

Recommendations:

MUNI should update the Rail Transit Operator Compliance Program to include the newly adopted

observation check procedures that the Cable Car Division follows and expand the use of the surreptitious observations.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	31	Element	Central Control Dispatchers Performance
Date of Audit	October 18, 2005	Department(s)	MUNI Central Control
Auditors/ Inspectors	Brian Yu	Persons Contacted	Jim Kelly Dave Banbury Liana Kastina Audrey Chiu (observer, LACMTA)

REFERENCE CRITERIA

1. Train Controller Compliance Program, March 2002
2. System Safety Program Plan, Dated December 1, 2003, Chapter 6
3. Resolution ST-59, Dated August 21, 2003
4. APTA Guidelines - APTA Guidelines Element 12 AND 13
5. General Order 164-C – Section 3
6. General Order 143-B – Section 13.0

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Using a combination of direct observations, document reviews, and interviews with Central Control Operators, determine if:

1. They perform their duties in accordance with the governing rules, procedures, bulletins, notices, etc.;
2. They have the applicable reports, logs and other records they are required to prepare and maintain, current and available for review and;
3. Are knowledgeable and understand the procedures for dealing with fires, floods, earthquakes, injury accidents and coordination with BART

RESULTS/COMMENTS

Findings:

1. MUNI currently has 15 train controllers and 19 dispatchers (Buses).
2. Train controllers generate Call Tags for each call from train operators and the Call Tags are uploaded to the Daily Log (database).
3. MUNI Central Control now has a revised procedure OCC Dispatcher & Train Controller Compliance Check Program (August 1, 2005).
4. MUNI Central Control has SOP SF Municipal Railway Operations Control Center Facilities Maintenance and Train Control for emergency stop button operations (for central, platform, and passenger), portal intrusion alarm, and work area protection.
5. MUNI Central Control has Train Controllers training summary matrix which keeps track of each train controller's training/certification status on rulebook test, OCC Manual test, progress test, train controller test, compliance check, and recertification test. According to the latest summary dated October 16, 2005, all train controllers' status was current.
6. MUNI Central Control had a computerized Daily Log.
7. The Interview of a train controller, regarding emergency procedures, indicated a thorough knowledge. The scenarios presented included: fire in the subway, train movements/passenger evacuation during fire, and flammable material found on board the

trains. MUNI SOP Subway Ventilation Fans Operations Control Center was the reference document. The train controller's response was very detailed and thorough. There were three train controllers working at the time of the audit.

Recommendations:

None

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	32	Element	Metro LRV and Historic Streetcar Train Operator Performance
Date of Audit	October 18, 2005	Department(s)	MUNI Green Division
Auditors/ Inspectors	Brian Yu	Persons Contacted	George Louie Harlan Lee Train Operators

REFERENCE CRITERIA

1. System Safety Program Plan, Dated December 1, 2003, Chapter 6
2. APTA Guidelines - APTA Guidelines Element 12
3. General Order 164-C – Section 3
4. General Order 143-B – Section 13.04

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Yard Operations:

1. Auditors should observe train operations in the Green and Geneva Yards for two hours or more to determine if:
 - a. Trains are being operated in compliance with applicable MUNI operating rules and procedures;
 - b. The train operators, with trains departing the yards to enter revenue service, correctly perform pre-departure checks;
 - c. Coupling and uncoupling actions are performed safely and according to rules and procedures;
2. Interview at least two departing train operators to determine if they have all required safety items including flashlights, rule books, radios, etc. in proper working order.
3. Select and interview at least four HSC or LRV train operators to evaluate their knowledge and understanding of MUNI's operating rules and procedures for yard operations.

Mainline Operations:

1. Observe, on-board, the operations of not less than four LRV trains in both subway and street operations and HSC trains in street operation to determine if:
 - a. Each train operator performs in compliance with the governing orders, rules and procedures, etc. and;
 - b. Each operator possesses the required on-board safety equipment.
2. Interview at least four LRV and four HSC train operators to evaluate their knowledge and understanding of MUNI's rules and procedures related to LRV mainline operations.

RESULTS/COMMENTS

Findings Yard Operations:

1. The two MUNI Metro Operators' knowledge on the yard operations and their pre-operational checks appeared thorough.
2. The PCC pre operational check was much less comprehensive than that for the LRV.
3. The PCC operator had a "mark up card" that he was required to turn in before going into service. The mark up card had only a basic (5 or 6) items to check.

4. The MUNI LRV pre operational checklist had 30 items listed.
5. According to the MUNI SOP, Breda Pre-Operational Checklist (TN.MO.MN.011), the following safety equipment is required: pantograph manual crack tool, brake cutout valve tool, wheel block, track iron, and fire extinguisher. The trains that I inspected had all of the required safety equipment.
6. MUNI has written rules requiring that train operators must be in position of rulebooks but do not require them to have flashlights or radios.
7. MUNI does not conduct performance evaluations of the train operators' pre operational check.

Findings Mainline Operations:

MUNI mainline operations were observed on two Metro (Breda) trains and two historic streetcars (one PCC and one Milan). Trains observed had all of the required safety equipment on board.

Recommendations:

MUNI should develop a method to ensure, monitor, and verify that Green Division train operators are properly and thoroughly performing the required pre-operational checks.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	33	Element	Cable Car Operating Crew Performance
Date of Audit	10/18/05	Department(s)	Cable Car Operations
Auditors/ Inspectors	S. Feyl	Persons Contacted	Brendan Scanlan Wayne Gilles Kenneth Anderson

REFERENCE CRITERIA

1. Rail Vehicle Transit Operator Compliance Program, Dated February 2, 2004
2. System Safety Program Plan, Dated December 1, 2003, Chapter 6
3. Rules and Instructions Handbook, Dated
4. APTA Guidelines - APTA Guidelines Element 12
5. General Order 164-C – Section

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Observe, on-board or wayside, the operations of not less than six cable cars being operated on all three lines to determine if:

1. Each crew member performs in compliance with the governing rules and procedures
2. Each crew member possesses the required on-board safety equipment.
3. Interview at least six cable car crewmembers to evaluate their knowledge and understanding of MUNI's cable car operating rules and procedures.

RESULTS/COMMENTS

Findings:

1. Operations on all 3 lines were observed, and at least 2 crew members from each line were questioned regarding the rules, latest bulletins, and accident prone areas.
 - a No rule violations were observed.
 - b Each crew member possessed safety equipment including safety vests, radio, copy of the Rules and Instructions Handbook, sand, and a funnel.
2. All crew members interviewed correctly answered all questions regarding rules and procedures.
3. There was an antifreeze spill at California & Powell during this evaluation. The Muni Tower representative directed traffic to avoid accidents and reduce congestion. Another gripman stopped a cable car short of the crossing, offloaded the passengers, and helped push that through the intersection - all as required by MUNI procedures.
4. While conducting the evaluation of cable car crew performance, Muni track maintenance workers were observed on a blind curve without adequate protection, as required by MUNI procedures. Contrary to MUNI requirements, there was only one cone out to the side of their work area and the worker's truck was not positioned immediately in front of them. When the workers were questioned, they claimed that they did not have keys to remove the necessary cones from this truck.

Recommendations:

As recommended in the CPUC 2002 Triennial Audit, Muni should reexamine employee

compliance with roadway worker rules and procedures and take the additional steps necessary to ensure compliance with the roadway worker safety program.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	34	Element	Operating Rules and Procedures for Cable Cars
Date of Audit	10/17/05	Department(s)	Cable Car Operations
Auditors/ Inspectors	S. Feyl	Persons Contacted	Brendan Scanlan, Wayne Gilles, Kenneth Anderson, Grace Wu, Joyce Garrey

REFERENCE CRITERIA

1. Cable Car Guidebook, Dated September 2004
2. System Safety Program Plan, Dated December 1, 2003, Chapter 6
3. APTA Guidelines - APTA Guidelines Element 12
4. General Order 164-C – Section

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview the responsible MUNI cable car operating representative, review cable car operating rules and procedures and examine records as well as bulletin and notice postings to determine if current program requirements and practices include:

1. That, at a minimum, there is a procedure, which is being implemented, for issuing interim or permanent mandatory operating directives (“bulletins”) and a separate provision for issuing non-operating directives and advisory or informational notifications (“notices”);
2. A formal description of the purpose of each (“bulletin” or “notice”) and what each is used for;
3. An explanation on the limitations of use, and how each is prepared, approved, distributed, signed for, posted and recalled or annulled, etc.
4. That bulletins and notices, when issued, are entered on a master log to control issuance and distribution as well as to track the active / inactive status of each notice and bulletin;
5. That a record is maintained for each bulletin issued and each employee receiving a copy of that bulletin;
6. The active bulletins and notices are posted at MUNI specified locations;
7. No non-current bulletins are posted at the MUNI designated locations and;
8. Inactive bulletins and notices are removed from those posting locations and the affected employees are notified the directive is no longer in effect.

Select a sample of six or more cable car mandatory directive operating “bulletins” issued to cable car personnel within the last two years. Review records to determine whether or not:

1. Each affected operating employee has received those bulletins;
2. Affected employees were notified when any bulletin is no longer in effect.
3. The bulletins are posted at selected locations identified by MUNI;
4. No non-current bulletins are posted at the MUNI designated locations.

Select a sample of six or more cable car operating “notices” issued to cable car personnel within the last two years. Review records to determine if any mandatory interim or permanent operating directive is issued on a “operating notice” form;

RESULTS/COMMENTS

Findings:

1. There is a procedure, Master File for All Rules, document number SY.PR.027, for issuing operating directives and bulletins.
2. The procedure includes a description of the purposes of the various types of bulletins and notices. One major distinction between MUNI bulletins and notices is that bulletins address operational directives. However, this point is not clearly addressed in the procedure.
3. The procedure includes limitations of use, how each is prepared, approved, distributed, posted and recalled, though there is considerable overlap in the function of each.
4. There is a log which tracks active/inactive status. A color code is used for the notices, with pink being most important.
5. Record is maintained for each bulletin issued. Employees sign for a copy of the bulletin when they receive their paycheck.
6. Active bulletins and notices are posted.
7. Two non current notices were found still posted.
8. The auditor was told that the Division Secretary or Manager is supposed to remove inactive bulletins and notices, but this responsibility is not written in the procedure, nor are the inactive bulletins being removed.
9. The records of 7 bulletins/notices were reviewed.
 - a Each car/crew was given a copy of the bulletin, but not each employee.
 - b Employees are notified when a bulletin is no longer in effect.
 - c The bulletins are posted at selected locations.
 - d Two non-current bulletins were found currently posted, 05-005 and 03-002.
10. A mandatory operating directive was issued as a notice rather than as an operating bulletin, as required by MUNI procedure: Notice 02-002 Cable Car Operations, according to MUNI requirements, should have been issued as an operating bulletin.

Recommendations:

1. Muni should reexamine and revise the SOP Master File for All Rules to clarify, simplify and limit authority to issue written instructions in the form of Bulletins, Notices, and Orders and ensure compliance with the revised procedure.
2. MUNI should develop a mechanism that ensures and verifies each employee receives bulletins and notices and formally establish who is responsible for removing non-current bulletins and notices.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	35	Element	Metro Track Maintenance Program
Date of Audit	10-17-2005	Department(s)	MUNI Track Department
Auditors/ Inspectors	Joey E. Bigornia	Persons Contacted	Ken Butori Audrey Chiu Linda Perone Robert Ramirez Ricky Smith Wai Tom

REFERENCE CRITERIA

1. Track Inspection & Maintenance, Dated March 16, 2005
2. Cable Car Railway Track Maintenance and Inspection, Dated June 3, 2003
3. System Safety Program Plan, Dated December 1, 2003, Chapter 6
4. APTA Guidelines - APTA Guidelines Element 11
5. General Order 164-C – Section 3
6. General Order 143-B – Section 14.0

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview the MUNI representative responsible for track maintenance and review the track maintenance program, procedures, selected records and standards, to determine if:

1. A current standard operating procedure or program manual, describing MUNI's preventive maintenance program for mainline track and a comprehensive set of track standards with inspection and measurement acceptance criteria have been prepared, approved, and issued for use.
2. All surface mainline track and special work was inspected at the specified frequencies required by MUNI's standards;
3. All mainline tracks in the MUNI Metro subway were inspected at the specified frequencies during the past 12 months as required by MUNI's standards;
4. The required inspections were documented on standardized track inspection report forms and;
5. Repairs to correct defects and deficiencies noted on the track inspection report forms were completed and signed off in a timely manner.
6. MUNI is ensuring that the track maintenance crews are given adequate nighttime access and resources to complete their work.

RESULTS/COMMENTS

Findings:

1. MUNI's Standard Operating Procedure, dated 3/16/05, describes the preventative maintenance program and the track standard acceptance criteria for mainline track.
2. MUNI's track and switch inspection reports are available in hard copy form and a database system is used to document mainline track maintenance activities. The monthly spreadsheet identifies the assigned work crew (nos. 1-4) responsible for the performance of track and

switch inspections. Hardcopy inspection reports for January – October 2005 were available for records review and are currently entered in the database system.

3. The following MUNI track records were reviewed:
 - a. Double Point Switch Inspection – dated 4/05 and 6/05
 - b. Switch Maintenance Log – dated 4/05 and 6/05
 - c. Track Inspection Reports – dated 4/05 and 6/05
 - d. Welder's Daily Reports – dated 4/05 and 6/05
 - e. Daily Accomplishment Log & Maintenance Activity – dated 4/05 and 6/05
4. The track and switch records corresponding work orders (both electronic and hard copies) were reviewed and showed that required inspections were performed at the required frequency interval and defects were completed in a timely manner. This review included mainline tracks in the subway portion of the track network.
5. The Welder's Daily Report and Daily Accomplishment Log & Maintenance Activity files identify work performed on MUNI's system. These files provide a summary of maintenance activities performed on MUNI's track way and can be used as a secondary check of corrective actions on a daily basis.
6. MUNI's current database system track identifies open maintenance activities and assigns a Work Order number for defects found during track inspections. Since the current database is being revised, an inspection number and defect number for open defects must be hand written on the inspection report cover page. This inspection report is then filed in the OPEN Work Order file and given a priority number until repair work is complete.
7. MUNI representatives report the same work conditions for performing track maintenance work in non-revenue service hours found during the CPUC's Year 2002 audit still exist today.

Recommendations:

MUNI should continue to revise, complete and implement the database utilized for tracking open deficiencies found during track inspections and ensure adequate resources are provided to perform track maintenance.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	36	Element	LRV Maintenance Program
Date of Audit	10/14/05	Department(s)	LRV Fleet Maintenance
Auditors/ Inspectors	Mahendra Patel	Persons Contacted	John G. Sadorra Phil Guterman Michael W. Ellis Kartik Shah Chris Cressci Lawrence Freed Jamie Young Jeffrey T. Lau

REFERENCE CRITERIA

1. System Safety Program Plan, Dated December 1, 2003, Chapter 6 Rail Vehicle
2. Preventive Maintenance Inspection Scheduling, Dated February 22, 2005
3. APTA Guidelines - APTA Guidelines Element 11
4. General Order 164-C – Section 3
5. General Order 143-B – Section 14.04

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Select six or more LRVs and review the respective preventive maintenance, inspection and repair records prepared during the past ten or more months to determine if:

1. The Preventive Maintenance Inspection procedures are current and consistent with all LRV modifications;
2. The required inspections and other maintenance activities were performed at the specified frequencies;
3. The responsible maintenance workers properly documented the inspection and maintenance activities;
4. Defects and deficiencies identified during the PM inspections were properly documented, corrected, and closed out in a timely manner and;
5. No LRV with safety defects was returned to service until all safety defects were repaired.

RESULTS/COMMENTS

Activities:

1. Interviewed MUNI representatives regarding LRV Maintenance Program.
2. Reviewed the following documentation:
 - Standard Operating Procedure (SOP) – LRV Maintenance, procedure Number L05.00.016, Revision 2, dated January 1, 2002.
 - Draft of Rail Vehicle Preventive Maintenance Inspection Scheduling Procedure, Document Number L.PR.016 dated 2/22/05.
 - Maintenance records for four LRV2 cars – 1421, 1434, 1469 and 1474. MUNI has 76 Breda LRV2 cars – 1400 to 1475.

- Maintenance records for six LRV2 cars – 1485, 1513, 1521, 1535, 1539, and 1545. MUNI has 75 Breda LRV3 cars – 1476 to 1550 - Cars 1536 to 1550 are within warranty.
3. Discussed my findings, comments and recommendations with MUNI representatives and obtained their concurrence.

Findings:

1. MUNI personnel gave a brief description of the LRV Maintenance Program. According to the draft procedure (Document Number L.PR.016 dated 2/22/05), the Preventive Maintenance Inspection (PMI) interval for LRV3 that are under warranty is every 5000 miles. The post warranty PMI interval for LRV2/LRV3 is every 10,000 miles. PMI is considered within scheduled interval with a +/- 10% variance. MUNI personnel stated that currently PMIs are performed at these specified frequencies.
2. The approved procedure L.05.00.016 dated January 1, 2002 stipulates PMI interval of 6000 miles for LRV2 and 5000 miles for LRV3 with a +/- 10% variance as acceptable. However, the frequencies specified in the draft procedure (Document Number L.PR.016 dated 2/22/05) are used instead of these frequencies.
3. The old approved forms are currently used for PMI. The forms included in the draft procedure (Document Number L.PR.016 dated 2/22/05) are not used.
4. The effective date of the approved procedure L.05.00.016, Revision 2 is January 1, 2002. However the approval date for this procedure is 2/22/05!
5. The maintenance records for the selected cars are in compliance with the maintenance program. The defects and deficiencies identified during the PMIs were properly documented, corrected and closed out.
6. MUNI – Equipment on hold with Primary Task List tracks the cars that are on hold due to various reasons, such as, awaiting parts, corrective maintenance, engineering, preventive maintenance, etc. to ensure that no LRV with safety defects is returned to service until all safety defects are repaired.
7. Cars 1539 and 1545 (under warranty) were twice over the specified frequency. However, these cars were put on hold as required by the draft procedure.
8. Test Battery Item information for 20,000 mile inspection for car 1469 was missing in the inspection form.
9. Inspection forms were not completely filled out. Information such as, dates, codes, etc. were missing in some cases. Also, in some cases, maintenance workers did not initial each inspection item.

Comments:

None.

Recommendations:

1. MUNI should complete the revision, approve, and implement the rail Vehicle Preventive Maintenance Inspection Scheduling Procedure L.PR.016.

MUNI should ensure that the PMI forms are filled out completely and accurately to demonstrate that the responsible maintenance workers have properly documented the inspection and maintenance activities.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	37	Element	Historic Streetcar Maintenance Program
Date of Audit	10/12/05	Department(s)	Geneva Car Maintenance
Auditors/ Inspectors	Mahendra Patel	Persons Contacted	John G. Sadorra Phil Guterman Romer Manag Kartik Shah Jeffrey T. Lau

REFERENCE CRITERIA

1. System Safety Program Plan, Dated December 1, 2003, Chapter 6
2. Current Historic Streetcar Inspection and Maintenance Manuals and Checklists
3. APTA Guidelines – APTA Guidelines Element 11
4. General Order 164-C – Section 3
5. General Order 143-B – Sections 8 and 14.04

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Select at least three Milano cars, three PCCs and three other historic cars. By interview with MUNI historic streetcar maintenance representatives and review of the respective preventive maintenance, inspection and repair records prepared for at least a six month period during the past year, determine if:

1. The required inspections and other maintenance activities were performed at the specified frequencies;
2. The responsible maintenance workers properly documented the inspection and maintenance activities;
3. Defects and deficiencies identified during the PM inspections were properly documented, corrected, and closed out in a timely manner and;
4. No historic streetcars with safety defects were returned to service unless all safety defects were repaired.

RESULTS/COMMENTS

Activities:

1. Interviewed MUNI representatives regarding the Historic Streetcar Maintenance Program.
2. Reviewed the following documentation:
 - a. Standard Operating Procedure (SOP) – Historic Streetcar Maintenance, procedure Number L05.00.016, Revision 2, dated January 1, 2002.
 - b. Standard Operating Procedure (SOP) – President Conference Car Maintenance, procedure Number L05.00.016, Revision 2, dated January 1, 2002.
 - c. Draft of Historic Preventive Maintenance Inspection Scheduling Procedure, Document Number L05.00.016 dated 2/22/05.

- d. Draft of Rail Vehicle Preventive Maintenance Inspection Scheduling Procedure, Document Number L.PR.016 dated 2/22/05.
 - e. Maintenance records for three Milan cars – 1807, 1814, and 1895. MUNI has 10 Milan cars – nine are in service and one (1888) was involved in an accident and is not in service.
 - f. Maintenance records for three President Conference cars (PCC) – 1015, 1053, and 1059. MUNI has 16 PCC cars.
 - g. Maintenance records for three Historic cars – 130, 496, and 932. MUNI has 7 Historic cars – three from San Francisco, one each from England, Australia and New Orleans, and one from Japan that is being refurbished since last six years and is not in service.
3. Discussed findings, comments and recommendations with MUNI representatives and obtained their concurrence.

Findings:

1. MUNI personnel gave a brief description of the Milan, PCC and Historic Car Maintenance Program. According to the draft procedures and the approved procedures, the Preventive Maintenance Inspection (PMI) interval for Milan cars and Historic cars is every 294 hours of service and that for PCC cars is every 2500 miles. PMI is considered within scheduled interval with a +/- 10% variance. MUNI personnel stated that currently PMIs are performed at these specified frequencies.
2. A combination of the draft procedures along with the old approved forms are currently used for PMI.
3. The effective date of the approved procedures L.05.00.016, Revision 2 is January 1, 2002. However the approval date for these procedures is 2/22/05!
4. The maintenance records for the selected cars are in compliance with the maintenance program. The required inspections and maintenance activities were performed at the specified frequencies. The defects and deficiencies identified during the PMIs were properly documented, corrected and closed out.
5. PCC + Vintage Car Hold sheet tracks the cars that are on hold due to various reasons, such as, brakes, body shop, engineering, multiple defects, etc. to ensure that no cars with safety defects is returned to service until all safety defects are repaired.
6. Inspection forms were not completely filled out. Information such as, dates, codes, supervisor's signature, car number, mileage, hours of service, etc. were missing in some cases. Also, one supervisor used a rubber stamp instead of the actual signature.

Comments:

None.

Recommendations:

1. MUNI should complete the revision, approve, and implement the draft HSC Preventive Maintenance Inspection Scheduling Procedures.
2. MUNI should ensure that the HSC PMI forms are filled out completely and accurately to demonstrate that the responsible maintenance workers and supervisors have properly documented the inspection and maintenance activities.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	38	Element	Cable Car Maintenance Program
Date of Audit	10/13/05	Department(s)	Cable Car Maintenance
Auditors/ Inspectors	Mahendra Patel	Persons Contacted	Thomas W. Hidayat Patrick Ho John G. Sadorra Kartik Shah Jeffrey T. Lau

REFERENCE CRITERIA

1. System Safety Program Plan, Dated December 1, 2003, Chapter 6
2. APTA Guidelines - APTA Guidelines Element 11
3. General Order 164-C – Section

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview the responsible MUNI cable car maintenance representative and review selected documents to determine if the cable car maintenance program is current and comprehensive.

Select at least three California Street cable cars and three Powell Street cable cars and review the completed preventive maintenance, inspection, and repair records prepared during the past year or more to determine if;

1. The required inspections and other maintenance activities were performed at the specified frequencies;
2. The responsible maintenance workers properly documented the inspection and maintenance activities;
3. Defects and deficiencies identified during the PM inspections were properly documented, corrected, and closed out in a timely manner and;
4. Any cable cars with safety defects were released to operate in revenue service before those defects were repaired.

RESULTS/COMMENTS

Activities:

1. Interviewed MUNI representatives regarding Cable car Maintenance Program.
2. Reviewed the following documentation:
 - a. Standard Practice Procedure Number 7.1, dated May 10, 1979.
 - b. Draft of Cable Car Preventive Maintenance Inspection and Scheduling Procedure, Document Number CC.RR.001 dated 8/15/2005.
 - c. Maintenance records for three Powell Street cable cars – 8, 13, and 21. MUNI has 28 Powell Street cable cars – 1 to 28.
 - d. Maintenance records for three California Street cable cars – 49, 55, and 60. MUNI has 12 California Street cable cars – 49 to 60.

3. Discussed findings, comments and recommendations with MUNI representatives and obtained their concurrence.

Findings:

1. MUNI personnel gave a brief description of the Cable Car Maintenance Program. According to the draft procedure, the Preventive Maintenance Inspection (PMI) interval for cable cars is every 15 days of actual service for A Inspection and every 60 days of actual service for B Inspection. MUNI personnel stated that currently PMIs are performed in accordance with the draft procedure (Document Number CC.RR.001 dated 8/15/2005) requirements.
2. The maintenance records for the selected cars are in compliance with the draft maintenance program. The required inspections and maintenance activities were performed at the specified frequencies. The defects and deficiencies identified during the PMIs were properly documented, corrected and closed out.
3. The status of work orders, equipments, maintenance activities, etc. is tracked by the computer. A data search showed that several cable cars were on hold due to various reasons, such as corrective maintenance, body work, to ensure that no cars with safety defects is returned to service until all safety defects are repaired.
4. The responsible maintenance workers and the supervisor properly documented the inspection and maintenance activities on the inspection form.

Comments:

None.

Recommendations:

MUNI should complete the revision, approve, and implement the Cable Car Preventive Maintenance Inspection and Scheduling Procedure, Document Number CC.RR.001.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	39	Element	Cable Car Track and Cable Maintenance Program
Date of Audit	10/19/05	Department(s)	Fleet & Roadway Maintenance
Auditors/ Inspectors	S. Feyl	Persons Contacted	John Baker Michael Ellis Wayne Gilles Kenneth Anderson

REFERENCE CRITERIA

1. Cable Car Railway Track Maintenance and Inspection, Dated June 3, 2003
2. System Safety Program Plan, Dated December 1, 2000, Chapter 6
3. APTA Guidelines - APTA Guidelines Element 11
4. General Order 164-C – Section 3

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview the MUNI representative who is responsible for cable car track and cable maintenance and review the track maintenance program, procedures, records and standards, to determine if:

1. A standard operating procedure or program manual, describing MUNI's preventive maintenance program for mainline track and a comprehensive set of updated track standards with inspection and measurement acceptance criteria have been prepared, approved, and issued for use;
2. The track standards establish requirements for gage, curve, and rail wear measurements in its cable car system track maintenance standards;
3. Data concerning track conditions is collected to effectively address preventive maintenance planning;
4. All cable car mainline track and special work was inspected at the specified frequencies required by MUNI's standards during the past twelve months;
5. The required inspections were documented on standardized track inspection report forms and;
6. Repairs to correct defects and deficiencies noted on the track inspection report forms were completed and signed off in a timely manner.

RESULTS/COMMENTS

Findings:

1. There is a written procedure for preventive maintenance for track, Cable Car Railway Track Maintenance and Inspection, Procedure C.PR.002, but none for cable maintenance.
2. Cable maintenance knowledge and skills are taught and acquired informally through on the job experience.
3. Requirements are established for track gauge, curve, and rail wear on pages 10, 11, and 14 of the referenced procedure. There is a Specification for Cable Car Cable dated February 1978 which discusses the minimum and maximum cable diameters.

4. Data concerning track conditions is collected daily.
5. Mainline and special track work is inspected as frequently as specified in the procedure.
6. The required inspections are documented on standardized forms and based on standards defined and established in Procedure C.PR.002.
7. Track repairs are completed and signed off in a timely manner. There is a Splicer Logbook and a cable Downtime Logbook which provides a minimal record of corrective actions performed on the cable system.

Recommendations:

MUNI should develop and implement formal cable maintenance and inspection program standards, procedures and training.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	40	Element	ATCS Maintenance Program
Date of Audit	10-18-2005	Department(s)	MUNI Signal Department
Auditors/ Inspectors	Joey E. Bigornia	Persons Contacted	Dale Duncan Daniel Harbin Stephen Newman Wai Tom

REFERENCE CRITERIA

1. Automatic Train Control System (ATCS) Wayside Equipment Preventative Maintenance Reference Guide, Dated November 20, 2002
2. Vital Relays, Dated January 1, 2002
3. System Safety Program Plan, Dated December 1, 2003, Chapter 6
4. APTA Guidelines - APTA Guidelines Element 11
5. General Order 164-C – Section 3

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview the MUNI representative responsible for ATCS maintenance and review ATCS procedures, manuals and records to determine if:

1. A standard operating procedure describing MUNI's comprehensive preventive maintenance program for the ATCS is current, approved, and implemented;
2. The ATCS was inspected and tested at the specified frequencies during the past 12 months;
3. The required P.M. activities were documented on standardized inspection report forms;
4. Defects and deficiencies noted on the inspection report forms were corrected and signed off in a timely manner and;
5. All ATCS safety related anomalies that have been identified have also been rectified.

RESULTS/COMMENTS

Findings:

1. MUNI has implemented a comprehensive maintenance program for the ATCS System. The standard operating procedure identifies the inspection frequency interval for ATCS equipment.
2. I reviewed the following maintenance records;
 - a. ATCS Platform Emergency Stop Buttons Test
 1. Powell – dated 11/7/04 to 7/9/05
 2. Van Ness – dated 11/6/04 to 7/9/05
 3. Castro – dated 11/6/04 to 7/9/05
 4. Montgomery – dated 11/6/04 to 7/9/05
 - b. ATCS Portal Intrusion Detector Device, Walk-Through Test
 1. Duboce (DL) – dated 9/14/04 to 9/14/05
 2. Eureka (TL) – dated 8/30/04 to 9/3/05

3. Eureka (TR) - dated 8/30/04 to 9/3/05
4. West Portal - dated 9/28/04 to 10/15/05
- c. ATCS Uninterruptible Power Supply (UPS), PM Procedure
 1. Montgomery – dated 3/19/05 and 9/28/05
 2. Powell – dated 6/8/05 and 9/28/05
 3. Church – dated 3/1/05 and 9/29/05
- d. ATCS Axle Counter Test Procedure
 1. Duboce (TR) – dated 8/27/04 and 9/3/05
 2. Castro (CR) – dated 7/8/04 and 7/12/05
- e. ATCS Station Controller Subsystem
 1. MMT1 – dated 6/29/04 and 7/29/05
 2. West Portal – dated 8/26/04 and 10/12/05
- f. Vital Relays, Test
 1. Embarcadero – dated 10/28/02 and 11/4/04
 2. MMT – dated 10/11/02 and 11/19/04
3. The inspection tests listed above were performed at the required frequency interval and properly documented on the inspection forms. Defects noted on the inspection reports were corrected and signed off. No exceptions were noted.
4. Staff did not find any open safety issues on the inspections records selected for review.

Recommendations:

None.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	41	Element	Signal Systems Maintenance Program Including Power Switch Machines
Date of Audit	10-19-2005	Department(s)	MUNI Signal Department
Auditors/ Inspectors	Joey E. Bigornia	Persons Contacted	Dale Duncan Daniel Harbin Stephen Newman Wai Tom

REFERENCE CRITERIA

1. Vital Relays, Dated January 1, 2002
2. Conventional Track Switch & Signal Interlocking Test, Dated July 15, 2002
- 3. Highway - Railroad Grade Crossings & Light Rail-to-Freight Rail Crossing Interlocking Inspection and Maintenance, Dated November 5, 2004**
4. System Safety Program Plan, Dated December 1, 2003, Chapter 6
5. APTA Guidelines - APTA Guidelines Element 11
6. General Order 164-C – Section 3

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview the MUNI representative responsible for interlocking plant maintenance and review Signal Department procedures, manuals and records to determine if:

1. A standard operating procedure or other directive describing MUNI's preventive maintenance program for interlocking plants is current, has been approved, and is being implemented;
2. The two surface mainline interlocking plants were inspected and tested at the specified frequencies during the past 12 months;
3. The MUNI Metro subway interlocking plants were inspected and tested at the specified frequencies during the past 12 months;
4. The required P.M. activities were documented on standardized inspection report forms and;
5. Defects and deficiencies noted on the inspection report forms were corrected and signed off in a timely manner.

RESULTS/COMMENTS

Findings:

1. MUNI has implemented a comprehensive maintenance program for interlocking plant inspections. The standard operating procedure identifies the interlocking inspection frequency interval.
2. The following mainline interlocking maintenance records were reviewed;
 - a. 3rd / 4th and King Street dated 2/3/05
 - b. 19th Avenue, North of Holloway Platform dated 4/6/05
3. Mainline interlocking inspection tests were performed at the required frequency interval and properly documented on the inspection forms. Defects noted on the inspection reports were corrected and signed off. No exceptions were noted.
4. MUNI subway interlocking plants were inspected and tested at the specified frequencies.

The interlocking plants in the subway are part of the ATCS (See Checklist No. 40) system which does a self-test once every 24-hour period. Defects noted on the inspection reports were corrected and signed off. No exceptions were noted.

Recommendations:

None.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	42	Element	Substation and Overhead Lines Maintenance Program
Date of Audit	10-19-2005	Department(s)	MUNI Overhead Lines Department
Auditors/ Inspectors	Joey E. Bigornia	Persons Contacted	Sonny Alban Theodore Aranas Audrey Chiu Timothy Lipps Kartik Shah Hoy Wong

REFERENCE CRITERIA

1. Annual Overhaul & Inspection Activities For The Motive Power System, Dated June 8, 2004
2. Inspection of Overhead Lines, Dated August 11, 2004
3. System Safety Program Plan, Dated December 1, 2003, Chapter 6
4. APTA Guidelines - APTA Guidelines Element 11
5. General Order 164-C – Section 3
6. General Order 95

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

1. Interview the MUNI representative responsible for substation maintenance and review procedures and records to determine if:
 - a. MUNI's preventive maintenance program standard operating procedures for MUNI Metro Substations are current, approved and are being implemented;
 - b. Each of at least three auditor-selected MUNI Metro Substations were inspected at the specified frequencies during the past 12 months as required by the SOP;
 - c. The required substation preventive maintenance activities were documented as required on the standardized inspection report forms and;
 - d. Any defects or deficiencies noted on the inspection report forms were corrected and signed off in a timely manner.
2. Interview the MUNI representative responsible for overhead lines maintenance and review procedures and records to determine if:
 - a. MUNI's preventive maintenance program standard operating procedures for Metro Overhead Lines are current, approved and are being effectively implemented;
 - b. Each of at least three auditor-selected MUNI Metro operating lines had the overhead traction electrification system inspected at the specified frequencies during the past 12 months as required by the SOP;
 - c. The required overhead lines preventive maintenance activities were documented as required on the standardized inspection report forms and;
 - d. Any defects or deficiencies noted on the inspection report forms were corrected and signed off in a timely manner.

RESULTS/COMMENTS

Findings Overhead Lines Maintenance:

1. MUNI has implemented a comprehensive maintenance program for overhead lines maintenance. The standard operating procedure identifies the inspection frequency per GO95 Standard for OCS wire height and OCS tension. MUNI recently revised the SOP on 8/26/05 to include OCS wire dimension inspection.
2. Maintenance records of F-Line, dated 7/8/05, L-Line, dated 5/10/05, and M-line, dated 4/20/05 were inspected. These inspection tests were performed at the required frequency interval and properly documented on the inspection forms Defects noted on the inspection reports were corrected and signed off. If a defect item is deferred, a work order number is assigned to the task for completion. MUNI's Work Order Summary for MUNI RAILWAY OVERHEAD LINES database captures all outstanding work by **Work Order No., Task #, Task Description/Delay Description, Assign to, WO Type, Start date, Priority, and Status**. No exceptions were noted.

COMMENT:

It is suggested that MUNI include the new OCS contact wire dimension inspection task in its Internal Safety Audit Process.

Recommendations:

None

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	43	Element	Emergency Response Planning and Training
Date of Audit	October 19, 2005	Department(s)	Security Division
Auditors/ Inspectors	Brian Yu	Persons Contacted	Robert Hertan Scott Heugly Linda Gill John Simon (observer, Booz-Allen)

REFERENCE CRITERIA

1. Emergency Operations Plan, June 5, 2002
2. System Safety Program Plan, Dated December 1, 2003, Chapter 6
3. APTA Guidelines - APTA Guidelines Element 14
4. General Order 164-C – Section

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview the MUNI representative responsible for emergency response planning and training, review the emergency response program requirements as well as the emergency planning and training activities records to determine if:

1. The Emergency Operations Plan has been updated and is at least current concerning emergency contact lists, the designated contact list maintainer, required reviews.
2. MUNI has regularly scheduled meetings with other city and county agencies to coordinate emergency response planning;
3. MUNI's emergency response planning addresses both accidental emergency events and security related emergency events;
4. Within the past 12 months, MUNI has sponsored or participated in at least three emergency exercises with other affected governmental agencies, emergency responders and at least one of which has included BART;
5. Emergency exercises are critiqued by the participants, any corrective actions are recorded, scheduled and tracked to completion;
6. MUNI also provided training and familiarization events for affected emergency responders and;
7. MUNI incorporated requirements and responsibilities for corrective actions resulting from emergency response drills into Section 6.6, Emergency Response Planning/ Coordination/ Training of the System Safety Program Plan.

RESULTS/COMMENTS

Findings:

1. MUNI Emergency Operations Plan has been updated three times since May 2002. (April 2004, August 2004, August 2005)
2. City and County of San Francisco Office of Emergency Services and Homeland Security hold monthly meetings. The participants include emergency responders from the San

Francisco City and nine counties surrounding the bay area. Table top drills designed by FBI are conducted at the meeting.

3. Bay Area Terrorism Working Group meets quarterly. Police Departments, Fire Departments, Coast Guard, Army, FBI and Transit Security are participants.
4. Public Safety/Emergency Services Work Group meets weekly. San Francisco emergency response agencies and MUNI security are participants.
5. MUNI Emergency Operations Plan Appendix D, Hazard Specific Standard Operating Procedures, lists specific procedures for the following situations: Evacuation Procedure, Fire, Subway Ventilation Fans, Earthquake, Bomb Threat, Chemical/Biological Agent, Civil Disorder, Floods, Heightened Security, and Emergency Notification Procedures.
6. Drills organized by MUNI in 2004 included: MUNI Metro Emergency Subway Fire Drill at West Portal Station – MUNI, SFFD (3/14/04), MUNI Metro Emergency Subway Fire Drill at Church Station – MUNI, SFFD (6/13/04), MUNI Metro Emergency Subway Fire/HazMat/WMD type Drill at Embarcadero – MUNI, BART, SFFD, SFPD, DPT, OES with DPH support (7/11/04)
7. MUNI Metro Emergency Subway Fire Drill at Forest Hill and West Portal was scheduled on 4/24/05; however, due to a major fire in San Francisco, was postponed to November 2005.
8. Another MUNI Fire Drill was scheduled on 10/16/05; however, due to CPUC audit, the drill was postponed to late 2005.
9. The records of Inter-agency drills hosted by the City and County of San Francisco Office of Emergency Services and Homeland Security are maintained at the Office of Emergency Services.
10. The Transportation Terrorism Functional Exercise, hosted by the Metropolitan Transportation Commission on 10/6/04, evaluated MUNI after the drill. There was no mechanism, however, for tracking the status of the identified corrective actions.
11. MUNI provides basic safety and familiarization trains to emergency responders.
12. MUNI is in the process of finalizing a new SOP entitled Emergency Preparedness Drills - Security Division. The new SOP would identify the requirements and responsibilities for the corrective actions resulting from emergency response drills.

Recommendations:

MUNI should develop a mechanism that would track the status of open corrective actions, resulting from Security Division emergency preparedness drills and incorporate the requirements and responsibilities for it into the proposed SOP: Emergency Preparedness Drills - Security Division, and the System Safety Program Plan.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	44	Element	Safety Data Acquisition and Analysis
Date of Audit	October 18, 2006	Department(s)	Safety
Auditors/ Inspectors	Anton Garabetian	Persons Contacted	Michael Kirchanski, Manager, Office of Health and Safety, MUNI Kylie Grenier, Project Facilitator, MUNI John Simon, Associate, Booz Allen Hamilton

REFERENCE CRITERIA

1. Safety Data Acquisition and Analysis Procedure, Dated July 26, 2002
2. System Safety Program Plan, Dated December 1, 2003, Chapter 6
3. APTA Guidelines – APTA Guidelines Element 16
4. General Order 164-C – Section 3

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview the MUNI representative responsible for safety data acquisition and analysis, review the safety data acquisition and analysis program requirements as well as records and reports to determine if:

1. The data collected includes, at a minimum, information concerning MUNI rail transit accidents and incidents, employee performance failures, equipment failures, software failures, procedural deficiencies, external factors, environmental factors, fatalities, injuries, property damage and environmental damage;
2. Safety data is supplied by and collected from all departments including risk management;
3. Safety data that is collected is analyzed and incorporated into MUNI's hazard identification and resolution process and;
4. The safety data collected and the resulting analyses are made available to all MUNI departments for use in planning their safety related activities.

RESULTS/COMMENTS

Findings:

MUNI representatives responsible for safety data acquisition and analysis were interviewed. Also safety data acquisition and analysis program requirements, as well as records and reports were reviewed.

1. MUNI assigned Mike Kirchanski for the safety data acquisition and analysis task in 2004.
2. Before 2004, MUNI collected safety data and analyzed it. MUNI determined, however, that the collected data was old and obsolete and did not adequately serve the safety program.
3. MUNI Safety Department issued a Corrective Action Plans procedure in 2003 and also drafted a new Safety Data Acquisition and Analysis (SDAA) procedure. The SDAA is in final stages of management approval. MUNI has implemented the SDAA procedure, even though SDAA has not yet been approved. The MUNI SSPP does not have information on the Corrective Action Plans procedure or the SDAA procedure.

4. MUNI collected data includes information concerning MUNI rail transit accidents and incidents, external factors, environmental factors, fatalities, injuries, property damage, and environmental damage.
5. Through the Executive Safety Committee, safety data is supplied by and collected from all the MUNI departments.
6. MUNI utilizes a TransitSafe software program to analyze the collected data. The TransitSafe program issues all the required reports for the Federal Transit Administration's National Transit Data Base and CPUC Forms T and V. MUNI analyzes the collected data and issues a corrective action plan list for the hazard identification and resolution process. There were no exceptions taken to this process.
7. The MUNI Safety Department provides the safety data collected and the resulting analyses to all managers and departments for use in planning their safety related activities.

Recommendations:

MUNI should complete, approve, and implement the adopted Safety Data Acquisition and Analysis procedure and also update the SSPP to reflect that procedure and the Corrective Action Plan procedure.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	45	Element	Interdepartmental & Interagency Coordination
Date of Audit	October 19, 2005	Department(s)	Security
Auditors/ Inspectors	Anton Garabetian	Persons Contacted	Robert Hertan, Director MTA Security Programs, MUNI Scott Heugly, Security, MUNI John Simon, Associate, Booz Allen Hamilton

REFERENCE CRITERIA

1. System Safety Program Plan, Dated January 7, 2000, Chapter 6
2. APTA Guidelines - APTA Guidelines Element 17
3. General Order 164-C – Section 3

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview the MUNI representative(s) responsible for interdepartmental and interagency coordination and review the coordination requirements as well as those audit reports and other records to determine if:

1. The interdepartmental and interagency communications process, procedures, and requirements are clearly defined and explained in detail;
2. The communications are properly documented and filed;
3. Interdepartmental and interagency communications are an element of MUNI's internal safety audit program;
4. Any deviations from the approved procedure, identified during an internal safety audit or by any other means are brought to the attention of the general management and;
5. MUNI monitors, reports and acts to correct any deviation from its communications policies with emergency responders and other affected agencies.

RESULTS/COMMENTS

Findings:

MUNI Security Department representatives were interviewed concerning interdepartmental and interagency coordination activities and the coordination requirements along with the related audit reports were reviewed.

1. MUNI has Emergency Operating Procedures with an effective date of June 5, 2002, which explains the interdepartmental and interagency communication process. MUNI Emergency Notification Procedure, dated March 5, 2005, explains emergency interdepartmental and interagency notifications. MUNI Emergency Operating Procedures, dated November 2, 2004, describe emergency operating procedures for operation Control Center personnel.
2. The communications are properly documented and filed in log sheets.
3. A Security audit was part of the internal safety audit program, but interdepartmental and interagency communications were not included. MUNI representatives stated that the internal safety audit cycle ends next year and they will include interdepartmental and interagency coordination in the future.

4. Interdepartmental and interagency communications have not yet been included in the internal safety audit program.
5. According to the MUNI Security Department, the City of San Francisco organizes the emergency drills. The recommendations resulting from the drills are tracked and closed by the City of San Francisco. I could not verify that MUNI monitors, reports and acts to correct any deviation from its communications policies with emergency responders and other affected agencies.

Comment:

It is suggested that the Office of Health and Safety include interdepartmental and interagency communications in its internal safety audit program.

Recommendations:

MUNI should develop and implement requirements and responsibilities to ensure that corrective actions resulting from emergency response drills, including interdepartmental and interagency communications deficiencies, are recorded, promptly addressed and actively monitored to completion.

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	46	Element	Contractor Safety Program
Date of Audit	October 26, 2005	Department(s)	MUNI Construction Division
Auditors/ Inspectors	Gary Rosenthal	Persons Contacted	Lewis Ames, Michael Kirchanski, Kartik Shah, Mark Goldstein

REFERENCE CRITERIA

1. System Safety Program Plan, Dated December 1, 2003, Chapter 6
2. Contractor Safety Procedures, Dated July 8, 2003
3. APTA Guidelines - APTA Guidelines Element 22
4. General Order 164-C – Section 3

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview the MUNI representative in charge of the Contractors Safety Program and review MUNI's internal safety audit requirements, audit reports and other records to determine if:

1. MUNI has developed and implemented a control document clearly establishing its responsibilities and requirements for the contractor safety program including:
 - a. Training and certification for contractors and their employees;
 - b. The rules, regulations, and procedures applicable to contractors and their employees;
2. MUNI's procedures and practices clearly identify, for the contractors and MUNI managers, that MUNI is in charge and that its contractors and their employees must comply with all established safety rules and procedures and;
3. MUNI procedures require regular MUNI audits and inspections of the construction sites to monitor compliance with MUNI's safety requirements;
4. MUNI procedures establish the range of activities for MUNI's monitoring and enforcement of contractor's and contractor employee's compliance with the safety requirements by regular unscheduled and unannounced compliance checks as well as by scheduled periodic audits and inspections of the construction sites and;
5. MUNI's monitoring and enforcement activities are properly recorded, distributed, and filed.

RESULTS/COMMENTS

Findings:

MUNI representatives were interviewed and selected documents and records at MUNI's Construction Division were reviewed.

1. MUNI adopted a contractor safety program SOP in July 2003 to support its contractor safety program.
2. A subsequent ISA disclosed implementation of the contractor safety SOP was not achieving intended results.
3. MUNI drafted, but has not adopted, a revised contractor safety program SOP that addresses deficiencies identified in the July 2003 version and incorporates elements from the APTA Standard for Work Zone Safety.

4. In addition to previous contractor safety program SOP provisions, the draft revision includes:
 - a. Establishing a MUNI Contractor Safety Compliance Officer and related responsibilities;
 - b. Revising the responsibilities of MUNI Contractor Representatives;
 - c. Providing System Safety Trainers and System Safety Internal Auditors;
 - d. A number of MUNI developed contractor safety training modules to specifically address the safety training needs unique to each contractor's work, and;
 - e. Safety program record keeping requirements for contractors and MUNI managers.
5. Recent contractor safety training records, with a few exceptions, contained all of the required information and were properly signed.

Recommendations:

MUNI should complete, adopt and implement its revised contractor safety program SOP, ensuring that it also incorporates the provisions contained in APPENDIX C, SF MUNI 2002 Triennial Safety Audit Recommendations List, Recommendation No. 1

2005 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR SAN FRANCISCO MUNICIPAL RAILWAY

Checklist No.	47	Element	Procurement Control
Date of Audit	October 18, 2005	Department(s)	Maintenance, Materials Management, Support and Services
Auditors/ Inspectors	Anton Garabetian	Persons Contacted	Angela L. Carmen, Senior Operations Manager, Maintenance Division, MUNI Bartholomew Murphy, DPT Purchasing Manager, MUNI Luther Manning, Manager, Support and Services, MUNI Jeffrey Lau, Associate, Booz Alllen Hamilton John Simon, Associate, Booz Alllen Hamilton

REFERENCE CRITERIA

1. System Safety Program Plan, Dated December 1, 2003, Chapter 6
2. APTA Guidelines - APTA Guidelines Element 23
3. General Order 164-C – Section 3

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview the MUNI representative responsible for procurement control and the Material Control Group as well as review MUNI's procurement control program, policies and procedures, internal safety audit requirements for procurement control, internal safety audit reports and other records to determine if:

1. MUNI has comprehensive, clearly defined, and current procedures in place for procurement control;
2. Procurement control is actively monitored and enforced by responsible MUNI personal;
3. Procurement control is part of MUNI's addressed in MUNI's internal safety audit program;
4. Procurement control includes hazardous materials, maintenance and repair parts, and materials that could affect safety of the system, employees, passengers, the general public, equipment and the environment and;
5. Deviations from procurement control are brought to the attention of executive management.

RESULTS/COMMENTS

Findings:

MUNI representatives responsible for procurement control and the Material Control Group were interviewed. MUNI's procurement control program, policies and procedures, internal safety audit requirements for procurement control, internal safety audit reports and other records were reviewed.

1. MUNI has comprehensive, clearly defined, and current procedures in place for procurement control. MUNI has an approved vendors and parts list. MUNI has several procedures in place for material control, including Approval and Use of Chemical Products and Hazard Communication Program for MTA Employees. Also, MUNI has a draft Approved Equal Parts for Railcars and Purchasing Material and Supplies procedures. The MUNI SSPP does not refer to any of the procedures that MUNI procurement department follows
2. Procurement control is actively monitored and enforced by the responsible MUNI Purchasing Manager and Support and Services Manager.
3. Procurement control includes hazardous materials, maintenance and repair parts, and materials that could affect safety of the system, employees, passengers, the general public, equipment and the environment. All newly purchased materials are approved by MUNI Safety Department.
4. MUNI representatives responsible for procurement control stated that no violations occurred in procurement control for the last fifteen years.

Recommendations:

1. MUNI should complete, approve, and implement the Approved Equal Parts for Railcars and Purchasing Material and Supplies procedures.
2. MUNI should revise the SSPP procurement section to include or reference the procedures that MUNI follows in procurement control.