RSCD/RTSS/ccm

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

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

Resolution ST-38
Date: September 3, 1998

RESOLUTION

RESOLUTION ST-38. GRANTING APPROVAL OF A FINAL REPORT OF AN ON-SITE SAFETY AUDIT OF THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY PERFORMED BY THE RAIL TRANSIT SAFETY SECTION OF THE COMMISSION'S' RAIL SAFETY AND CARRIERS DIVISION.

Summary

This resolution grants the request of the Rail Safety and Carriers Division for approval of the Rail Transit Safety Section's final audit report entitled, "Triennial On-Site Safety Audit of the Los Angeles County Metropolitan Transportation Authority", dated August 5, 1998.

Background

Commission General Order No. 164-A, "Rules and Regulations Governing State Safety Oversight of Rail Fixed Guideway Systems" and Federal Transit Administration (FTA) Final Rule 49 CFR, Part 659, "State Safety Oversight of Rail Fixed Guideway Systems" require the Commission, as the designated state safety oversight agency for California, to conduct on-site safety reviews of transit agencies operating rail fixed guideway systems at least once every three years. Following the completion of each review, the Commission is required to issue a report containing its findings and recommendations. This report must also contain an analysis of the efficacy of the transit agency's system safety program plan, and a determination of whether or not the plan should be updated.

Discussion

Staff of the Rail Transit Safety Section of the Commission's Rail Safety and Carriers Division conducted an on-site, safety audit of the Los Angeles County Metropolitan Transportation Authority's (LACMTA) light and heavy rail transit systems during the two week period from June 15 to June 26, 1998. The methods used to conduct the audit included:

- Discussions with LACMTA management
- Reviews of procedures and records
- observations of operations and maintenance activities
- interviews with rank and file employees
- inspections and measurements of facilities and equipment

A full description of the audit, including the scope, results and recommendations, is contained in the final audit report which is included as an appendix to this resolution. The results of the audit show that the LACMTA is effectively implementing its system safety program plan. Exceptions noted during the audit are described in the Results / Comments section on each of the applicable checklists included with the final audit report. Twenty separate recommendations to correct identified exceptions are also contained in the final report.

The LACMTA system safety program plan requires the plan to be reviewed and updated every three years. The next review is scheduled to take place in November, 1999. No additional updating of the system safety program plan, other than the issuance of occasional supplemental organization chart changes, appears to be necessary at this time.

Following the audit, staff of both the LACMTA and the Rail Transit Safety Section were able to achieve full agreement on all aspects of the final audit report, including the recommendations. The LACMTA Operations Safety Department will perform the necessary follow up actions to assure that the 20 recommendations are fully implemented. The LACMTA will prepare a plan and schedule for each recommendation showing each step of the work to be done, when it will be done, and the person responsible for getting it done. The implementing plans and schedules for each recommendation will be provided to the staff of the Rail Transit Safety Section by October 5, 1998. Beginning in 1999, the LACMTA will also provide the staff of the Rail Transit Safety Section with a status report in April and October of each year until all 20 recommendations are fully implemented. The semi-annual status reports will include

updates that show the work completed and the work remaining for each recommendation.

The Rail Safety and Carriers Division recommends that the Commission approve the Rail Transit Safety Section's final audit report entitled, "Triennial On – Site Safety Audit of the Los Angeles County Metropolitan Transportation Authority", dated August 5, 1998. It is also recommended that the Commission order LACMTA to implement the 20 recommendations contained in the final report, and provide staff of the Rail Transit Safety Section with semi-annual status reports describing the progress made in implementing the recommendations.

Protests

All interested parties, including the LACMTA have been advised of the contents of this resolution, and no protest or objection has been received.

Findings

1. Staff of the Rail Safety and Carriers Division's Rail Transit Safety Section performed an on-site, safety audit of the LACMTA's light and heavy rail transit systems during the two week period from June 15 to June 26, 1998.

2. A description of the audit, including the scope, results and recommendations is contained in the final audit report entitled, "Triennial On-Site Safety Audit of the Los Angeles County Metropolitan Transportation Authority", dated August 5, 1998.

3. The audit results show that the LACMTA is effectively implementing its system safety program plan.

4. The final audit report contains 20 recommendations for improvements to the LACMTA system safety program based upon the audit findings.

5. The LACMTA has accepted and agreed to implement all 20 recommendations.

6. The LACMTA will submit its plans and schedules for implementing the 20 recommendations to the Rail Transit Safety Section by October 5, 1998.

7. Beginning in April, 1999, the LACMTA will prepare and submit to the Rail Transit Safety Section semi-annual reports on the status of the 20 recommendations.

8. It is recommended that the Commission approve the final audit report.

9. It is further recommended that the Commission order the LACMTA to:

   - implement the 20 recommendations
   - submit plans and schedules for implementing the 20 recommendations to the Rail Transit Safety Section by October 5, 1998
   - provide the Rail Transit Safety Section with semi-annual reports beginning in April, 1999 on the status of the 20 recommendations until all recommendations are fully implemented.

THEREFORE, IT IS ORDERED that:

The Rail Safety and Carriers Division's request for approval of the Rail Transit Safety Section's final audit report entitled, "Triennial On-Site Safety Audit of the Los Angeles County Metropolitan Transportation Authority", dated August 5, 1998 is granted. In addition, the LACMTA shall implement the 20 recommendations contained in the report. The LACMTA shall also prepare and submit to the Rail Transit Safety Section the implementation plans and schedules and the semi-annual status reports as described in the final audit report. The plans and schedules shall be submitted by October 5, 1998, and the first semi-annual status report shall be submitted in April, 1999 and shall continue to be issued until all 20 recommendations are fully implemented.

I certify that this resolution was adopted by the Public Utilities Commission of the State at its regular meeting in California held on September 3, 1998. The following Commissioners voting favorably thereon:

Wesley Franklin

WESLEY M. FRANKLIN
Executive Director

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

TRIENNIAL ON-SITE SAFETY AUDIT OF THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

AUDITORS: DONALD JOHNSON, LEN HARDY, GARY ROSENTHAL, ERIK JUUL, AUDREY ONG, SUSAN FEYL, JOEY BIGORNIA, KARTIK SHAH

RAIL TRANSIT SAFETY SECTION
RAIL SAFETY AND CARRIERS DIVISION
CALIFORNIA PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102

AUGUST 5, 1998

FINAL REPORT

PREPARED FOR:

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY
One Gateway Plaza,
Los Angeles, CA 90012

FINAL REPORT
8-5-98

CALIFORNIA PUBLIC UTILITIES COMMISSION

TRIENNIAL ON-SITE SAFETY AUDIT OF THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

INTRODUCTION

The California Public Utilities Commission's General Order No. 164-A and the Federal Transit Administration's Final Rule, 49 CFR Part 659, require the Commission staff to perform triennial, on-site, safety audits of each transit agency operating a rail fixed guideway system in California. The purpose of these audits is to verify compliance with, and evaluate the effectiveness of, each rail transit agency's system safety program plan.

The first triennial, on-site, safety audit of the Los Angeles County Metropolitan Transportation Authority (LACMTA) was conducted by the Rail Transit Safety Section of the Commission's Rail Safety and Carriers Division during the two week period from June 15 to June 26, 1998. The on-site audit was preceded by a pre-audit conference with staff of the LACMTA on June 15, 1998. A post-audit conference, also attended by staff of the LACMTA, was held on June 26, 1998.

PROCEDURE

The audit was conducted in accordance with the Commission's procedure RTSS-4, Procedure for Performing Triennial Safety Audits of Rail Transit Systems. A set of 55 audit checklists covering operations, maintenance and system safety was prepared in advance of the on-site audit. Each checklist identifies the safety related elements and characteristics that were audited, the LACMTA reference documents that established the acceptance requirements, and the method that was used for evaluating compliance with the requirements. The methods used included:

- discussions with LACMTA management
- reviews of procedures and records
- observations of operations and maintenance activities
- interviews with rank and file employees
- inspections and measurements of equipment and infrastructure

The audit checklists concentrated on requirements that affect the safety of train operations, and are known or believed to be important to reducing safety hazards and preventing accidents.

RESULTS AND RECOMMENDATIONS

The findings for each element / characteristic audited are recorded under the RESULTS / COMMENTS heading on each of the 55 checklists. These findings were discussed in detail with the LACMTA personnel listed under "Persons Contacted" during the course of the on-site audit. Based upon these findings, 20 recommendations for improvements to the LACMTA system safety program were presented to the LACMTA staff at the post audit exit meeting held on Friday, June 26, 1998. The majority of these recommendations involve improvements that the LACMTA recognized needed to be made and had begun to work on, but not completed, before the audit began. The 20 recommendations are:

1. Complete and issue for use the management directive which is currently being drafted to assure that accident follow-up check rides are performed as soon as possible, but not later than two weeks, after an operator returns to duty following an accident. See checklist No. 2.

2. The temporary train operators who received their initial training and certification in 1995 should be given a four-day refresher training course as currently scheduled before they are elevated to full time, permanent operators. See checklist No. 2.

3. Rail Operations Bulletins should be issued in a size and format to facilitate insertion in the Train Operator's individual rule books. See checklist Nos. 3, 5, 6, 8, 9 and 10.

4. The existing "sign for" requirements governing the issuance of new procedures, notices and bulletins should be strengthened to assure that all employees with a need to know receive, read and understand the content and purpose of each newly issued document. See checklist Nos. 3 and 9.

5. The existing program of operations performance evaluations should be expanded and strengthened to ensure that employees: (a) have up to date rule books and other required equipment in their possession while on duty, (b) are familiar with and have a correct understanding of the latest rule changes and newly issued bulletins, notices and procedures and (c) communicate information to the Rail Operation's Control center in strict conformance with the rules and procedures. See checklists Nos. 3, 4, 5, 8, 9, and 10.

6. The "look back" rule should be reviewed and re-evaluated to determine whether or not it needs to be revised to require light rail train operators to continue to monitor their side view mirrors as the train moves forward out of a station to make certain that no one is being dragged or has fallen under the train. See checklists. No. 4.

7. The standard operating procedures for Yard Controllers that are currently under development should be completed and issued for use on an expedited basis. See checklist Nos. 5 and 6.

8. The System Safety Program Plan requirements for maintenance of way SOP's, equipment maintenance SOP's, an emergency preparedness plan, an earthquake action plan and a fire action plan should all be re-evaluated. If it is determined that such plans and procedures are truly needed, they should be prepared and issued on an expedited basis. See checklist Nos. 5 and 21.

9. The lesson plans for refresher training and other courses currently under development for rail operations controllers should be completed and put into use on an expedited basis. In addition, consideration should be given to requiring the Operations Safety Department to review and provide input to these lesson plans before they are issued for use. See checklist No. 7.

10. The governing procedures for the preparation and distribution of Unusual Occurrences Reports should be revised and strengthened to assure that the Operations Safety Department and others with a need to know receive copies of these reports in a timely manner. See checklist Nos. 9 and 21.

11. The Controller's 40 channel tape recorder should be checked out to see if its performance can be improved. In addition, consideration should be given to creating a special log to record the date and time of failures, broken tapes, and tape changes. See checklist No. 9.

12. The entire subject of configuration management and change control as described in the LACMTA System Safety Program Plan and Rail Configuration Change Control Procedure should be re-evaluated. As a first step, the LACMTA should conduct a more detailed study of the existing program and procedures to determine the full depth and true nature of the problems described in checklist No. 11. Following the completion of this study, a comprehensive corrective action plan should be prepared and implemented to correct the identified deficiencies. The entire process from conducting the study to preparing the corrective action plan and following up to evaluate the effectiveness of the corrective action should be carried out with the active involvement of the Operations Safety Department. See checklist No. 11.

13. When the Operations Safety Department conducts its next internal audit it should include the elements and characteristics described in checklist Nos. 12, 15 and 26 with full time participation by the designated CPUC representative for the LACMTA. See checklist Nos. 12, 15 and 26.

14. Revise the applicable LACMTA standard operating procedure for investigating accidents to include a requirement that the designated CPUC representative be notified in advance of multi-department meetings convened to address major accidents involving injuries or fatalities. See checklist No. 16.

15. Organizational and other changes such as those described in checklist No. 20 that occur between the normal three years cycle of system safety program plan reviews and updates should be prepared and issued as amendments or supplements to the plan. See checklist No. 20.

16. An appropriate program and procedure to cover the periodic review and analysis of statistical accident data to identify and correct any apparent negative trends should be prepared and put into use. See checklist No. 27.

17. An engineering evaluation of the specified frequencies for preventive maintenance, inspection, and testing of material and equipment under the control of the Facilities Maintenance, Signal Maintenance, Track Maintenance (including inspection of concrete structures), and Traction Power Maintenance departments should be conducted to determine whether or not changes, to more closely reflect actual practices, are justified. Following this evaluation the required frequencies should be firmly established under a controlled scheduling program that will alert senior management when PM activities are deferred without prior engineering approval. See checklist Nos. 28, 29, 30, 31, 32, 36, 37, 38, 39, 43, 45, 47 and 48.

18. The initial testing and certification of all signal inspectors and track inspectors should be completed on an expedited basis. See checklist Nos. 34 and 40.

19. The LAMCTA should first inspect and then repair all of the Blue Line grade crossing warning devices to correct the kind of problems described in checklist No. 39. See checklist No. 39.

20. The Red Line vehicle maintenance training department should adopt the same record format as used by the Blue Line / Green Line to clearly show for each employee the required training courses, optional training courses, which courses have been completed, the date they were completed, and which courses have not been completed. See checklist No. 50.

During the 30 days post audit review and comment period, each of the above recommendations was reviewed and concurred with by the LACMTA staff. For each recommendation, LACMTA has agreed to prepare and implement an action plan and schedule that identifies each step of the work to be done to carry out the recommendation, when each step will be done, and the person responsible for getting it done. This planning and scheduling information will be provided to the Commission staff for review and acceptance within 30 days, i.e. by October 5, 1998. In addition, beginning in April, 1999 LACMTA will also provide the Commission staff with a status report in April and October each year until all the required work to implement the recommendations is completed. The status reports will include plan and schedule updates that show the work completed and work remaining for each recommendation. Also, the newly created LACMTA Office of Safety has agreed to monitor the work performed to assure it is fully responsive to the recommendations, and to sign off each recommendation when the work is satisfactorily completed.

Finally, the Commission's designated representative for LACMTA is responsible for monitoring the progress of the work required to complete the recommendations as part of his/her regularly assigned safety oversight duties performed in accordance with RTSS-1, Procedure for Safety Oversight of Design, Construction, Operation and Maintenance of Rail Fixed Guideway Systems.

SUMMARY AND CONCLUSIONS

This, the first on-site, triennial, safety audit of the LACMTA conducted by the Rail Transit Safety Section of the Commission's Rail Safety and Carriers Division concentrated on those elements of LACMTA's system safety program that affect the safety of train operations, and that are important to reducing safety hazards and

preventing accidents. The audit was conducted by interviewing management and staff personnel, reviewing documentation, observing operations, and inspecting equipment and infrastructure to evaluate compliance with, and determine the effectiveness of LACMTA's system safety program plan. The scope of the audit included operations, maintenance and system safety.

The results of the audit show that the LACMTA is effectively implementing its system safety program plan. LACMTA management demonstrated that they have a clear understanding of the policies and procedures important to safety. LACMTA staff, by their actions as well as words, demonstrated that they understand their duties and responsibilities relative to carrying out the policies and procedures that are important to safety.

The LACMTA is required by procedure to review and update its system safety program plan every three years. The next required review and update is scheduled to take place in November, 1999. No additional updating of the plan, except for the preparation of occasional supplemental organization chart changes (see recommendation No. 15) appears to be necessary at this time.

The vast majority of the thousands of documents reviewed, activities observed, and items inspected were found to be in compliance with the requirements of LACMTA's system safety program plan. However, there were exceptions noted. These are described under the Results / Comments section on each checklist. The noted exceptions are addressed by the 20 recommendations presented above.

The single most common noted exception involved "not following procedures." This was encountered in operations, maintenance and system safety. The recommendations listed above are intended to mitigate potential problems associated with not following procedures. LACMTA has agreed to accept all of the recommendations. LACMTA has further agreed to develop appropriate action plans and schedules to carry out the recommendations, and to keep the Commission staff advised of LACMTA progress through semi-annual progress reports. The LACMTA

Office of Safety, with Commission staff oversight, is responsible for assuring the recommendations are put into practice.

The Rail Transit Safety Section of the Commission's Rail Safety and Carriers Division would like to express its appreciation to LACMTA management and staff for their cooperation and support during every phase of this audit from development of the checklist requirements through the post audit review and comment period. All of the information requested was made readily available, and LACMTA personnel at every level were responsive to the auditors every request for assistance. This kind of cooperation contributed greatly to the performance of the audit.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	1	Date of Audit	June 15, 1998	Persons Contacted
Department RAIL OPERATIONS		Auditors: Audrey Ong Gary Rosenthal		Rita Malone Eugene Adams

REFERENCE CRITERIA

1) System Safety Program Plan – Operations, Rev. 1, dated 11-25-96, Sect. 3.2.9 Safety Training
2) Heavy Rail Instruction Training Matrix
3) CPUC G.O. 143A, Section 12.02, 13.03, 14.03

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

HEAVY RAIL OPERATIONS TRAINING AND CERTIFICATION

Select a random sample of employees from each of the following employee classifications:

- Train Operators
- Rail Transit Operations Supervisors (Includes ROC Controllers & Yard Controllers),
- Maintenance Of Way
- Equipment Maintenance Personnel

1. Review their training, certification, and recertification records to determine whether or not they are in compliance with the Reference Criteria.

2. Review the current training, certification and re-certification programs for each classification to determine whether or not they are complete and current.

RESULTS/COMMENTS

A random sample consisting of the following employee classifications was selected:

- 8 Train Operators
- 9 Rail Transit Operations Supervisors (5 of which are Controllers)
- 9 Maintenance-of-Way employees
- 6 Equipment Maintenance employees

The training, certification, and re-certification procedures and records for each of these individuals were reviewed.

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CHECKLIST NO. 1
CONTINUED FROM PAGE 1

All records were well organized, neat, and easy to access. The Train Operator and non-Controller RTOS records were complete and current (see checklist No. 7 for Controllers). These files contained records of initial training, certification, current re-certification as well as the graded tests supporting the certifications.

Equipment Maintenance employees, whose duties include train operations and therefore require operations training and certification, also had complete files for initial training, certification and re-certification.

Maintenance of Way operations training records are maintained at the MOW facility at Division 20, and were reviewed there on June 19, 1998. The sampled employees had all received initial training and certification and were current with operations re-certification requirements.

With regard to the training, certification, and re-certification procedures themselves, they appeared to be in order, all having been recently revised, signed and dated June 10, 1998.

This element / characteristic judged satisfactory without any noted exceptions.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	2	Date of Audit	June 17, 1998	Persons Contacted
Department RAIL OPERATIONS		Auditors Audrey Ong Gary Rosenthal		Duane Martin Dennis Villard Robert Johnson Hector Guiterrez

REFERENCE CRITERIA

1) System Safety Program Plan – Operations, Rev 1, dated 11-25-96, Sect. 3.2.9 Safety Training
2) Light Rail Instruction Training Matrix
3) CPUC G.O. 143A, Section 12.02, 13.03, 14.03

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

LIGHT RAIL OPERATIONS TRAINING AND CERTIFICATION

Select a random sample of employees from each of the following employee classifications:

- Train Operators
- Rail Transit Operations Supervisors (Includes ROC Controllers & Yard Controllers),
- Maintenance Of Way
- Equipment Maintenance Personnel

1. Review their training, certification, and recertification records to determine whether or not they are in compliance with the Reference Criteria.

2. Review the current training, certification and re-certification programs for each classification to determine whether or not they are complete and current.

RESULTS/COMMENTS

A random sample of the Training, Certification, & Recertification records for the Light Rail Operations Department was reviewed. The sample consisted of:

- Train Operators (10 of 79 full time, 5 of 14 part time, and 6 of 6 temporarys)
- 10 Rail Transit Operations Supervisors
- Maintenance of Way Personnel (5 of 13)
- Equipment Maintenance Personnel (5 of 9)

The records were reviewed to determine whether or not the following items were in compliance with the reference criteria:

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CHECKLIST NO. 2
CONTINUED FROM PAGE 1

- Driver's License
- Medical Card
- Vehicle TransitTraining certificate
- Light Rail Certification

A review of the part time and temporary Operator's accident histories and performance evaluations was also included.

Lastly, a review of the current training, certification, and recertification procedures was made.

The results of the reviews of the accident histories, performance evaluations, training, certification and re-certification procedures and records were all satisfactory without any noted exceptions. However, the records revealed that the Training Dept. is behind in performing quarterly check rides. Also, the accident records revealed that some accident follow-up rides were not performed at all, and some others occurred after the 60-90 day recommended time frame. The MTA representative explained that a management directive is currently being prepared to require accident follow-up rides to be performed no later than 2 weeks after an operator returns to duty following an accident.

The records for the temporary train operators revealed that many of them are scheduled to start operating LRV's on a regular, full time basis within the next two weeks. These temporary operators completed their initial training and certification three years ago in 1995. In the intervening period between then and now they have kept up their certified train operator status by annual re-certification and 60 day proficiency rides. Nevertheless, there is still some question about how well prepared these temporary operators are to be elevated to full time operators after such an extended period between the time of initial training and certification in 1995 and now. In answer to this question the MTA representative said the temporary operators will be given a 4 day refresher course before beginning their full time, permanent operator assignments.

See recommendations 1 and 2.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	3	Date of Audit	June 16, 1998	Persons Contacted
Department RAIL OPERATIONS		Auditors Audrey Ong Gary Rosenthal		Rita Malone Ron Regenor

REFERENCE CRITERIA

1) Heavy Rail Operations Rulebook, undated
2) Heavy Rail Standard Operating Procedures, effective 2-1-98
3) Heavy Rail - Rail Operations Bulletins
4) Heavy Rail - Rail Operations Procedure Notices, Special Notices, and General Notices
5) CPUC G.O. 143A, Section 13.04 Program of Operational Evaluations

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

RED LINE TRAIN OPERATOR PERFORMANCE

1. Observe on-board operations of not less than three trains between not less than four stations to determine whether or not each train operator is in compliance with the corresponding Rules and Procedures addressed in the Reference Criteria.

2. Observe train operations for at least two hours in the yard to determine whether or not the train operators are in compliance with the Rules and Procedures addressed in the Reference Criteria.

3. Interview not less than five randomly selected Train Operators from the current roster regarding the Rules, Procedures and policies listed in the Reference Criteria.

4. Review Performance Evaluation, Discipline and Accident/Incident Records for each of the Train Operators selected in Item 3.

RESULTS/COMMENTS

Performed the mainline onboard observations, train operator interviews and review of performance evaluations, discipline and accident / incident records as described in 1, 3 and 4 above. The yard operation observations as described in 2 above were not performed.

Results of the T.O. observations were satisfactory except that one T.O. failed to notify the Rail Operations Center of an authorized person in the control cab.

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CHECKLIST NO. 3
CONTINUED FROM PAGE 1

Results of the 4 T.O. interviews were also satisfactory except for the following:

- Three of the T.O.'s set their watches to the yard controller's "non standard" digital clock and one set his watch to the "standard" analog clock in the tower.
- None of the 4 T.O.'s rule books were updated with the current operations bulletins.
- One of the 4 T.O.'s was not equipped with a working flashlight.
- One of the 4 T.O.'s was unfamiliar with SOP 108.9 which deals with bomb threats.
- None of the 4 T.O.'s seemed to be aware of Operations Notice 98-05 which deals with unknown hazardous substances..

Results of the review of the performance evaluation, discipline and accident / incident records were all satisfactory without exceptions.

See recommendations 3, 4 and 5.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	4	Date of Audit	June 18, 1998	Persons Contacted
Department RAIL OPERATIONS		Auditors Audrey Ong Gary Rosenthal		Duane Martin Dennis Villard

REFERENCE CRITERIA

1) Light Rail Operations Rulebook, undated
2) Standard Operating Procedures, Metro Blue Line, Los Angeles/Long Beach Light Rail System
3) Standard Operating Procedures, Metro Green Line, Norwalk/Redondo Beach Light Rail System
4) Light Rail - Rail Operations Bulletins
5) Light Rail - Rail Operations Procedure Notices, Special Notices, and General Notices
6) CPUC G.O. 143A, Section 13.04 Program of Operational Evaluations

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

BLUE LINE AND GREEN LINE TRAIN OPERATOR PERFORMANCE

1. Observe on-board operations of not less than two trains each on the Blue and Green Lines between not less than four stations to determine whether or not each train operator is in compliance with the corresponding Rules and Procedures addressed in the Reference Criteria.

2. Observe train operations for at least two hours in the yard to determine whether or not the train operators are in compliance with the Rules and Procedures addressed in the Reference Criteria.

3. Interview not less than five randomly selected Train Operators from the current roster regarding the Rules, Procedures and policies listed in the Reference Criteria.

Review Performance Evaluation, Discipline and Accident/Incident Records for each of the Train Operators selected in Item 3.

RESULTS/COMMENTS

Observed on-board operations of two Green line trains and two Blue Line trains between more than four stations. All train operators followed the appropriate rules and procedures with the exception of the rule requiring notification of ROC when an additional person is in the operator's cab. Although not a rule or procedure violation, it was noted that train operators did not and are not required to make look backs, using their side mirrors, once the train starts moving forward when departing from a station.

See recommendations 5 and 6.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	5	Date of Audit	June 15, 1998	Persons Contacted
Department RAIL OPERATIONS		Auditors: Audrey Ong Gary Rosenthal		Ron Regenor Rita Malone

REFERENCE CRITERIA

1) Heavy Rail Operations Rulebook, undated
2) Heavy Rail Standard Operating Procedures, effective 2-1-98
3) Heavy Rail - Rail Operations Bulletins
4) Heavy Rail - Rail Operations Procedure Notices, Special Notices, and General Notices
5) Yard Control Procedure Manual
6) Maintenance of Way Standard Operating Procedures
7) Equipment Maintenance Standard Operating Procedures

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

RED LINE YARD CONTROLLERS PERFORMANCE

Observe Yard Controllers for not less than two hours at the Red Line yard in connection with the Reference Criteria Policy, Rules and Procedures.

Interview not less than one randomly selected Yard Controller from the Red Line yard regarding the Rules and Procedures listed under the Reference Criteria.

Review a randomly selected sample of Daily Status Logs, Work Permits, and Yard Movement Logs prepared during the past six months to determine whether or not they are being properly prepared and maintained according to the referenced criteria.

RESULTS/COMMENTS

Observed two yard controllers at the Red Line yard. Interviewed one yard controller. Reviewed Daily Status Logs, Work Permits, Yard Movement Logs, Yard Control Procedure Manual, Rail Operations Bulletins, Rail Operations Procedures Notices, and General Notices.

The two controllers were observed to perform their duties in accordance with the applicable rules and procedures. They were familiar with the rules and procedures, and the location of various reference manuals in the tower.

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CHECKLIST NO. 5
CONTINUED FROM PAGE 1

One of the two yard controllers did not have a personal copy of the Rule Book immediately available. However, there is a common Rule Book in the tower for use by the yard controllers, but it was not current. The other yard controller had a personal copy of the Rule Book available, but it was not up to date - one rule had not been updated. The necessary corrections were made to the employee's Rule Book and the common Rule Book as soon as the discrepancies were identified by the auditors.

Standard Operating Procedures for Yard Controllers, which will include requirements for keeping the common Rule Book current, are in the process of being developed.

The Daily Status Logs, Work Permits, Yard Movement Logs, Yard Control Procedure Manual, Rail Operations Bulletins, Rail Operations Procedures Notices, and General Notices appeared to be properly prepared, maintained, and current. However, the referenced Maintenance of Way and Equipment Maintenance SOP's appear to have never been prepared.

See recommendations 3, 7 and 8.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	6	Date of Audit	June 24, 1998	Persons Contacted
Department RAIL OPERATIONS		Auditors Audrey Ong Gary Rosenthal		Duane Martin Dennis Villard Hector Guiterrez

REFERENCE CRITERIA

1) Light Rail Operations Rulebook, undated
2) Standard Operating Procedures, Metro Blue Line, Los Angeles/Long Beach Light Rail System
3) Standard Operating Procedures, Metro Green Line, Norwalk/Redondo Beach Light Rail System
4) Yard Control Procedure Manual
5) Light Rail - Rail Operations Bulletins
6) Light Rail - Rail Operations Procedure Notices, Special Notices, and General Notices

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

BLUE LINE YARD CONTROLLERS PERFORMANCE

Observe Yard Controllers for not less than two hours at the Blue Line yard in connection with the Reference Criteria Policy, Rules and Procedures.

Interview not less than one randomly selected Yard Controller from the Blue Line yard regarding the Rules and Procedures listed under the Reference Criteria.

Review a randomly selected sample of Daily Status Logs, Work Permits, and Yard Movement Logs prepared during the past six months to determine whether or not they are being properly prepared and maintained according to the referenced criteria.

RESULTS/COMMENTS

Observed two yard controllers at the Blue Line yard. Reviewed Daily Status Logs, Work Permits, Yard Movement Logs, Yard Control Procedure Manual, Rail Operations Bulletins, Rail Operations Procedures Notices, and General Notices.
The two controllers were observed to perform their duties in accordance with the applicable rules and procedures.

There is a common Rule Book in the tower for use by the yard controllers, but it was not current. Standard Operating Procedures for Yard Controllers are in the process of being developed.
The Daily Status Logs, Work Permits, Yard Movement Logs, Yard Control Procedure Manual, Rail Operations Bulletins, Rail Operations Procedures Notices, and General Notices appeared to be properly prepared, maintained, and current.

See recommendations 3 and 7.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	7	Date of Audit	June 19, 1998	Persons Contacted
Department RAIL OPERATIONS CONTROL		Auditors Audrey Ong Gary Rosenthal		Frank Alejandro Linda Leone

REFERENCE CRITERIA

1) System Safety Program Plan – Operations, Rev 1, dated 11-25-96, Section 3.2.9 Safety Training
2) Central Control Facility Light Rail Standard Operating Procedures, effective 10/01/96
3) Central Control Facility Manual
4) Training Matrix for Controllers
5) Training Matrix for Senior RTOS
6) CPUC G.O. 143A, Section 13.03 Program of Instruction

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

TRAINING AND CERTIFICATION OF LIGHT AND HEAVY RAIL OPERATIONS CONTROLLERS

1. Select a random sample of controllers and review their training, certification, and recertification records to determine whether or not they are in compliance with the Reference Criteria.

2. Review the current training, certification and re-certification lesson plans for controllers to determine whether or not they are complete and current.

RESULTS/COMMENTS

Of the 30 Rail Operations Control (ROC) Controllers, 4 Seniors and 26 RTOSs, the records for 2 Seniors and 8 RTOSs were reviewed for compliance with the Reference Criteria.
The review included a follow up to Checklists No.1 & 2, Heavy and Light Rail Operations Training and Certification.
The records were found to be complete and well organized. The few minor discrepancies which were found were immediately corrected.
In answer to a question about refresher training of Controllers returning after a long leave of absence, the training instructor stated that Lesson Plans for retraining of this nature are currently being developed and written.
There are also a number of other Lesson Plans being developed and written or being revised. However, there apparently are no requirements or procedures in place that require the Operations Safety Department to review these lesson plans before they are issued for use.

See recommendation 9.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
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Checklist No.	8	Date of Audit	June 23, 1998	Persons Contacted Frank Alejandro Doug Jackson Henry Castenada
Department RAIL OPERATIONS CONTROL		Auditors Audrey Ong Gary Rosenthal		

REFERENCE CRITERIA

1) System Safety Program Plan - Operations, Rev 1, dated 11-25-96, Sect. 2.4.1.1 Rail Facilities
2) Light Rail Operations Rule Book, undated
3) Standard Operating Procedures, Metro Blue Line, Los Angeles/Long Beach Light Rail System
4) Standard Operating Procedures, Metro Green Line, Norwalk/Redondo Beach Light Rail System
5) Light Rail – Rail Operations Bulletins
6) Light Rail – Rail Operations Procedure Notices, Special Notices, and General Notices
7) Central Control Facility Light Rail Standard Operating Procedures, effective 10/01/96
8) CPUC G.O. 143A, Section 12.04 Hours of Service – Safety Sensitive Employees

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

BLUE LINE AND GREEN LINE RAIL OPERATIONS CONTROLLERS ACTIVITIES

Audit the safety related duties and responsibilities of MTA personnel assigned to the ROC to determine whether or not they are being properly performed by a combination of the following:

- First hand observations for a minimum of four hours
- One on one interviews with randomly selected Light Rail ROC employees
- Review a random sample of forms, cards, recorded voice tapes, computer files and other documentation prepared during the past six months

A list of specific items to be included in the audit follows:

1. Rail Controllers are responsible for maintaining and having their SOPs available while in the performance of duties. Complete knowledge and strict compliance of all SOPs shall be required by all Control Center personnel. (CCF SOP 101.1)

2. Unusual Occurrence Reports and the Open Incidents Log

3. Hours of service time records

4. Incidents documented in the Rail Incident Management System (RIMS) (CCF SOP 101.6)

5. ATP By-Pass activities documented in the ATP By-Pass Log (CCF SOP 103.4 & 104.6)

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CHECKLIST NO. 8
CONTINUED FROM PAGE 1

6. Manual Block System Clearance Log (CCF SOP 104.13)

7. Wayside Restriction Orders (CCF SOP 104.20)

8. Clearance Cards (CCF SOP 104.21)

9. Communications with Union Pacific for UP Train Movements at the Vargus Spur and the Amoco Line. (CCF SOP 107.1)

RESULTS/COMMENTS

First hand observations of Light Rail Controllers were made for more than six hours, and one on one interviews were conducted with four Controllers. All of the above listed specific items were reviewed with the exception of items 5-8. See Checklist No. 9 for results of the hours of service review.

Of the four interviewed Controllers, only one had an updated rulebook. All had a good understanding of the applicable operating rules and procedures.

There are three copies of the Light Rail Operations Rule Book at the Control Center. They are kept in binders along with the Standard Operating Procedures. Two of them are current, and the other one, which is kept at the Senior's desk, is not up to date.

All other documents and logs reviewed were current and properly maintained as required by the Standard Operating Procedures.

Reviewed multiple channel audio tape recordings of Blue Line Controllers Activities related to four Light Rail Accidents and two Union Pacific Railroad/Blue Line operations. Controllers performed according to appropriate rules and SOPs while exercising sound professional judgment in addressing the unique aspects of each emergency event.

See recommendations 3 and 5.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
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Checklist No.	9	Date of Audit	June 22, 1998	Persons Contacted
Department RAIL OPERATIONS CONTROL		Auditors Audrey Ong Gary Rosenthal		Frank Alejandro Doug Jackson Henry Castenada

REFERENCE CRITERIA

1) System Safety Program Plan - Operations, Rev 1, dated 11-25-96, Sect. 2.4.1.1 Rail Facilities
2) Heavy Rail Operations Rule Book, undated
3) Heavy Rail Standard Operating Procedures, effective 2-1-98
4) Heavy Rail - Rail Operations Bulletins
5) Heavy Rail - Rail Operations Procedure Notices, Special Notices, and General Notices
6) Central Control Facility Heavy Rail Standard Operating Procedures, effective 2/01/97
7) CPUC G.O. 143A, Section 12.04 Hours of Service – Safety Sensitive Employees

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

RED LINE RAIL OPERATIONS CONTROLLERS ACTIVITIES

Audit the safety related duties and responsibilities of MTA personnel assigned to the ROC to determine whether or not they are being properly performed by a combination of the following:

- First hand observations for a minimum of four hours
- One on one interviews with randomly selected Heavy Rail ROC employees
- Review a random sample of forms, cards, recorded voice tapes, computer files and other documentation prepared during the past six months

A list of specific items to be included in the audit follows:

1. Rail Controllers are responsible for maintaining and having their SOPs available while in the performance of duties. Complete knowledge and strict compliance of all SOPs shall be required by all Control Center personnel. (CCF SOP 101.1)

2. Unusual Occurrence Reports and the Open Incidents Log for the past six months

3. Hours of service time records

4. Incidents documented in the Rail Incident Management System (RIMS) (CCF SOP 101.6)

5. Manual Block System Clearance Log (CCF SOP 104.13)

6. Wayside Restriction Orders (CCF SOP 104.19)

7. Clearance Cards (CCF SOP 104.20)

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CHECKLIST NO. 9
CONTINUED FROM PAGE 1

RESULTS/COMMENTS

First hand observations and reviews of the documentation were made with the exception of items 5-7. Two heavy rail controllers were also interviewed.

The Controllers were knowledgeable of the applicable Standard Operating Procedures. Both Controllers were unaware, however, of the latest Heavy Rail Operations Procedure Notice dated June 1, 1998 – Unknown Hazardous Substance. One Controller had his personal copy of the rulebook but it was not current. The other Controller stated he uses the file copy of the rulebook at Control. The two Heavy Rail file copies of the rulebook were both out of date, one near the console and the other at the Senior's desk.

It was found that the latest Heavy Rail Operations Procedure Notice dated June 1, 1998 – Unknown Hazardous Substance, was neither posted nor was there a "sign for" sheet for it.

Reviewed the Hours of Service Records for all the Red, Blue and Green Line Controllers through 16 weeks between December 28, 1997 and June 13, 1998. There was no record of any Controller working in excess of 12 hours in any 16 hour period and no record of any Controller having gone on duty without at least 8 hours off duty prior to the start of their next shift.

Reviewed a sample of more than 40 Unusual Occurrence Reports prepared for the Red Line. Each report appeared to be complete and properly prepared. In reviewing these Unusual Occurrence Reports it was disclosed that the departments listed at the bottom of each report do not actually receive the reports unless they are requested. It was also noted that there were two UORs that appeared to be reportable injury accidents, but they were not forwarded to the Operations Safety Department.

It was learned that the 40 channel tape recorder frequently fails or breaks recording tapes. There is no specific log to record these failures, however the failures may be recorded in any one of the three unusual occurrence logs and the Communications Dept. is notified. This machine records radio and telephone communications as well as security related activities for the Red, Blue and Green Lines.

See recommendations 3, 4, 5, 10 and 11.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	10	Date of Audit	June 25, 1998	Persons Contacted
Department MAINTENANCE OF WAY		Auditors Audrey Ong Gary Rosenthal		Bud Moore Jeff Root Ron Regenor

REFERENCE CRITERIA

1) Light Rail Operations Rulebook, undated
2) Standard Operating Procedures, Metro Blue Line, Los Angeles/Long Beach Light Rail System
3) Standard Operating Procedures, Metro Green Line, Norwalk/Redondo Beach Light Rail System
4) Light Rail - Rail Operations Bulletins
5) Light Rail - Rail Operations Procedure Notices, Special Notices, and General Notices
6) Maintenance of Way Standard Operating Procedure

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

LIGHT RAIL HI-RAIL EQUIPMENT OPERATOR PERFORMANCE

1. Observe Hi-Rail Equipment Operators for at least one hour at two locations on the Blue or Green Line to determine whether or not they are in compliance with the Reference Criteria, policy, rules and procedures.

2. Interview not less than one certified Hi-Rail Equipment Operator regarding rules and procedures in the Reference Criteria to determine whether or not they are knowledgeable about them.

3. Check the Hi-Rail Equipment Operators to determine whether or not they are certified/recertified as required by the Reference Criteria.

RESULTS/COMMENTS

Two certified Hi-Rail Equipment Operators were interviewed regarding rules, Standard Operating Procedures, Light Rail Bulletins and Special Notices. We also checked to see if these employees had a Railroad Approved watch, a Light Rail Operations Rulebook that had been updated and appropriate high visibility vests.

Both employees were familiar with the operating rules, bulletins, SOPs and notices. Both had copies of the Light Rail Operations Rulebook with them. Only one of the equipment operators had an updated rulebook. Neither of the equipment operators had a Railroad Approved watch. Both were wearing high visibility vests.

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CHECKLIST NO. 10
CONTINUED FROM PAGE 1

We observed both Hi-Rail Equipment Operators as they operated on the Green Line. The operators are also qualified to operate a ballast regulator and tie tamper which they did operate as a single train between Norwalk and Long Beach Blvd. Stations.

These operators performed the required predeparture inspections, copied train orders and work permits, and operated the ballast regulator and tie tamper according to the appropriate rules and procedures.

The Hi-Rail Equipment Operators were both checked against the list of currently certified Hi-Rail Equipment Operators and were found to be listed on the roster.

See recommendations 3 and 5.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
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Checklist No.	11	Date of Audit	June 25, 1998	Persons Contacted
Department RAIL OPERATIONS SUPPORT		Auditors Susan Feyl Len Hardy		Anton Andersen Albert Nijland Rufus Francis

REFERENCE CRITERIA

1) System Safety Program Plan – Operations, Rev 1, dated 11-25-96, Sect. 4.1.4 Configuration Control Center (CCC)
2) LACMTA Rail Configuration Change Control Procedure

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

CONFIGURATION CHANGE CONTROL

Select a sample of three Change Orders completed or substantially completed during the past year and review the associated configuration change records and drawings to determine whether or not:

1. The required change approval process was correctly implemented.
2. The affected operations and maintenance procedures and training programs were revised to incorporate the changes.
3. The changes were recorded on as-built drawings.
4. The changes were reviewed and accepted by the Operations Safety Dept.

RESULTS/COMMENTS

Item A

Arbitrarily selected a completed modification project on the Red Line. This project consisted of "Adding on Switches to the Emergency Management Panel" for the control of ventilation fans. The modification was submitted to the Configuration Review Committee on June 1, 1995. Reviewed the official as-built drawings to see if they were revised with this modification. Also reviewed the latest copy of the Emergency Management Panel operating procedure to see if it had been revised to reflect the modification.

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CHECKLIST NO. 11
CONTINUED FROM PAGE 1

Findings:

1. The as built drawings have not been updated.

2. A procedure that includes the operation of these switches was not available for review at the time of the audit.

3. The Configuration Change record sheet in the file for this project did not contain sign-off signatures for the Safety Dept, the Design Dept, nor the approval signature of the director of the Change Review Committee. However, the Change Review Committee and Safety Dept had apparently approved the design change.

Item B

Arbitrarily selected two plans (Hazardous Materials Emergency Contingency Response Plan (HMECRP), and the System Safety Program Plan (SSPP) to see if they had been prepared and issued in accordance with established configuration management procedures.

Findings:

1. The HMECRP was revised on May 29, 1996 but was never submitted to the Configuration Control Department and consequently was not reviewed by the Change Review Committee.

2. The SSPP was revised on November 25, 1996. However, the Configuration Management Department was unable to produce a copy of the revision at the time of the audit.

Item C

Arbitrarily selected a set of contract documents (Special Trackwork Contract No. R01-T08-P830, specification for trackwork for the Blue Line in the Long Beach area) dated February 1987, and requested to see how the as built drawings had been processed through the Configuration Management process.

Findings:

1. The drawings were never officially transmitted to the Configuration Management Department, and are currently not under configuration change control.

2. Follow-up questions led to the discovery that as-built drawings supplied by consultants and vendors are, for the most part, not submitted to the Configuration Management Department and consequently fail to fall under any change control process. Consequently, a seamless transition between construction management and the MTA end users is not in place.

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CHECKLIST NO. 11
CONTINUED FROM PAGE 2

Item D

Subsequent questioning on the above discrepancies revealed the following information:

- Vehicle Maintenance Plans, Maintenance-of-Way Plans, the Operating Rule Book, and the Rail Operations Control Standard Operating Procedures do not go through the configuration change control procedure.
- Although there is a generic list of documents subject to formal change control, there is some confusion regarding which specific documents come under the configuration management program.
- The current Rail Configuration Change Control Procedure does not adequately define the scope of change control, lines of communication, and specific responsibilities. For example, it was not clear who is responsible to ensure "ripple effect" documentation (up-dates to affected operating procedures, training manuals, rule books, etc.) is revised.
- There is no process to merge a number of contracts in one track area in order to determine the number and location of all utility lines. For example, during excavation at Imperial, there was no way of knowing how to trace drawings showing the location of 480 volt underground power lines.

See recommendation 12.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
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Checklist No.	12	Date of Audit	June 25, 1998	Persons Contacted Bill McCann
Department RAIL ACTIVATION & START-UP		Auditors Don Johnson		

REFERENCE CRITERIA

Rail Activation Test Program Plan - Metro Red Line Vermont/Hollywood Corridor

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

TEST PROGRAM STATUS REPORTING FOR THE METRO RED LINE VERMONT/HOLLYWOOD CORRIDOR

Review the contract acceptance test matrix for the MOS2B Vermont/Hollywood Corridor maintained by the MTA Start-up Program Manager to determine whether or not the matrix is up to date and shows:

- The scheduled date for the acceptance test for each contract
- The actual date for completed contract acceptance tests
- The disposition of each completed test

Review the MTA Start-up Program Manager's file of weekly progress reports for the MOS2B Vermont/Hollywood Corridor prepared by the Construction Manager's (CM) Rail Activation Manager to determine whether or not they include:

- Tests percent completed status
- Status of Interim, Pre-Final and Final Test Reports issued
- Problems encountered and resolved, and outstanding discrepancy reports
- Status of Safety Certifications issued

RESULTS/COMMENTS

Spoke to the MTA representative by phone on June 25, 1998. He explained that he would not be able to meet with the auditors on June 26, 1998 as scheduled because of a conflict with another meeting he had to attend with the FTA. He apologized for the delay but said he would not be available until June 30, 1998. This element/characteristic not audited.

See recommendation 13.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
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Checklist No.	13	Date of Audit	June 24, 1998	Persons Contacted
Department HUMAN RESOURCES		Auditors Audrey Ong Gary Rosenthal		Leila Procopio-Makuh Jessica Gil

REFERENCE CRITERIA

1) System Safety Program Plan - Operations, Rev 1, dated 11-25-96, Sect. 4.3.16 Human Resources & 6.11 Drug and Alcohol Abuse
2) MTA Alcohol and Drug Abuse Policy
3) Code of Federal Regulations CFR 49 Parts 653 and 654
4) CPUC G.O. 143A, Section 12.03 Use of Alcohol, Narcotics, or Drugs Forbidden

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

DRUG AND ALCOHOL TESTING PROGRAM

Ask MTA to review their records for the following Types of Drug and Alcohol Testing conducted during the past three (3) years on Safety Sensitive Rail Employees:
Pre-Employment & Transfer, Reasonable Suspicion, Post-Accident, Random, Return From Extended Medical Leave, Return-to-Duty, and Follow-Up Testing.

From this review ask MTA to identify those individuals, if any, who either tested positive (i.e. failed one or more of the tests) or refused to take a test. Perform a further review of the employment records of the above identified individuals to confirm that they were subsequently prohibited from performing safety sensitive duties unless and until they successfully completed the Employee Assistance Program and passed the required Return-to-Duty testing. Finally, perform a further review of the records of any identified individuals who were allowed to return to work in safety sensitive positions to confirm that they have been subjected to and successfully passed the required Follow-up Testing as specified in the reference criteria.

RESULTS/COMMENTS

A review of the program records for Rail employees in safety sensitive positions disclosed eight had tested positive for illegal drugs between January 1, 1995 and May 1998. In 1995, four tested positive in random testing. In 1996, one tested positive in random testing and one tested positive in reasonable cause testing. In 1997, two tested positive in random testing. For this year, no rail employees have tested positive through May 1998. Of the eight employees who tested positive, five were terminated, one retired, one resigned and one was suspended due to an administrative error in handling of the testing process. That employee agreed to participate in the Employee Assistance

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CHECKLIST NO. 13
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Program for one year and was then allowed to return to work. The employee is now subject to follow-up testing, six times a year, for a total of 60 months.

The administration of this program was found to be in full compliance with the referenced criteria for the element / characteristics reviewed.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	14	Date of Audit	March 6, 1998	Persons Contacted Cliff Sammons
Department CONSTRUCTION SAFETY		Auditors Audrey Ong		

REFERENCE CRITERIA

California Code of Regulations Title 8, Division 1, Chapter 4, Subchapter 4, Construction Safety Orders

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

GENERAL COMPLIANCE WITH CAL/OSHA CONSTRUCTION SAFETY ORDERS

Contact the responsible CAL/OSHA representative for LACMTA construction safety and ask for his evaluation of LACMTA's and its construction contractor's compliance with the referenced safety orders.

RESULTS/COMMENTS

Spoke with Cliff Sammons of Cal/OSHA's Division of Mining and Tunneling regarding LACMTA and its construction contractor's compliance with the referenced safety orders. Mr. Sammons stated that the LACMTA and its construction contractor's are in general compliance with the required standards.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	15	Date of Audit	June 15, 1998	Persons Contacted
Department CONSTRUCTION SAFETY		Auditors Susan Feyl Erik Juul		Ralph Sbragia

REFERENCE CRITERIA

1) Construction Safety And Security Manual, Part F, Rev 6, 2/22/93, 5.3.3 Inspections And Exhibit 5-2 Construction Safety Inspection Checklist
2) System Safety Program Plan - Operations, Rev 1, dated 11/25/96, Sect.3.2.7 Facility And Equipment Inspections

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

FACILITIES INSPECTIONS

Randomly select 2 currently active on-site contractors and review the contractor's file of safety inspection records prepared during the past six months to determine whether or not:

1. The required monthly inspections have been performed and documented on Form CS-54, Construction Safety Inspection Checklist.
2. The required daily, monthly, quarterly and annual crane inspection logs are being properly maintained, and the crane and wire rope inspection records, Form CS-55 and CS-56 are on file at the job site.
3. Any noted safety discrepancies were corrected in a timely manner.

RESULTS/COMMENTS

Visited the Vermont/Sunset Station construction site and attempted to review the contractor's construction safety inspection checklists and crane inspection logs for the past six months as described above under items 1 and 2. Except for 2 monthly CS-54 checklists and some incomplete crane inspection records, the required documentation was not available for review. The required review of the elements and characteristics described in this checklist were not completed.

See recommendation 13.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	16	Date of Audit	June 17, 1998	Persons Contacted
Department OPERATIONS SAFETY		Auditors Susan Feyl Erik Juul Len Hardy		Rufus Francis

REFERENCE CRITERIA

1) CPUC General Order 164A, 9/3/97, Par. 5 Reporting Accidents and Par. 7 Investigating Accidents
2) System Safety Program Plan - Operations, Rev 1, dated 11/25/96, Section 3.2.16 Accident Investigation
3) LACMTA Rail Accident Procedures Manual, 9/20/90, Section 2.3 Investigations
4) Code of Federal Regulations CFR 49 Part 659.41 Investigations And Part 659.43 Corrective Actions
5) CPUC General Order 143A, 4/6/94, Par. 15 Accident Reporting Requirements

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

ACCIDENT/INCIDENT REPORTING & INVESTIGATION

Randomly select 3 accidents involving injuries or fatalities reported to the CPUC during the past 12 months. Review the accident investigation procedures, reports, and corrective action plans and schedules utilized by LACMTA for the selected accidents to determine whether or not:

1. The accident investigation procedure clearly describes the method to be used and the person/department in charge of each phase of the investigation.
2. The accident investigation reports correctly identified the most probable cause and any other contributing causes.
3. The accompanying corrective action plan properly addresses the identified causes and contains requirements which can be expected to prevent the accident from recurring.
4. The implementation schedule has been completed or is up-to-date.

RESULTS/COMMENTS

Reviewed MTA's Rail Accident Procedure dated 9/20/90, Rail Operations Control Special Notice, Rail Accident / Incident Response and Documentation Training Course, and Training Schedule for Rail Accident Procedures. The application and use of these procedures, notices, and training materials with respect to 4 different accidents was discussed in detail with a representative of the Operations Safety Department. The four accidents were:

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CHECKLIST No. 16
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1. Florence, train vs. pedestrian (Blue Line) 3/28/98
2. Dog Incident (Red Line) 2/3/98
3. Pantograph Problem (Green Line) 10/1/97
4. Washington Blvd. & Hooper Street, Left Turn Accidents (Blue Line) 3/6/98

Results of this review and discussion showed that all of the elements/characteristics listed under items 1 through 4 above were satisfactorily complied with for the 4 selected accidents. No exceptions were noted.

During the course of the discussion it was learned that the MTA routinely convenes a multi-department meeting to discuss and reach agreement on the most probable cause and required corrective action for major accidents. However, the MTA has not been notifying the CPUC designated representative in advance of these meetings as is required by Commission General Order No. 164-A, paragraph 6.2.

See recommendation 14.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	17	Date of Audit	June 15, 1998	Persons Contacted
Department OPERATIONS SAFETY		Auditors: Susan Feyl Erik Juul Len Hardy		Collins Kalu Robert Torrez James Jimenez Marion Ray

REFERENCE CRITERIA

LACMTA Procedures For Reporting Hazardous Materials Spills, 11/17/93.

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

HAZARDOUS MATERIAL SPILLS REPORTS

Randomly select a hazardous material spill that occurred during the past 12 months and review the corresponding report from the Risk Management Department's file of Hazardous Material Spills to determine whether or not the report contains the following minimum information:

1. Date and time of incident
2. Incident location
3. MTA personnel and outside agencies responding to spill
4. Nature and cause of incident
5. Number and type of injuries
6. Amount of released material and an estimate of gallons that entered the storm or sanitary sewer system if applicable
7. Weather condition at time of incident
8. Copies of citations that may have been issued
9. Current status and location of released spill material

RESULTS/COMMENTS

Met with the above listed personnel and reviewed a binder containing hazardous material spill reports prepared during the past 12 months. Several of these reports were selected at random and reviewed against the items listed in this checklist.

All checklist items were adequately covered, except that weather conditions were not indicated on some of the reports. This discrepancy was questioned. The response was that weather conditions are entered only when the weather has an effect on the incident (e.g. rain washing hazardous materials into drains, etc.) This response was considered reasonable and accepted by the audit team.

This element / characteristic judged to be satisfactory without any noted exceptions.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
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Checklist No.	18	Date of Audit	June 17, 1998	Persons Contacted Robert Torres Henry Ho
Department OPERATIONS SAFETY		Auditors Susan Feyl Erik Juul		

REFERENCE CRITERIA

System Safety Program Plan - Operations, Rev 1, dated 11/25/96, Section 3.2.12 Occupational Health And Safety

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

INJURY AND ILLNESS PREVENTION PROGRAM

Review the Operations Safety Department's Injury and Illness Prevention Program Records to determine whether or not:

1. The persons responsible for implementing the program are clearly identified.
2. There is a system for identifying and evaluating workplace hazards.
3. Procedures exist for investigating occupational injuries and illnesses and for correcting unsafe or unhealthy conditions in a timely manner.
4. The program includes occupational health and safety training for employees.
5. The program includes safety meetings, posting written notices, suggestion programs, and a labor / management safety and health committee.
6. Records are maintained to verify compliance with the program training and inspection requirements.

RESULTS/COMMENTS

Reviewed the MTA's Injury and Illness Prevention Program Plan dated February, 1997 as well as selected examples of associated safety training sign-in sheets, inspection checklists, and other records. Results of this review revealed that the elements / characteristics listed in items 1 through 6 above are all satisfactory without any noted exceptions.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	19	Date of Audit	June 16, 1998	Persons Contacted Rufus Francis Robert Torres Tom Eng
Department OPERATIONS SAFETY		Auditors Susan Feyl Erik Juul		

REFERENCE CRITERIA

1) Operations Safety Certification Plan, MTA Heavy Rail System, 1/96
2) System Safety Program Plan - Operations, Rev 1, dated 11/25/96, Section 3.2.18, Safety Certification

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

OPERATIONS SAFETY CERTIFICATION

Review the Operations Safety Department's file of Safety Certification Reports for Metro Red Line Segment 2A and randomly select 2 subsystems (same subsystems as selected for Checklist No. 22) to determine whether or not:

1. System testing has been performed and documented in a Test Completion Certificate.
2. Operations and maintenance plans and procedures have been prepared and issued for use.
3. Operations and maintenance training and certification has been completed.

RESULTS/COMMENTS

Randomly selected two subsystems (1. Ventilation and 2. Automatic Train Control) and reviewed the Operations Safety Department's file of safety certification reports for both subsystems. Testing for each subsystem was properly documented on a test completion certificate. Operations and maintenance plans and procedures have been prepared and issued for use, and the required training and certification has been completed. All of the required safety certification activities for the two selected subsystems appear to have been satisfactorily completed without any noted exceptions.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	20	Date of Audit	June 18, 1998	Persons Contacted Robert Torres Rufus Francis Henry Ho
Department OPERATIONS SAFETY		Auditors Susan Feyl Erik Juul Don Johnson		

REFERENCE CRITERIA

1) System Safety Program Plan, Rev 1, dated 11-25-96, Sect. 2.3 and Appendices B,C,D and E

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

ORGANIZATIONAL STRUCTURE

Compare the organizational structure as described in the System Safety Program Plan with the LACMTA organizational structure as it actually exists at the present time to determine whether or not:

1. The three or four different safety departments and their different functions are accurately described in the SSPP - Operations.

2. The organizational diagrams show the structure and identify the key positions in each of the individual safety departments

3. The organizational diagrams show the relationship and lines of communications between each of the individual safety departments and other organizational units of the LACMTA.

RESULTS/COMMENTS

Compared several newly prepared MTA organization charts provided by the Director of Operations Safety with the organizational structure as described in the approved System Safety Program Plan (SSPP). This comparison revealed that the SSPP is out of date. A new Office of Safety occupied by a Managing Director of Safety has been created to bring together each of the 4 different MTA safety departments under a single manager. The new organization charts clearly show the structure, relationship, lines of communication and identify the key positions in each of the individual safety departments.

See recommendation 15.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	21	Date of Audit	June 19, 1998	Persons Contacted
Department OPERATIONS SAFETY		Auditors Susan Feyl Erik Juul		Pamela Engelke Jess Diaz Robert Torres

REFERENCE CRITERIA

1) System Safety Program Plan - Operations, Rev 1, dated 11/25/96, Sect. 3.2.10 Emergency Response Planning, Coordination And Training / Drills
2) Heavy Rail Standard Operating Procedures, eff. 2-1-98, Sect. 108 - Emergency Response Procedures
3) Standard Operating Procedures, Metro Blue Line, Los Angeles / Long Beach Light Rail System Sect. 108 – Emergency Response Procedures
4) Standard Operating Procedures, Metro Green Line, Norwalk/Redondo Beach Light Rail System Sect. 108 – Emergency Response Procedures

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

SYSTEM EMERGENCY PREPAREDNESS PLAN

1. Review LACMTA's file of plans and procedures to determine whether or not they have prepared and issued the following documents:

   - System Emergency Preparedness Plan.
   - Emergency Response Plan.
   - Hazardous Material Emergency Contingency Response Plan.
   - Emergency Response Policies and Procedures.

2. Review LACMTA's file of unusual occurrence reports to determine whether or not reports were prepared for each of the fire/smoke, train vs object, train vs person, and derailment accidents reported to the CPUC during the past six months.

3. Review LACMTA's record of emergency drills performed during the past 12 months to determine whether or not the drills were performed on a regular periodic basis, they included the appropriate outside agencies, and an appropriate post drill analysis report was prepared with recommendations for changes if necessary.

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CHECKLIST NO. 21
CONTINUED FROM PAGE 1

RESULTS/COMMENTS

Reviewed the LACMTA's file of plans and procedures and determined that they have prepared and issued:

1. an emergency response plan dated 8/95
2. a hazardous materials emergency contingency response plan dated 12/93 and revised 5/96
3. an operational action plan for severe weather conditions and floods dated 12/97

Additional emergency procedures presently being prepared and in draft form but not issued for use are:

1. an emergency preparedness plan
2. an earthquake action plan
3. a fire action plan

Reviewed LACMTA's records of emergency drills for the past 12 months and determined that quarterly drills for both light and heavy rail were performed as required. The appropriate outside agencies were notified in advance of each drill and post drill analysis reports were prepared.

Unusual Occurrence Reports are not maintained by the Operations Safety Department. They are on file, however, at the Rail Operations Center (see Checklist No. 8).

See recommendations 8 and 10.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	22	Date of Audit	June 18, 1998	Persons Contacted
Department SYSTEM SAFETY		Auditors Susan Feyl Erik Juul		Rufus Francis Robert Torres Tom Eng

REFERENCE CRITERIA

1) System Safety Program Plan - Operations , Rev 1, 11/25/96, Sect. 3.2.18 Safety Certification
2) LACMTA Safety Certification Plan For Construction, 9/97, Par. 9 Safety Certification Overview And Procedures

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

CONSTRUCTION SAFETY CERTIFICATION

Review the System Safety Department's file of Safety Certification Reports for the Metro Red Line Segment 2A and randomly select 2 subsystems (same subsystems as selected for Checklist No. 19) to determine whether or not:

1. A Criteria Conformance checklist was developed and signed.
2. A Specification Conformance checklist was developed and signed.
3. Contractual testing was performed and documented on the Specification Conformance checklist
4. Integrated testing was performed and documented in a Safety Certification Test Completion Report.
5. Operational Certification Report exists

RESULTS/COMMENTS

Reviewed the safety certification records for the ventilation and automatic train control subsystems (same 2 subsystems selected for Checklist No. 19). Properly prepared criteria conformance and specification conformance checklists were on file for both subsystems. The specification conformance checklists showed that contractual testing was satisfactorily completed for both subsystems. A safety certification test completion report dated July, 1996 showed that integrated testing was completed for both subsystems. The required operational certification report is also on file. The safety certification documentation for the 2 selected subsystems appears to be satisfactory without any noted exceptions.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	23	Date of Audit	June 22, 1998	Persons Contacted Vijay Khawani Robert Torres
Department SYSTEM SAFETY		Auditors Susan Feyl Erik Juul		

REFERENCE CRITERIA

1) System Safety Program Plan - Operations, Rev 1, dated 11/25/96, Section 3.2.1 Hazard Identification And Resolution And Appendix J, Report Of Unsafe Condition Or Hazard
2) APTA Manual For System Safety Program Plans, 8/20/91, Checklist Item 7 Hazard Identification/Resolution Process

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

REPORTING OF HAZARDOUS CONDITIONS

Review the System Safety Department's file of completed Reports of Unsafe Condition or Hazard prepared during the past 12 months to determine whether or not:

1. All LACMTA employees have been made aware of the program for reporting hazardous conditions and are using the reports accordingly.
2. Reported hazardous conditions have been properly investigated, evaluated, and are resolved in accordance with the requirements in paragraph 3.2.1 of the SSPP.

RESULTS/COMMENTS

Reviewed the System Safety Department's file of completed reports of unsafe conditions and unsafe hazards prepared during the past 12 months. These reports showed that each reported condition or hazard was properly investigated, evaluated, and resolved as required by the SSPP. The System Safety Department's records of employee training also show that all MTA employees have been made aware of the program for reporting hazardous conditions. This element / characteristic judged to be satisfactory without any noted exceptions.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	24	Date of Audit	June 22, 1998	Persons Contacted
Department SYSTEM SAFETY		Auditors Susan Feyl Erik Juul		Vijay Khawani Robert Torres

REFERENCE CRITERIA

1) LACMTA Four Quadrant Crossing Gate System Trial Installation Integrated Test Plan 12/9/97
2) System Safety Program Plan - Operations, Rev 1, 11/25/96. Sect. 3.2.1 Hazard Identification And Resolution, 3.2.5 Equipment/Design Modification, 4.2.5 Equipment/Design Modification

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

SYSTEM MODIFICATION TESTING PROCESS

Review the four quadrant gate project test records to determine whether or not the following were performed:

1. Tests 1.1 a-f to verify the operation of exit gates without track area vehicle detection system in operation.
2. Tests 1.3 a-c to verify Central Control facility alarms.
3. Tests 1.4 a-g to verify the operation of exit gates with track area vehicle detection system connected.
4. Tests 1.2 a-d, and 1.4 h to verify the operation of exit gates with track area vehicle detects.
5. Tests were repeated if a failure occurred and properly documented.
6. Noted defects were corrected in a timely manner.

RESULTS/COMMENTS

All four quadrant gate project tests were performed based upon the original design with octagonal loops and large spacing, except for test 1.2d (broken exit gate alarm test, the alarm was not in the original design), and a partial test of 1.3a (verify operation of exit gates with exit controller, which involved Union Pacific trains whose connections were not all complete).

The original design has been improved to provide rectangular loops and smaller spacing. The MTA representative stated that all of the required tests will be repeated as soon as the design changes are completed. This element / characteristic judged to be satisfactory without any noted exceptions.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	25	Date of Audit	June 23, 1998	Persons Contacted
Department SYSTEM SAFETY		Auditors Susan Feyl Erik Juul		Vijay Khawani Robert Torres John Miller

REFERENCE CRITERIA

1) System Safety Program Plan For Construction, 12/4/96., Par. 4 Program Elements
2) Code of Federal Regulations CFR 49 Part 659.31 System Safety Program Plan Standard

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

SYSTEM SAFETY PROGRAM PLAN FOR CONSTRUCTION

Through a combination of interviews with the System Safety Department personnel, procedure reviews, and documentation checks, determine whether or not LACMTA has successfully implemented the referenced Construction System Safety Program requirements for the following listed activities during the past 12 months:

1. Participation in design reviews.
2. Collect historical information on hazards, accidents, and injuries.
3. Acceptance and system integration tests have been conducted and documented.
4. System readiness drills were conducted and documented.
5. Contractual training was performed as required.

RESULTS/COMMENTS

Pasadena Blue Line Design Review Meeting Minutes for contracts C6450, C6420, and C6440 were reviewed and provided evidence of participation in design reviews.

Hazard Resolution Meeting Minutes and Reports of Unsafe Conditions or Hazards were reviewed for historical information on hazards. Quarterly accident summary reports provided historical information on accidents and injuries.

The Metro Red Line segment 2a Safety Certification Report dated July 1996 documented that acceptance and system integration tests (Section 4), system readiness drills (Section 6), and contractual training (Section 5) were all satisfactorily performed.

This element / characteristic judged to be satisfactory without any noted exceptions.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	26	Date of Audit	June 16, 1998	Persons Contacted
Department SYSTEM SAFETY		Auditors Susan Feyl Erik Juul		Tom Eng Robert Torres Rufus Francis

REFERENCE CRITERIA

LACMTA Safety Certification Plan For Construction, 9/97, Par. 3.7 Objective 9 Safety Certification Overview And Procedures.

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

VEHICLE SAFETY CERTIFICATION

Review the System Safety Department's file of vehicle safety certification records for the P2000 vehicles to determine whether or not:

1. A Vehicle Criteria Conformance Checklist was developed and signed and the supporting documentation is available.
2. A Vehicle Specification Conformance Checklist was developed and signed and the supporting documentation is available.
3. Integrated vehicle test was performed and properly documented, and a Test Conformance Certificate issued.
4. Certificate of Compliance has been issued and signed.
5. The required inspections were properly documented.
6. Noted defects were corrected in a timely manner.
7. Operator training specific to this vehicle has been completed.
8. Maintenance procedures have been developed with specific requirements for the 2000 vehicle.

RESULTS/COMMENTS

The Vehicle Criteria Conformance checklist is the only portion of the safety certification process that has been completed to date for the P2000 vehicles. The System Safety Department representative stated that he is still in the process of reviewing this checklist to assure that it was properly prepared. The remaining checklists and other activities required to complete the vehicle safety certification process will be performed as the vehicles continue to be delivered, inspected, tested and accepted. This element / characteristic could not be completed because of the behind schedule status of the delivery and acceptance of the P2000 vehicles.

See recommendation 13.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	27	Date of Audit	June 15, 1998	Persons Contacted Roobik Galoosian Marie Kim Robert Torres
Department RISK MANAGEMENT		Auditors: Susan Feyl Erik Juul Len Hardy		

REFERENCE CRITERIA

1) System Safety Program Plan - Operations, Rev 1, dated 11/25/96. Sect. 3.2.11 Safety Data Acquisition Analysis, 4.2.11 Safety Data Acquisition/Analysis, 6.8 Safety Information & Reporting
2) LACMTA Report: Operations Safety Management Statistics

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

SAFETY DATA ACQUISITION/ANALYSIS

Randomly select two quarterly VAMS reports prepared during the past 24 months to determine whether or not :

1. The two reports were prepared and issued on schedule to the recipients indicated on the governing procedure.
2. Rail accidents are categorized into the 5 FTA categories.
3. Statistics are displayed numerically and graphically.
4. Occupational injuries are categorized into light and heavy rail.
5. Each report shows the past 4 quarters and past 2 years results.
6. The statistical data is analyzed for trends as required in 3.2.11 - Safety Data Acquisition of the SSPP.

RESULTS/COMMENTS

VAMS reports prepared for the first and second quarters of FY 98 and the third quarter for FY 97 were selected for review. This review showed that items 1 through 5 were satisfactorily performed and documented in the selected sample reports. The MTA representatives explained that the trend analysis required by item 6, above is performed by the Operations Safety Department rather than by Risk Management. Operations Safety has prepared a report entitled "Metro Blue Line Accident Trend Analysis" dated May 14, 1998. However, this report was apparently developed in response to a specific management request on a one time basis. Regular analysis of statistical accident data on a periodic basis is apparently not being performed.

See recommendation 16.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	28	Date of Audit	June 16, 1998	Persons Contacted
Department FACILITIES MAINTENANCE		Auditors Joey Bigornia Kartik Shah		Rufus Francis Randolph Gordy Dan Lindstrom

REFERENCE CRITERIA

1) Communication Quarterly Inspection and Maintenance Report - Metro Blue Line, Undated, Page 2
2) Communication Quarterly Inspection and Maintenance Report - Metro Red Line, Undated, Pages 3 and 8
3) Communication Quarterly Inspection and Maintenance Report - Metro Green Line, Undated.
4) System Safety Program Plan – Operations, Rev 1, dated 11-25-96, Sect. 3.2.7, Facility And Equipment Inspections

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

EMERGENCY MANAGEMENT PANEL AND TELEPHONES

Randomly select 3 stations (one for each of the 3 rail lines) and review the Emergency Management Panel and Emergency Telephone preventative maintenance reports prepared during the past 12 months for all 3 stations to determine whether or not:

1. The emergency management panels and emergency telephones were inspected and tested at the specified frequency as required by the reference criteria

2. The results of the inspections and tests were properly documented

3. Noted defects were corrected in a timely manner

RESULTS/COMMENTS

Selected the Civic Center (Red Line), Vermont (Green Line), and Dominguez (Blue Line) stations and reviewed the associated emergency panel (EMP) and emergency telephone (E-TEL) quarterly inspection records prepared during the past 3 quarters for each station. The results of the inspection records review for each station follows:

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CHECKLIST No. 28
CONTINUED FROM PAGE 1

1. Civic Center

   E-TEL & EMP - Except for not complying with the required 3-month interval between inspections, the specified inspections were properly documented on records dated 4/30/98, 3/13/98 and 11/3/97.

2. Vermont

   E-TEL & EMP - Similar to Civic Center, the specified inspections were also properly documented except for not complying with the quarterly frequency requirement. The records were dated 3/14/98, 11/15/97, and 9/22/97.

3. Dominguez

   E-TEL - Except for not complying with the specified frequency (quarterly) the required inspections were properly documented on records dated 4/16/98, 11/11/97, and 8/12/97.

   EMP - There are 3 flyover stations on the Blue Line with EMP's. The MTA's quarterly inspection and maintenance report form used on the Blue Line for these three stations does not include a provision for recording the inspection and testing of EMP's. Consequently, no inspections were performed and no records were prepared during the past 3 quarters.

See recommendation 17.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	29	Date of Audit	June 15, 1998	Persons Contacted Randolph Gordy Dan Lindstrom
Department FACILITIES MAINTENANCE		Auditors Joey Bigornia Kartik Shah		

REFERENCE CRITERIA

1) National Fire Protection Association (NFPA) Sect. 25, Chapter 2, Sprinklers, Subsection 2-3.1.1, Dated 1992

2) National Fire Protection Association (NFPA) Sect. 72, Chapter 7, Station Fire Alarms, Subsection, Dated 1992

3) System Safety Program Plan - Operations, Rev 1, dated 11-25-96, Sect. 3.2.7, Facility And Equipment Inspections

4) Regulation 4 Test Document (LAFD City Code)

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

STATION FIRE ALARMS AND SPRINKLER SYSTEMS

Randomly select 2 underground stations and review the Station Fire Alarm and Sprinkler System Inspection reports prepared during the past 2 years for the two selected stations to determine whether or not:

1. the inspections and tests were performed at the specified frequency as required by the reference criteria

2. the results of the inspections and tests were properly documented

3. noted defects were corrected in a timely manner

RESULTS/COMMENTS

The Facilities Maintenance Manager explained that prior to the fall of 1997 station fire alarm and sprinkler system inspection and testing was contracted out. However, the responsible contractor did not do an adequate job, and consequently documentation to verify that the required inspection and testing was satisfactorily performed is not on file for 1996 and previous years.

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CHECKLIST NO. 29
CONTINUED FROM PAGE 1

Beginning in late 1997 the MTA began to do the inspection and testing themselves. At this same time they adopted Regulation 4 of the Los Angeles Fire Code as the applicable criteria for testing the station alarms and sprinkler systems. This code requires testing on an annual basis.

The 2 stations selected for review were Union Station and Civic Center Station. The test records dated 10/14/97, 10/15/97, 10/30/97, and 10/31/97 for Union Station showed that after an initial failure, repairs, and several re-tests, the final re-test on 10/31/97 yielded satisfactory results. Similarly for Civic Center, the test records dated 2/24/98, 2/25/98, 3/3/98, 4/1/98, and 4/2/98 showed that the final test on 4/2/98 was satisfactory. As explained above, test records for earlier years are not available.

See recommendation 17.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	30	Date of Audit	June 16, 1998	Persons Contacted
Department FACILITIES MAINTENANCE		Auditors Joey Bigornia Kartik Shah Len Hardy		Randolph Gordy Collins Kalu Dan Lindstrom

REFERENCE CRITERIA

1) National Fire Protection Association (NFPA) Sect. 25, Chapter 9, Preaction / Deluge Valve, Subsection 9-4.3.2.1, Dated 1992
2) System Safety Program Plan - Operations, Rev1, dated 11-25-96, Sect. 3.2.7, Facility And Equipment Inspections
3) Regulation 4 Test Document (LAFD City Code)

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

UNDERCAR EMERGENCY SPRINKLER SYSTEM - QUARTERLY

Randomly select 2 underground stations and review the Undercar Emergency Sprinkler System Inspection reports prepared during the last 12 months for the 2 underground stations to determine whether or not:

1. the undercar emergency sprinkler system was inspected and tested at the specified frequency as required by the reference criteria
2. the required inspections and tests were properly documented
3. noted defects were corrected in a timely manner

RESULTS/COMMENTS

See the explanation concerning the problems associated with contracting out the station fire alarm and sprinkler system inspection and testing described in Checklist No. 29. The same problems applied to the undercar emergency sprinkler system and explain why verification documentation for the required annual test is not available for years prior to 1998.

Selected the Pershing Square and Civic Center stations for review. SCADA generated reports for these 2 stations show that they were satisfactorily tested between 4/1/98 and 4/3/98. As explained above, test records for earlier years are not available.

See recommendation 17.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	31	Date of Audit	June 16, 1998	Persons Contacted Randolph Gordy Collins Kalu
Department FACILITIES MAINTENANCE		Auditors Joey Bigornia Kartik Shah Len Hardy		

REFERENCE CRITERIA

1) California Administrative Code, Title 19
2) National Fire Protection Association (NFPA) Sect. 25, Chapter 3, Flow Tests, Subsection 3-3.1.1, Dated 1992
3) System Safety Program Plan - Operations, Rev 1, dated 11-25-96, Sect. 3.2.7, Facility And Equipment Inspections

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

STANDPIPES and ASSOCIATED PUMPS - FIVE YEARS

Randomly select 2 underground tunnel Sections (one for each of the Blue Line and Red Line) and then review the Standpipes and Associated Pump Inspection reports prepared during the last 5 years for the 2 selected standpipes and pumps to determine whether or not:

1. each standpipe and associated pump was inspected and tested at the specified frequency as required by the reference criteria

2. the required inspections and tests were properly documented

3. noted defects were corrected in a timely manner

RESULTS/COMMENTS

From discussions with the Facilities Maintenance Manager it was learned that the wet standpipes in the Red Line tunnel and Blue Line tunnel have not yet been hydrostatically tested as required by Title 19 of the California Administrative Code. Since this test is required only once every 5 years, the first Red Line test is not due until this year. The Blue Line test is overdue. Both systems are scheduled for initial testing next month.

See recommendation 17.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	32	Date of Audit	June 16, 1998	Persons Contacted
Department FACILITIES MAINTENANCE		Auditors Joey Bigornia Kartik Shah Len Hardy		Randolph Gordy Collins Kalu Gary Felix

REFERENCE CRITERIA

1) Communications Quarterly Inspection And Maintenance Report - Metro Red Line, Undated, Pages 6 And 7
2) System Safety Program Plan - Operations, Rev 1, dated 11-25-96, Sect. 3.2.7, Facility And Equipment Inspections

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

GAS ANALYZER UNITS

Randomly select the gas analyzers associated with 2 Red Line stations and review the Preventative Maintenance Inspection and Test reports prepared during the past 12 months to determine whether or not:

1. the gas analyzer units were inspected and tested at the specified frequency as required by the reference criteria

2. the required inspections and tests were properly documented

3. noted defects were corrected in a timely manner

RESULTS/COMMENTS

Selected the Civic Center and Pershing Square Stations and reviewed the gas analyzer preventive maintenance inspection and test records prepared during 1997 and 1998 for both stations. The required test frequency is once every six months. However, the actual testing was performed on a 10 to 11 month basis. The most recent tests were performed during April 1998. Therefore, the next scheduled tests are due in September 1998.

See recommendation 17.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	33	Date of Audit	June 16, 1998	Persons Contacted
Department FACILITIES MAINTENANCE		Auditors Joey Bigornia Kartik Shah Len Hardy		Randolph Gordy Collins Kalu Marco Sanchez Ed Turienzo

REFERENCE CRITERIA

1) Communications Quarterly Inspection And Maintenance Report - Metro Red Line, Undated
2) System Safety Program Plan - Operations, Rev 1, dated 11-25-96, Sect. 3.2.7, Facility And Equipment Inspections

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

TUNNEL INSPECTION - QUARTERLY

Randomly select a Sect. of the Red Line Tunnel between 2 stations and review the Metro Red Line Tunnel Inspection reports prepared during the past 12 months to determine whether or not:

1. the tunnel Sect. chosen was inspected at the specified frequency as required by the reference criteria

2. the results of the inspection were properly documented

3. noted defects were corrected in a timely manner

RESULTS/COMMENTS

Reviewed LACMTA Metro Redline Quarterly Tunnel Inspection Reports dated 1-15-97 to 4-22-98 for the Union Station to Wilshire Station section. The inspections were conducted at the specified frequency and the results were properly documented.

Trouble tickets for the whole Red Line for the first quarters of 1997 and 1998 were also reviewed. All trouble ticket items were closed for the first quarter of 1997. All but five percent of the trouble ticket items for the first quarter of 1998 had been closed. The open items are being properly tracked until closure.

This element / characteristic judged to be satisfactory without any exceptions noted.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	34	Date of Audit	June 17, 1998	Persons Contacted
Department SIGNAL MAINTENANCE		Auditors Joey Bigornia Kartik Shah Don Johnson		George Matajovsky Marty Maggard Alan Clark

REFERENCE CRITERIA

1) System Safety Program Plan - Operations, Rev 1, dated 11-25-96, Sect. 3.2.9, Safety Training

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

TRAINING AND CERTIFICATION OF SIGNAL INSPECTORS – EVERY TWO YEARS

Obtain a copy of LACMTA's list of qualified signal inspectors for all 3 rail lines. Randomly select two or more inspectors and review each selected person's training and certification file to determine whether or not:

1. Training, certification, and recertification records are in compliance with the reference criteria (every two years)

2. the current training lesson plans and testing for certification/recertification reflects the persons assigned duties

RESULTS/COMMENTS

Reviewed the personnel qualification and certification records for two signal inspectors on the Red Line and two signal inspectors on the Blue Line. These records showed that initial certification was incomplete for all 4 inspectors. The Manager of the Signals Maintenance Department stated that inspectors who are not fully certified always work under the direct supervision of one or more fully qualified inspectors in the field.

See recommendation 18.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	35	Date of Audit	June 17, 1998	Persons Contacted
Department SIGNAL MAINTENANCE		Auditors Joey Bigornia Kartik Shah Don Johnson		George Matajovsky Marty Maggard Alan Clark

REFERENCE CRITERIA

1) Signal Maintenance Plan For Blue Line, Undated, Mainline Switches, Task Sect. 1(B)
2) Signal Maintenance Plan For Red Line, Dated 1-14-97, Mainline Switches
3) System Safety Program Plan - Operations, Rev 1, dated 11-25-96, Sect. 2.6.4, Rail Signal Maintenance

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

MAINLINE SWITCHES INSPECTION - QUARTERLY

Review LACMTA's file of completed Mainline Switch Inspection reports for three randomly selected switches on either the Blue Line or Red Line for two different quarterly periods during the past 12 months to determine whether or not:

1. the mainline switches were inspected at the specified frequency as required by the reference criteria

2. the required inspections were properly documented on the Mainline Switch Inspection Report

3. noted defects were corrected in a timely manner

RESULTS/COMMENTS

Reviewed the Red Line Monthly Mainline Switch Inspection reports for Union Station Switch 9B dated 6-2-97 to 5-22-98 and MacArthur Park - Switch A55 dated 6-3-97 to 5-11-98. All required monthly as well as quarterly inspections were properly documented with no exceptions noted.

Reviewed the Blue Line Mainline Switch Inspection reports for Imperial Switch 13 dated 6-12-97 to 5-9-98. All but one inspection was properly documented. The report dated 6-12-97 should have been for a quarterly inspection instead of a monthly inspection. No other exceptions were noted.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	36	Date of Audit	June 17, 1998	Persons Contacted
Department SIGNAL MAINTENANCE		Auditors Joey Bigornia Kartik Shah Don Johnson		George Matajovsky Marty Maggard Alan Clark

REFERENCE CRITERIA

1) Signal Maintenance Plan For Blue Line, Undated, Task Sect. 5
2) Signal Maintenance Plan For Red Line, Dated 1-14-97
3) Signal Maintenance Plan For Green Line, Undated
4) System Safety Program Plan - Operations, Rev 1, dated 11-25-96, Sect. 2.6.4, Rail Signal Maintenance

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

INTERLOCKING TESTS

Randomly select one interlocking on each of the 3 rail lines and review the associated inspection and test reports for the past 4 years to determine whether or not

1. the interlockings were tested at the specified frequency as required by the reference criteria

2. all of the required tests (route locking, time locking, approach locking, etc.) were satisfactorily completed and documented in the appropriate test reports

3. noted defects were corrected in a timely manner

RESULTS/COMMENTS

Selected the Union Station interlocking for the Red Line and the Imperial Station interlocking for the Blue Line. The Green Line interlockings are still under GRS's control so they have not yet been tested by the MTA Signal Maintenance Department.

Review of the Union Station interlocking test reports showed that the required testing was performed satisfactorily at the required 2 year interval during the past 4 years. Records for the tests performed on the Imperial Station prior to 1996 were not available for review. The latest series of interlocking test records that were available for Imperial Station showed the tests were satisfactorily performed in March to April 1996. To meet the every 2 years frequency requirement, these tests should have been repeated in March to April 1998. Testing is at least 2 months past due.

See recommendation 17.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	37	Date of Audit	June 17, 1998	Persons Contacted
Department SIGNAL MAINTENANCE		Auditors Joey Bigornia Kartik Shah Don Johnson		George Matajovsky Marty Maggard Alan Clark

REFERENCE CRITERIA

1) Signal Maintenance Plan For Blue Line, Undated, Task Sect. 3
2) Signal Maintenance Plan For Red Line, Dated 1-14-97, Vital Relays
3) Signal Maintenance Plan For Green Line, Undated, Task Sect. 7
4) System Safety Program Plan - Operations, Rev 1, dated 11-25-96, Sect. 2.6.4, Rail Signal Maintenance

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

VITAL RELAYS

Randomly select two vital relays for each of the 3 rail lines. From a combination of procedure and records review as well as visual inspection of each of the selected items, determine whether or not:

1. the vital relays are properly controlled and calibrated against certified standard at prescribed intervals as required by applicable procedures

2. vital relays have been marked, tagged or otherwise identified to show their calibration status

RESULTS/COMMENTS

Selected Vane Relay 213TRC and Neutral Bias Relay 213-219 LR for the Red Line yard, and Vane Relay 237TR and Neutral Bias Relay PD-1 for the Blue Line yard. The Green Line relays are still under GRS's control and therefore they were not included in this audit. Calibration records for the past 4 years were reviewed for the 4 selected relays. Results of the review showed that the records for the Blue Line relays were satisfactory without exception. The record for the Neutral Bias Relay 213-219LR for the Red Line yard was also satisfactory. However, a calibration record for the Red Line yard vane relay 213TRC could not be located. The MTA performed a calibration test on this relay the next day (6/18/98) with satisfactory results. However, it appears that a larger number, perhaps all Red Line yard vane relays, have not been tested at the required 2 years frequency.

See recommendation 17.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	38	Date of Audit	June 17, 1998	Persons Contacted
Department SIGNAL MAINTENANCE		Auditors Joey Bigornia Kartik Shah Don Johnson		George Matajovsky Marty Haggard Alan Clark

REFERENCE CRITERIA

1) Signal Maintenance Plan For Blue Line, Undated, Task Sect. 2
2) System Safety Program Plan - Operations, Rev 1, dated 11-25-96, Sect. 2.6.4 Rail Signal Maintenance

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

GRADE CROSSING PROTECTION – MONTHLY

Review LACMTA's file of completed grade crossing protection inspection reports for 3 randomly selected Blue Line grade crossings for 3 different one-month periods during the past 12 months to determine whether or not:

1. The grade crossing protection was inspected at the specified frequency as required by the reference criteria
2. The results of the inspection were properly documented
3. Noted defects were corrected in a timely manner

RESULTS/COMMENTS

Reviewed the Blue Line monthly grade crossing inspection reports for Gage Avenue dated 6-18-97 to 5-18-98 and Nadeau Street dated 6-18-97 to 5-11-98. For both grade crossings, all the monthly inspections were properly documented except:

1. The January 1998 inspection reports for both grade crossings were not in the record file.
2. The required ground test was not recorded in the October 1997 and November 1997 inspection reports.

See recommendation 17.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	39	Date of Audit	June 23, 1998	Persons Contacted
Department SIGNAL MAINTENANCE		Auditors Len Hardy Joey Bigornia Erik Juul		George Matajovsky Ron Regenor

REFERENCE CRITERIA

1) Signal Maintenance Plan For Blue Line, Undated
2) Code Of Federal Regulations CFR 49, Part 234
3) System Safety Program Plan - Operations, Rev 1, dated 11-25-96, Sect. 2.6.4 Rail Signal Maintenance

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

SIGNAL INSPECTION - CPUC INSPECTOR

Randomly select a minimum of 3 grade crossings on the Blue Line and utilizing the services of a FRA certified signal inspector from the Commission's Railroad Operations Safety Sect., perform a detailed inspection to determine whether or not the selected items are in-compliance with LACMTA's signal maintenance standards.

RESULTS/COMMENTS

Mr. William Mealor, FRA Certified signal inspector from the Commission's Railroad Operations Safety Branch, inspected the Spring Street, Wardlow Avenue, and Imperial Highway grade crossing warning devices on the Blue Line.

The scope of the inspection consisted of (1) checking the alignment and cleanliness of the warning lights, (2) checking the voltage levels of the warning lights both for normal mode (AC power) and for standby mode (DC battery power), performing a ground test in the signal cabinet (ensuring that the DC power is isolated from the cabinet ground), and checking that up-to-date track circuit drawings are available in the signal cabinet.

Results of the inspection were:

- All signal lights were adequately aligned, but signal light lenses (exterior surfaces) at two locations (Spring Street & Wardlow) were in need of cleaning.
- Voltage levels in normal mode were below acceptable levels at two locations (Spring Street and Wardlow), and voltage levels in standby power mode were below acceptable levels at all three locations.
- The electrical ground tests in the cabinets were negative (acceptable) at all three locations.
- Up-to-date track circuit drawings were available at all three locations.

See recommendation 17 and 19.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	40	Date of Audit	June 18, 1998	Persons Contacted
Department TRACK MAINTENANCE		Auditors Joey Bigornia Kartik Shah Len Hardy		Bud Moore Jeff Root Keith Kranda

REFERENCE CRITERIA

1) LACMTA Track Inspection Maintenance Plan For All Rail Lines, Dated 12-97, Page 2
2) Code Of Federal Regulations (CFR) 49, Part 213.7 A & B
3) System Safety Program Plan - Operations, Rev 1, dated 11-25-96, Sect. 3.2.9, Safety Training

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

TRACK INSPECTOR QUALIFICATIONS

Obtain a copy of LACMTA's list of qualified Track Foreman and Track Inspectors. Randomly select not less than 2 foremen and 3 inspectors and then review the qualification records (recertification every 2 years) and examination records for those selected to determine whether or not they meet the requirements of the above referenced criteria. Also, use the list of qualified persons when performing the inspection record reviews.

RESULTS/COMMENTS

Reviewed the personnel qualification and examination records for 2 foreman and 3 inspectors randomly selected to cover all 3 rail lines. The records for the one foreman and two inspectors assigned to the Blue and Green lines were satisfactory in all respects. The examination test records for the one foreman and one inspector assigned to the Red Line were not on file. MTA staff later produced examination records for the one foreman and one inspector showing they satisfactorily passed their exams on 6/22/98 and 6/24/98.

See recommendation 18.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	41	Date of Audit	June 18, 1998	Persons Contacted
Department TRACK MAINTENANCE		Auditors Joey Bigornia Kartik Shah Len Hardy		Bud Moore Jeff Root Keith Kranda

REFERENCE CRITERIA

1) LACMTA Track Maintenance Plan For All Rail Lines, Dated 12-97, Page 6
2) System Safety Program Plan - Operations, Rev 1, dated 11-25-96, Sect. 2.6.2, Track Maintenance

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

TRACK INSPECTION - WEEKLY

Review LACMTA's file of completed Track Inspection reports for three randomly selected given lengths of track (one for each of the 3 rail lines) for two different one month periods to determine whether or not:

1. all mainline track (including turnouts) was visually inspected weekly by walking the track
2. the required inspections were properly documented on the LACMTA Track Inspection Report
3. noted defects were posted on the Maintenance Log Sheet and corrected in a timely manner

RESULTS/COMMENTS

Selected the full lengths of track for all 3 rail lines and reviewed the weekly track inspection reports for the months of January and February of this year. All of the required weekly inspection reports for all 3 rail lines were properly documented without any exceptions noted.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	42	Date of Audit	June 18, 1998	Persons Contacted
Department TRACK MAINTENANCE		Auditors Joey Bigornia Kartik Shah Len Hardy		Bud Moore Jeff Root Keith Kranda

REFERENCE CRITERIA

1) LACMTA Track Maintenance Plans For All Rail Lines, Dated 12-97, Page 7
2) System Safety Program Plan - Operations, Rev 1, dated 11-25-96, Sect. 2.6.2, Track Maintenance

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

TURNOUT AND CROSSOVER SWITCH INSPECTIONS – DETAILED MONTHLY

Review LACMTA's file of completed Turnout and Crossover Switch Mechanism Inspection reports for 3 randomly selected (one for each rail line) mainline interlockings for 3 different one month periods to determine whether or not:

1. the selected turnouts were visually inspected on foot at least once each month
2. the required inspections were properly documented on the LACMTA Turnout Inspection Report
3. noted defects were properly documented and corrected in a timely manner

RESULTS/COMMENTS

From the discussions with the track maintenance department representative, it was learned that this department is only responsible for the track portion of turnouts and crossovers. The switch mechanisms are inspected and maintained by the signal department (see Checklist No. 35). Therefore, this part of the audit was limited to the track portion of the selected turnouts only.

Selected the Florence turnout on the Blue Line, the Aviation - East turnout on the Green Line, and the East Union turnout on the Red Line, and reviewed the switch inspection reports dated March 1998 to May 1998. The reports show that all required monthly inspections were conducted at the specified frequency, and the results were properly documented without any exceptions noted.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	43	Date of Audit	June 18, 1998	Persons Contacted
Department TRACK MAINTENANCE		Auditors Joey Bigornia Len Hardy Kartik Shah		Bud Moore Jeff Root Keith Kranda

REFERENCE CRITERIA

1) LACMTA Track Maintenance Plan For All Rail Lines, Dated 12-97, Pages 3 And 8

2) System Safety Program Plan - Operations, Rev 1, dated 11-25-96, Sect. 2.6.2, Track Maintenance

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

DIRECT FIXATION TRACKWORK – SEMI-ANNUALLY

Randomly select 3 given lengths of direct fixation trackwork (one for each of the 3 rail systems) and then review the LACMTA Direct Fixation Trackwork Inspection reports prepared during the past 18 months for the selected trackwork to determine whether or not:

1. one fastener out of every 500 was torque tested at least once every six (6) months.

2. the required inspections were properly documented on the LACMTA Track Inspection Report

3. noted defects were corrected in a timely manner

RESULTS/COMMENTS

Selelcted all of the direct fixation trackwork on the Green Line, Red Line and Blue Line and reviewed the applicable track inspection reports for each rail line.

The Red Line reports dated 2-24-97 and 2-24-98 produced a satisfactory record. No defects were noted. The inspection was performed on an annual basis rather than once every six months as required by the track maintenance plan.

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CHECKLIST NO. 43
CONTINUED FROM PAGE 1

The Blue Line reports prepared during March 1996 and April 1997 and Green Line reports prepared during March 1996 and April & May 1997 also showed a similar satisfactory record with no defects noted. The inspections were also performed on an annual basis rather than once every six months as required by the track maintenance plan. For both rail lines there were no records to show that the 1998 inspections were performed. However, the inspections are scheduled for next month.

The MTA representatives stated that based upon their experience they have determined that the six month inspection interval for all direct fixation trackwork, except that involving interlockings, could be extended to an annual basis. They believe the interlocking inspections should remain at the six month inspection frequency.

See recommendation 17.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	44	Date of Audit	June 18, 1998	Persons Contacted
Department TRACK MAINTENANCE		Auditors Joey Bigoinia Kartik Shah Len Hardy		Bud Moore Jeff Root Keith Karanda

REFERENCE CRITERIA

1) LACMTA Track Maintenance Plan For All Rail Lines, Dated 12-97, Page 5
2) Code Of Federal Regulations (CFR) 49, Part 213.113
3) System Safety Program Plan - Operations, Rev 1, dated 11-25-96, Sect. 2.6.2, Track Maintenance

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

RAIL INSPECTIONS AND DEFECTIVE RAILS - YEARLY

Randomly select 3 given lengths of mainline track (one for each of the 3 rail systems) and then review LACMTA's file of completed Rail Inspection and Defective Rails Inspection reports prepared during the past 2 years for the 3 selected lengths of track to determine whether or not:

1. track (including turnouts) was automatically inspected by either inductive or ultrasonic testing capable of revealing internal defects
2. the results of the tests were properly documented
3. noted defects were corrected in a timely manner
4. rail inspection records are kept in the office of the Track Maintenance Manager for at least two years and one year after the remedial action has been taken.

RESULTS/COMMENTS

Selected the full lengths of track for all 3 rail lines and reviewed the applicable Herzog Services, Inc. Ultrasonic Test records for the past 2 years.

The first required ultrasonic test for the Green Line was completed on 1-24-98. The report was complete in all respects. The one defect found was a defective field weld which was repaired as required. The next test is due in January 1999.

The Red Line report dated 6-1-98 was also satisfactory. No defects were noted. No records were available for 1997. The next test is due in June 1999.

The Blue Line was also satisfactorily tested on January, 1998.

This element / characteristic judged to be satisfactory without any exceptions noted.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	45	Date of Audit	June 22, 1998	Persons Contacted
Department RAIL OPERATIONS SUPPORT		Auditors Len Hardy Joey Bigornia		Anton Andersen Albert Nijland

REFERENCE CRITERIA

1) LACMTA Track Maintenance Plan For All Rail Lines, Dated 12-97, Page 8
2) System Safety Program Plan - Operations, Rev 1, dated 11-25-95, Sect. 2.6.2, Track Maintenance

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

CONCRETE INSPECTION (RAIL OPERATIONS SUPPORT) - ANNUALLY

Review a randomly selected sample of LACMTA's Concrete Inspection reports prepared during the past 2 years for three separate concrete structures (one for each of the 3 rail lines) to determine whether or not:

1. the required inspections were performed by the Rail Operations and Support Group and documented on the LACMTA Track Inspection Report forms
2. noted defects were corrected in a timely manner

RESULTS/COMMENTS

An interview with the persons contacted revealed that they were not clear on their responsibilities regarding the subject inspections. The Track Maintenance Plan (page 8) dated December 1997 indicates that the Rail Operations Support section (persons interviewed) are responsible for scheduling and performing annual professional concrete inspections as required by AREA, Chapter 8, Part 21. The interpretation of this requirement is that the structural integrity of bridge and tunnel elements should be evaluated by an engineering group, in addition to the regular maintenance inspections performed by the Facilities Maintenance section. Given this interpretation, the intended engineering inspections are not being performed.
The Rail Operations Engineering Support section indicated that the Track Maintenance Plan was not formally circulated in draft form for review and comment, and that it has not been formally adopted by the MTA. Additionally, there has not been any formal assignment of responsibilities to the different departments affected by the plan. Nevertheless, based on their own awareness of the needs, they have been working on a Bridge Inspection Procedure which is scheduled for completion in 3 months.

See recommendation 17.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	46	Date of Audit	June 23, 1998	Persons Contacted
Department TRACK MAINTENANCE		Auditors Joey Bigornia Len Hardy Erik Juul		Bud Moore Jeff Root George Matajovsky Ron Regenor

REFERENCE CRITERIA

1) LACMTA Track Maintenance Plan For All Rail Lines, Dated 12-97, Page 10
2) Code Of Federal Regulations (CFR) 49, Part 213
3) System Safety Program Plan - Operations, Rev 1, dated 11-25-96, Sect. 2.6.2, Track Maintenance

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

TURNOUT INSPECTION - CPUC INSPECTOR

Randomly select a minimum of 3 mainline turnouts on one of the three rail lines and utilizing the services of a FRA certified track inspector from the Commission's Railroad Operations Safety Section, perform a detailed visual inspection and dimensional measurement inspection to determine whether or not the selected items are in-compliance with LACMTA's track maintenance standards.

RESULTS/COMMENTS

CPUC employees, Mr. Eddie Damron (FRA certified track inspector) and Mr. Bill Mealor (FRA certified signal inspector) inspected 3 turnouts on the Blue Line Willow Avenue interlocking (switches 23-A, 23-B, and 13). The following elements were checked:

- Gage ahead of switch points, behind switch points, at frogs, at guard rails, and at various arbitrary locations throughout each turnout.
- Surface wear of track, switch points, guard rails, and frogs
- Condition of fasteners and clips for track, switches, guard rails, and frogs
- Switch-and-lock movement adjustment for each switch machine (obstruction test)

All elements reviewed were found to be within acceptable limits. This element / characteristic judged to be satisfactory without any exceptions noted.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	47	Date of Audit	June 25, 1998	Persons Contacted Armando Almazan Tanzeem Rivzi
Department TRACTION POWER		Auditors Joey Bigornia Erik Juul		

REFERENCE CRITERIA

1) Rail Maintenance Of Way, Blue Line - Dated 1-28-98
2) Preventive Maintenance Plan: Traction Power - Red Line, Undated, Auxiliary Equipment Maintenance Section, Task Sect. 2
3) System Safety Program Plan - Operations, Rev 1, dated 11-25-96, Sect. 2.6.3, Traction Power Maintenance

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

EMERGENCY VENT FANS – SEMI-ANNUAL

Review LACMTA's file of completed Emergency Vent Fan Inspection reports prepared during the past 2 years for three randomly selected ventilation fans on the Blue Line and/or Red Line subways to determine whether or not:

1. each emergency vent fan was inspected at the specified frequency as required by the reference criteria

2. the required inspections were properly documented

3. noted defects were corrected in a timely manner

RESULTS/COMMENTS

Selected the 20 emergency vent fans associated with the Union, Pershing Square, Wilshire/Vermont, and 7th and Metro (Blue Line only) Stations. Reviewed the inspection and test records for all 20 fans prepared during the past two years. The results of this review showed that the majority of the required records were satisfactory. However, some of the records were missing, some inspections and tests were not performed at all as scheduled, and some inspections and tests were deferred for periods up to four months.

See recommendation 17.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	48	Date of Audit	June 25, 1998	Persons Contacted
Department TRACTION POWER		Auditors Joey Bigornia Erik Juul		Leroy Bonifay Tanzeem Rivzi

REFERENCE CRITERIA

1) Preventive Maintenance Plan: Traction Power - Blue Line, Dated 1-28-98
2) Overhead Catenary System, Task Sect. 20
3) Preventive Maintenance Plan: Traction Power - Green Line, Dated 1-28-98, Overhead Catenary System, Task Sect. 20
4) System Safety Program Plan - Operations, Rev 1, dated 11-25-96, Sect. 2.6.3, Traction Power Maintenance

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

OVERHEAD CATENARY SYSTEM – ANNUALLY

Randomly select 2 separate sections of track (one each from the Blue Line and Green Line) and then review LACMTA's file of completed Overhead Catenary System (OCS) Inspection reports prepared during the past 2 years for the selected sections of track to determine whether or not:

1. OCS was inspected and adjusted at the specified frequency as required by the reference criteria

2. the required inspections were properly documented

3. noted defects were corrected in a timely manner

RESULTS/COMMENTS

From discussions with the MTA representative, it was learned that the Green Line went into initial service in 1996. The first annual inspection in 1997 was performed for approximately 40% of the mainline OCS. The remaining 60% of the mainline and all of the yard was not inspected in 1997. None of the mainline has received an annual inspection so far this year. All of the yard was completed for the first time on June 16, 1998.

Selected the Blue Line section of track between Willow Station and Wardlow Station. This section of track was satisfactorily inspected in both 1997 and April of this year.

See recommendation 17.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	49	Date of Audit	June 25, 1998	Persons Contacted
Department TRACTION POWER		Auditors Joey Bigornia Erik Juul		Armando Almazan Leroy Bonifay Tanzeem Rizvi

REFERENCE CRITERIA

1) Rail Maintenance Of Way: Traction Power - Blue Line, Dated 1-28-98, Task Sect. 24
2) Preventive Maintenance Plan: Traction Power - Red Line, Undated, Auxiliary Equipment Maintenance, Task Sect. 4
3) Rail Maintenance Of Way: Traction Power - Green Line, Dated 1-28-98, Task Sect. 24
4) System Safety Program Plan - Operations, Rev 1, dated 11-25-96, Sect. 2.6.3, Traction Power Maintenance

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

EMERGENCY TRIP STATIONS

Review LACMTA's file of completed Emergency Trip Stations (ETS) Inspection and test reports prepared during the past 2 years for 3 randomly selected ETS's to determine whether or not:

1. each ETS was inspected at the specified frequency as required by the reference criteria

2. the required inspections were properly documented

3. noted defects were corrected in a timely manner

RESULTS/COMMENTS

Reviewed the annual test records for all the emergency trip stations on all three rail lines for between the past six months (Red Line) and two years (Green Line). All of the required tests were satisfactorily performed at the required frequency. All discrepancies found during the tests were recorded and corrected as required. This element / characteristic judged satisfactory without any noted exceptions.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	50	Date of Audit	June 24, 1998	Persons Contacted
Department VEHICLE MAINTENANCE		Auditors Don Johnson		Jack Eich Rufus Francis Bob Ogus Dave Kalasnik Russell Homan Gary DeWater

REFERENCE CRITERIA

1) Rail Vehicle Maintenance Plans For Divisions 11, 20, And 22, Dated 12-22-97, Sect. IX, Training And Qualification Of Personnel
2) System Safety Program Plan - Operations, Rev 1, dated 11-25-96, Sect. 3.2.9, Safety Training

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

TRAINING AND CERTIFICATION OF TRANSIT VEHICLE EQUIPMENT MAINTENANCE PERSONNEL – EVERY TWO YEARS

Obtain a copy of LACMTA's list of qualified transit vehicle mechanics, inspectors, and technicians for all 3 rail lines. Randomly select at least two or more persons from each of the three categories and review each selected person's training and certification file to determine whether or not:

1. training, certification, and recertification records are in compliance with the reference criteria (every two years)

2. the current training lesson plans and testing for certification/recertification reflects the persons assigned duties

RESULTS/COMMENTS

Randomly selected the names of 3 Red Line, 2 Green Line and 2 Blue Line persons from the lists of certified vehicle maintenance personnel for all 3 rail lines. A valid certification record was contained in each persons file except for one Red Line vehicle maintainer. A review of that person's training file showed that he had taken and completed with passing grades a large number of training courses. However, because of the peculiar way these records are formatted, it was not possible to determine if this person, or anyone else for that matter, had completed all of the required courses.

See recommendation 20.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	51	Date of Audit	June 24, 1998	Persons Contacted
Department VEHICLE MAINTENANCE		Auditors Don Johnson		Jack Eich Rufus Francis Bob Ogus Dave Kalasnik

REFERENCE CRITERIA

1) Rail Vehicle Maintenance Plans For - Division 11, 20, And 22: Dated 12-22-97, Sect. II, Preventive Maintenance Inspections
2) System Safety Program Plan - Operations, Rev 1, dated 11-25-96, Sect. 2.6.2, Vehicle Maintenance

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

REVIEW OF PREVENTIVE MAINTENANCE PROGRAM DOCUMENTATION FOR TRANSIT VEHICLES

Randomly select 2-Blue Line Cars, 2- Red Line Cars, and 2-Green Line Cars. For each car selected, review the completed Preventive Maintenance Inspection (PMI) reports and other records to determine whether or not:

1. the required PMI's were performed during the required time and mileage limits

2. the inspection and maintenance activities were properly documented by the responsible maintenance workers

3. maintenance defects that were treated as UNSCHEDULED REPAIRS have been properly documented and closed out in a timely manner

RESULTS/COMMENTS

Randomly selected two Blue Line vehicles (110A and 141A) and two married pair Red Line vehicles (511-512 and 525-526) for review.

Reviewed selected samples of the preventive maintenance inspection records for all 4 vehicles prepared during the past 24 months. These records show that all of the required inspections were performed at the required frequencies and properly documented. Repairs made to correct defects found during the PM inspections as well as repairs made to perform unscheduled maintenance activities were properly documented on IR records. This element/characteristic judged to be satisfactory without any exceptions noted.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	52	Date of Audit	June 24, 1998	Persons Contacted
Department VEHICLE MAINTENANCE		Auditors Len Hardy Joey Bigornia		Bob Ogus Glenn Siaumau Tom Lingenfield Russell Homan Dave Kalasnik

REFERENCE CRITERIA

1) Rail Vehicle Maintenance Plans For Divisions 11, 20, And 22, Dated 12-22-97, Sect. V, Testing And Calibration
2) System Safety Program Plan - Operations, Rev 1, dated 11-25-96, Sect. 2.6.1, Vehicle Maintenance

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

CALIBRATION OF MEASURING & TEST EQUIPMENT

Obtain a copy of the measuring and test equipment subject to calibration control in each vehicle maintenance shop. For each shop, randomly select two each of LACMTA's micrometers, dial calipers, torque wrenches, and multimeters. From a combination of procedure and record reviews as well as visual inspection, determine whether or not:

1. the selected items are properly inventoried, controlled, calibrated against certified standards traceable to the National Bureau of Standards at prescribed intervals, and marked, tagged or otherwise identified to show their current calibration status
2. the next scheduled testing/calibration is shown on the item

RESULTS/COMMENTS

The following activities were performed for the Blue Line and the Red Line - the Green Line was not reviewed.

Reviewed the master calibration lists to see if any of the equipment requiring calibration was overdue for service. All items on both lists were within the calibration limit without exception.

From each master calibration list, arbitrarily selected five pieces of equipment (Digital Multimeter, Oscilloscope, VOM, Megaohmmeter, and Torque wrench). Checked the file for each piece of equipment selected and reviewed the calibration certificate. All certificates were on file and appropriately filed-in and signed-off. Checked the calibration sticker on each piece of equipment selected. All pieces of equipment had calibration stickers and all calibration and re-calibration dates matched those on the master lists. This element / characteristic judged satisfactory without any exceptions noted.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	53	Date of Audit	June 14, 1998	Persons Contacted
Department VEHICLE MAINTENANCE		Auditors Len Hardy Joey Bigornia		Bob Ogus Glenn Siaumau Tom Lingenfield Russell Homan Dave Kalasnik

REFERENCE CRITERIA

1) Rail Vehicle Maintenance Plans For - Division 11, 20, And 22: Dated 12-22-97
2) System Safety Program Plan - Operations, Rev 1, dated 11-25-96, Sect. 2.6.2, Vehicle Maintenance

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

WHEEL FLANGE THICKNESS – MEASUREMENT

Randomly select 3 or more wheel sets for each type of transit vehicle and measure the wheel flange thickness with an AAR Wheel Gauge to determine whether or not the wheel flange thickness meets the specified minimum criteria in the applicable inspection and maintenance procedures.

RESULTS/COMMENTS

Arbitrarily selected and tested the flange thicknesses of 5 wheels using an AAR gage (Go-No Go gage number 34401A) on each of the following:

- Two Blue Line cars (cars 126 and 150)
- One Green Line car (car 165), and
- Two Red Line cars (cars 552 and 509)

All flanges tested were within acceptable limits. This element / characteristic judged satisfactory without any exceptions noted.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	54	Date of Audit	June 24, 1998	Persons Contacted
Department VEHICLE MAINTENANCE		Auditors Len Hardy Joey Bigornia		Bob Ogus Glenn Siaumau Tom Lingenfield Russell Homan Dave Kalasnik

REFERENCE CRITERIA

1) Rail Vehicle Maintenance Plan For Divisions 11, 20 And 22, Dated 12-22-97
2) System Safety Program Plan - Operations, Rev 1, dated 11-25-96, Sect. 2.6.1, Vehicle Maintenance

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

WITNESS THE PERFORMANCE OF PREVENTATIVE MAINTENANCE ACTIVITIES FOR TRANSIT VEHICLES

Review the schedule of planned preventative maintenance (P.M.) activities to be performed by LACMTA during the time the CPUC audit takes place. Randomly select two or more of these activities for each of the two shops. Witness the performance of the P.M. activities to determine whether or not:

1. the P.M. activity is performed in accordance with the applicable P.M. procedures
2. the required inspection was properly documented
3. noted defects are corrected in a timely manner

RESULTS/COMMENTS

At both the Blue Line and Red Line shops, checked to see if the Heavy Maintenance Manuals and the Running Maintenance Manuals were being kept up-to-date. All were current, except for the Red Line Heavy Maintenance Manual. This one noted discrepancy was corrected on 6/25/98.

Reviewed the documentation being used by a maintenance team at the Blue Line yard performing a yearly PM activity. Checklists were being used, and were being appropriately checked-off and initialed.

Reviewed the documentation being used by a maintenance team at the Red Line yard performing a monthly PM activity. Checklists were being used, and were being appropriately checked-off and initialed. This element / characteristic judged to be satisfactory. The one noted exception has been corrected.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	55	Date of Audit	June 23, 1998	Persons Contacted
Department SCADA SYSTEMS ENGINEERING		Auditors Len Hardy Joey Bigornia Erik Juul		Kevin Sechler Martin Batistelli Stephen Stone

REFERENCE CRITERIA

1) Rail Operations Center - SCADA Preventative Maintenance Plan, Dated 1-29-98, Sect. 1.5, Preventative Maintenance Schedules, Table 1
2) Rail Operations Center - SCADA Daily / Weekly Check List Procedures, Dated 1-29-98

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

SCADA SYSTEMS

Randomly select 3 separate SCADA Systems and review the preventative maintenance inspection and test reports prepared for the 3 selected systems during the past 4 months to determine whether or not:

1. the required preventative maintenance activities were performed at the required frequency intervals required by the reference criteria

2. the inspections and other maintenance activities were properly documented

3. noted defects were corrected in a timely manner

RESULTS/COMMENTS

Reviewed the preventative maintenance inspection records for a four month period (Feb, Mar, Apr, May, of 1998) for three SCADA systems (Automatic Train Control, Wayside Intrusion Detection System, and Johnson 900 mHz Radio System). The inspection records of all 3 systems were satisfactorily completed.

Reviewed a sample of trouble tickets (those generated for the last quarter of 1997) and determined the number of trouble tickets still remaining open against those closed out. Found that one trouble ticket still remained open for the subject period vs. 48 that were closed. This review showed that noted defects are being corrected in a timely manner.

This element / characteristic judged satisfactory without any noted exceptions.