

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

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

Resolution ST-43
Date: October 7, 1999

RESOLUTION

RESOLUTION ST-43. GRANTING APPROVAL OF A FINAL REPORT OF AN ON-SITE SAFETY AUDIT OF THE SACRAMENTO REGIONAL TRANSIT DISTRICT 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 titled, "Triennial On-Site Safety Audit of the Sacramento Regional Transit District", dated August 27, 1999.

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 a determination of whether or not the transit agency's system safety program 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 Sacramento Regional Transit District (SRTD) light rail transit system during the period from June 21 to 29, 1999. The methods used to conduct the audit included:

- Discussions with SRTD 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 attached to this resolution as Appendix A. The results of the audit show that SRTD is effectively implementing its System Safety Program. Exceptions, however, were noted during the audit. These are described, where applicable, in the Results/ Comments Section of each checklist within the final report, along with recommendations to correct each identified exception. Sixteen checklists contain recommendations. They are Checklist numbers: 2, 3, 6, 10, 12, 13, 16, 18, 24-26, 30, 31, 34, 38, and 41.

Following the audit, staffs of both the SRTD and the Rail Transit Safety Section were able to achieve full agreement on all aspects of the final audit report, including the recommendations. SRTD will perform the necessary follow up actions to assure that the recommendations in sixteen of the checklists are fully implemented. SRTD 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 implementation plans and schedules for each recommendation will be provided to the staff of the Rail Transit Safety Section by November 8, 1999. In addition, beginning in January 2000, SRTD will provide the staff of the Rail Transit Safety Section with semi-annual status reports in January and July of each year until all recommendations are fully implemented. These 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 titled, "Triennial On-Site Safety Audit of the Sacramento Regional Transit District", dated August 27, 1999. It is also recommended that the Commission order SRTD to:

- submit by November 8, 1999, a report to the Rail Transit Safety Section, containing plans and schedules for implementing the recommendations contained in sixteen of the checklists.
- implement all recommendations in accordance with the plans and schedules submitted.
- on January 1st. and July 1st. of each year, provide the Rail Transit Safety Section with semi-annual reports on the status of the recommendations until all recommendations are fully implemented.

Protests

All interested parties, including SRTD have been advised of the contents of this resolution, and no protests or objections have been received.

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 titled, "Triennial On-Site Safety Audit of the Sacramento Regional Transit District", dated August 27, 1999, is granted.

SRTD shall submit plans and schedules for implementing all recommendations contained in the final audit report to the staff of the Rail Transit Safety Section by November 8, 1999.

SRTD shall implement all recommendations contained in the report, in accordance with the plans and schedules submitted to the Rail Transit Safety Section staff.

SRTD shall prepare and submit semi-annual status reports on January 1st. and July 1st. of each year to the Rail Transit Safety Section. These reports shall continue to be submitted until all 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 October 7, 1999. The following Commissioners voting favorably thereon:

Wesley Franklin

WESLEY M. FRANKLIN
Executive Director

Richard A. Bilas
President
Henry M. Duque
Josiah L. Neeper
Joel Z. Hyatt
Carl W. Wood
Commissioners

TRIENNIAL ON-SITE SAFETY AUDIT OF THE SACRAMENTO REGIONAL TRANSIT DISTRICT

AUDITORS: LEN HARDY
 RAED DWAIRI
 JOBY BIGORNIA

AUDREY CHIU
KARTIK SHAH
ERIK JUUL

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

AUGUST 27, 1999

FINAL REPORT



PREPARED FOR:

SACRAMENTO REGIONAL TRANSIT DISTRICT
P. O. BOX 2110
SACRAMENTO, CA 95812

FINAL REPORT
August 27, 1999

CALIFORNIA PUBLIC UTILITIES COMMISSION

TRIENNIAL ON-SITE SAFETY AUDIT OF THE SACRAMENTO REGIONAL
TRANSIT DISTRICT

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.

The first triennial, on-site, safety audit of the Sacramento Regional Transit District (SRTD) was conducted by the Rail Transit Safety Section of the Commission's Rail Safety and Carriers Division during the period from June 21 to June 29, 1999. The on-site audit was preceded by a pre-audit meeting with staff of the SRTD on June 21, 1999. A post-audit meeting, also attended by staff of the SRTD, was held on July 2, 1999.

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 41 audit checklists covering various departments with system safety responsibilities was prepared in advance of the on-site audit. Each checklist identifies the elements and characteristics that were audited, the results of the audit, and recommendations for improvement, where applicable. The methods used during the audit included:

- discussions with SRTD 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 vast majority of the hundreds of documents reviewed, activities observed, and items inspected were found to be in accordance with applicable rules and procedures. However, there were some exceptions noted. These can be found under the Results / Comments section of the checklists. An index of the 41 checklists is provided on page 5 of this report. Audit findings were discussed in detail with the SRTD personnel listed under 'Persons Contacted' during the course of the on-site audit. In cases where findings resulted in recommendations being made by the Commission staff, the recommendations were entered on the checklist directly below the findings.

Sixteen checklists contain recommendations; fifteen contain a single recommendation while one contains three recommendations, giving eighteen recommendations in total. Four recommendations advocate formalizing a current practice either by updating the System Safety Program Plan (SSPP) or developing a Standard Operating Procedure (SOP) to ensure that adequate controls are in place regarding the scope, frequency, and change process (see checklist nos. 2, 13, 16, & 24). Two recommendations advocate formally approving and adopting SOPs that are currently in draft form (see checklist nos. 3 & 10). Two recommendations advocate

evaluating current SOPs and either modifying the SOP or the practice governed by the SOP to ensure they are in harmony (see checklist nos. 6 & 18). Additionally, specific recommendations were made for each of the following checklists: nos. 12, 25, 26 (three recommendations), 30, 31, 34, 38, & 41.

Recommendations were summarized at the post-audit meeting and were discussed with SRTD staff during the 30-day comment period. As a result of these discussions, Commission staff and the SRTD staff have reached full agreement on the recommendations and the requirements for corrective action. For each recommendation, SRTD has agreed to prepare and implement a corrective 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 Monday, November 8, 1999. In addition, beginning in January 2000 SRTD will also provide the Commission staff with a semi-annual status report in January and July of 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.

Finally, the Commission's designated representative for SRTD 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 SRTD conducted by the Rail Transit Safety Section of the Commission's Rail Safety and Carriers Division concentrated on those elements of SRTD'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 SRTD's system safety program.

SRTD is in agreement with the recommendations made in this report. SRTD has further agreed to develop appropriate corrective action plans and schedules to carry out these recommendations, and to keep the Commission staff advised of SRTD's progress through semi-annual progress reports.

The Rail Transit Safety Section of the Commission's Rail Safety and Carriers Division would like to express its appreciation to SRTD 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 SRTD personnel at every level were responsive to the auditors' every request for assistance. This kind of cooperation contributed greatly to the successful performance of the audit.

**CPUC TRIENNIAL SAFETY AUDIT
OF
SACRAMENTO REGIONAL TRANSIT DISTRICT**

INDEX OF CHECKLISTS

Checklist No.	Element / Characteristic	Checklist No.	Element / Characteristic
1	Transportation Notices, Special Instructions, and Bulletins	22	Vital Relay Test Records & Inspection
2	Process/Procedure to Modify Rules, and to Issue Bulletins, Special Instructions, and Notices	23	Overhead Contact System Inspection Records
3	Training and Certification Records for Train Operators, On-Track Equipment Operators, and Central Controllers	24	Training and Certification Records for Track Inspector, Signal Inspector, and Traction Power Inspector
4	Unusual Occurrence Reports	25	CPUC Certified Inspection of Track Turnouts
5	Hours of Service	26	CPUC Certified Inspection of Grade Crossing Warning Devices
6	Train Operator Performance Evaluations by Supervisors	27	Substation Equipment and Inspections
7	Train Operator Performance-Mainline	28	Mainline Substation Red Tag Procedure
8	Train Operator Performance-Yards	29	R-O-W Fencing Inspections & Maintenance
9	Central Controller Performance	30	Station Facility Equipment and Inspections
10	On-Track Equipment Operation Performance	31	Configuration Management/Change Control Process
11	On-Train Security Preparedness	32	Safety/Configuration Management Review Committee Functions
12	Preventative Maintenance Program for Transit Vehicles	33	Safety Certification
13	Calibration of Measuring and Testing Equipment	34	Accident Reporting and Investigations
14	Wheel Flange Limit Gauging	35	Emergency Response Plan Including Review of Emergency Drill Activities
15	Witnessing of PM Activity	36	Hazardous Material Spill
16	Training and Certification for Vehicle Maintenance-mechanics, inspectors, technicians	37	Injury and Illness Prevention Program
17	Hazardous Material Logs in Maintenance Shops-MSDS sheets, spills record	38	Internal Audit Program
18	Inspection Records: Track, Crossovers, Switches, -weekly, monthly, yearly, ultrasonic, and geometry car inspections	39	Drug and Alcohol Testing Program
19	Mainline Switch Machine Inspection Records	40	Security and Law of Arrest Training
20	Interlocking Inspection and Test Records	41	Security Plan-implementation of scheduled tasks
21	Grade Crossing Devices Inspection Records		

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	1	Date of Audit: June 23, 1999	Persons Contacted:
Department		Auditor:	Alan Storey
RAIL OPERATIONS		Audrey Chiu	

REFERENCE CRITERIA

SRTD Light Rail Operating Rules, Sect. 1.3

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

RT METRO TRANSPORTATION NOTICES AND OPERATING BULLETINS

Randomly select and review two transportation notices and two bulletins within the last two years to determine whether or not:

1. Advisory and verbal bulletins were entered on the Metro Control log and the effective times were noted and signed
2. Copies of Operating Bulletins are kept in the Operations Department
3. Notices issued within the last 30 days are posted in the Operations Department

RESULTS / COMMENTS

Reviewed the Metro Control Log for the entire month of June, checked the operating bulletin process, and checked the posting of notices issued within the last 30 days.

Found that the Metro Control Log was in order, copies of bulletins are issued on a daily basis to the operators and kept in a binder in the Operator's Room for the current month, and notices issued within the last 30 days were posted in the Operations Department. No discrepancies were noted.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	2	Date of Audit	June 23, 1999	Persons Contacted:
Department	Auditor:		Alan Storey	
RAIL OPERATIONS	Audrey Chiu			

REFERENCE CRITERIA

1. SRTD Light Rail Operating Rule Book
2. G.O. 143-A, Sect. 13.02
3. APTA Manual for the Development of Rail Transit System Safety Program Plans

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

PROCESS / PROCEDURE TO MODIFY RULES, ISSUE BULLETINS, AND NOTICE

Interview the Light Rail Manager and review appropriate documents to determine whether or not:

1. Adequate procedures are in place for controlling the modification of rules, and for issuing bulletins and notices
2. Adequate controls are in place to ensure that responsibilities for drafting modifications to rules and issuing notices, including the need to distribute proposed modifications to departments with a need-to-know for review and comment, are clearly understood and practiced

RESULTS / COMMENTS

Requested to see SRTD's controlling documentation for modifying the Operating Rule Book and for issuing bulletins and notices. Found that there is an attachment to the Configuration Management SOP that lists the Operating Rule Book as an item that needs to go through the configuration management control process and that there are guidelines for issuing bulletins. Additionally, job descriptions address the responsibilities of individuals involved with the rule book, bulletins, and notices.

Although, managers are responsibly using the culmination of information from various sources to process modifications to the rule book and issue bulletins and notices, SRTD should develop a formal directive that addresses modifications to the Operating Rule Book, defines the factors for issuing bulletins and notices, and addresses the interrelationship between the three items.

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Recommendation:

Develop a formal directive (Addition to the SSPP or an SOP) that addresses Operating Rule Book modifications, defines the factors for issuing bulletins and notices, and addresses the interrelationship between the three items.

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All elements inspected were satisfactory, except for ambiguity regarding the obstruction test for switch N-35. SRTD's SOP does not provide a specification for the obstruction test. An SRTD wayside worker informed the CPUC inspector that the specification is $\frac{1}{4}$ ". Switch N-35 did not pass the $\frac{1}{4}$ " obstruction test, but passed the $\frac{3}{8}$ " obstruction test required by FRA standards.

Recommendation:

Determine SRTD's specification for the lock rod obstruction test and update the applicable procedure with this specific information. If SRTD's procedure is more stringent than FRA standards, ensure that the switches are maintained to the transit agency's own procedure.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	26	Date of Audit	June 29, 1999	Persons Contacted
Department WAYSIDE	Auditors: Raed Dwairi Len Hardy		Larry Davis	
		CPUC Inspectors: Bill Mealor		

REFERENCE CRITERIA

1. Code of Federal Regulations CFR 49, Part 234
2. LR-SOP-89-406, Rev. 110393, Dated 11/03/93

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

GRADE CROSSING WARNING DEVICES - CPUC INSPECTOR

Randomly select a minimum of three grade crossings on the main line and utilizing the service of a FRA certified signal inspector from the Commission's Railroad Operations Safety Section, perform a detailed inspection to determine whether or not the selected crossings are in compliance with the reference criteria.

RESULTS/COMMENTS

CPUC employee, Bill Mealor (FRA certified signal inspector) inspected the grade crossings at Roseville Road, 39th Street, and 48th Street.

The scope of the inspections included checking the alignment and cleanliness of the warning lights, checking reflective striping on gate arms, checking the voltage levels of the warning lights both in normal mode (AC power) and in standby mode (DC battery power), performing a ground test in the signal cabinet, and checking that up-to-date track circuit drawings are available in the signal cabinet.

The following exceptions were noted:

Roseville Road Crossing

A single flashing light was installed on each side of the mast at roughly 90 degrees to the main flashing light set. FRA requires all flashing lights to be mounted in sets (paired). (Further follow-up is required on this issue to determine whether the CPUC approved the design as installed)

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39th Street Crossing

Voltage values at the warning lights were below acceptable limits (North mast: 8.0 Volts in standby mode, and 8.1 Volts in normal mode).

48th Street Crossing

1. Voltage values at the warning lights were below acceptable limits (North mast: 8.3 Volts in standby mode, and 7.8 Volts in normal mode).
2. Reflective striping of gate arms at grade crossing was found to be fading
3. Approaching the crossing from the South, visibility of crossing lights on the South Mast is obstructed by a freeway overpass fence.
4. Drawings in the cabinet need updating due to having several modifications that are not color-coded and lack clear definitions regarding what is added or deleted. See recommendation in Checklist No. 31 regarding the timely update of as-built drawings.

Recommendations:

1. Determine the extent of low voltage values at grade crossings throughout the system and rectify this situation in a timely manner.
2. Determine the extent of faded reflective striping on gate arms at gate crossings throughout the system and correct where necessary.
3. Devise a solution and follow up to rectify the visibility obstruction of the South Mast crossing lights at the 48th Street Crossing.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	27	Date of Audit: June 23, 1999	Persons Contacted: Larry Davis Tim Kent
Department WAYSIDE		Auditors: Raed Dwairi Len Hardy	

REFERENCE CRITERIA

1. LR-SOP-86-402, Rev. 020796-D, Dated 10/29/86 : Traction Power Substation Weekly Inspection
2. LR-SOP-86-403, Rev. 110393-D, Dated 11/03/93 : Traction Power Substations Quarterly Inspection
3. LR-SOP-86-404, Rev. 110393-E, Dated 11/03/93 : Traction Power Substations Biennial Inspection

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

SUBSTATION INSPECTION

Review SRTD's file of completed substation inspection and test reports prepared during the past 2 years for at least 3 randomly selected substation to determine whether or not:

1. each substation 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

Randomly selected three substations and reviewed the quarterly inspection records for the past 2 years and the biennial inspection records for the past 4 year. The records showed that all of the required inspections were performed at the required frequency and were properly documented.

Randomly selected two substations, traveled to the location of each substation, and reviewed the weekly inspection records contained in the Journal within each substation. The review showed that all weekly inspections were performed as required.

Evaluated the method for tracking noted defects and found that noted defects are being adequately tracked by the supervisor-in-charge. Checked several repair orders used to address noted defects and found that they were properly completed and closed out in a timely manner.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	28	Date of Audit: June 23, 1999	Persons Contacted:
Department	RAIL OPERATIONS	Auditors: Raed Dwairi Len Hardy	Larry Davis

REFERENCE CRITERIA

LR-SOP-86-401, Rev. 020796-E, Dated 01/16/87: Mainline Substation Red Tag Procedure

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

RED TAG REQUIREMENT FOR REMOVAL AND RESTORATION OF PROPULSION POWER

Review appropriate records for at least the last 12 months to determine whether or not:

1. written requests for "Red Tag" authority were submitted at least 48 hours in advance of the work
2. "Red Tag" approvals were formally authorized by the Light Rail Manager
3. the wayside supervisor and linemen filled in the appropriate information on the Red Tag Request form, and the "release lines" on the Red Tag stub were signed off as required by the reference criteria
4. both portions of each Red Tag and the request form, for each request made, were filed at the Metro Maintenance facility

RESULTS / COMMENTS

Reviewed Red Tag files for 1998 and the first two quarters of 1999. All request forms were properly filled out and appropriately submitted in advance of the work. All red tags were processed and signed off as required.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	29	Date of Audit: June 24, 1999	Persons Contacted:
Department	FACILITIES MAINTENANCE	Auditors: Raed Dwairi Len Hardy	Toby Smith Donna Kelsay

REFERENCE CRITERIA

No SOPs available

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

RIGHT-OF- WAY FENCING

1. Review SRTD's records for fence inspections to determine whether or not:
 - all mainline fencing is being visually inspected on a periodic basis
 - noted defects are being corrected in a timely manner
2. Survey one or more sections of track where fencing is installed and determine whether or not the fence is in need of repair.

RESULTS / COMMENTS

1. Were told that there is no formal systematic program in place to inspect and repair fencing. See Results/Comments section and Recommendations in checklist 30. The persons contacted were in agreement with the idea that fencing, including mainline fencing, should be addressed as one of the elements of the preventative maintenance program for station facilities.
2. Surveyed sections of track between Globe and Watt/I-80 West. Determined that Swanston Station has damaged fencing at several locations. See Recommendations in checklist 30.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	30	Date of Audit	June 24, 1999	Persons Contacted: Toby Smith Donna Kelsay
Department FACILITIES MAINTENANCE	Auditors: Raed Dwairi Len Hardy			

REFERENCE CRITERIA

Station Inspection Forms

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

STATION FACILITY

1. Review station facility maintenance records for three (3) stations for the past year to determine whether or not:
 - telephones have been inspected
 - elevator emergency phones and the talk plates have been checked
 - monthly lighting inspections were completed
 - noted defects on any of the above equipment were corrected in a timely manner
2. Inspect a minimum of two stations during evening hours to determine whether or not:
 - adequate number of lights are functioning
 - phones on platforms are functional
 - any safety or security hazards are present in the station area

RESULTS / COMMENTS

1. Requested to review the maintenance records for three stations (Arden/Del Paso, Swanston, and 59th Street) for the past year. Found that comprehensive inspection checklists are only being used at park and ride stations where contracted security guards perform the inspections weekly. There are 7 park and ride stations out of a total of 31 stations. Reviewed the inspection checklists covering a 6 month period for two stations in our sample that were park and ride stations (Arden/Del Paso and Swanston) and found that the checklists were being adequately completed. For stations other than park and ride, there are reports from various contractors such as the Weekly Landscape Report that contain a line item for "Station Deficiencies Noted".

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Requested to see the process used to address safety and security discrepancies identified in the inspection reports. Were told that work orders are prepared and submitted but that they are generally not acted upon and there is no follow-up to ensure corrections are made. With regard to stations other than park and ride, were told that they are generally dependent on "trouble calls" from different transit agency personnel and complaints from the public to identify damaged or malfunctioning equipment and facilities.

Were told that in general there is no formal preventive maintenance program currently in place that adequately identifies deficiencies at stations and that ensures timely correction action to discrepancies found. A proactive program (Computer Maintenance Management System) is currently being developed to address preventative maintenance of the transit agency's facilities, including station facilities. Part of this program will include the development of standard operating procedures for preventative maintenance of various facilities.

2. Inspected the Arden / Del Paso and Swanston stations. Found that phones on station platforms were all functioning. Apart from the damaged fencing at Swanston station (see Checklist No. 29), did not observe any safety or security discrepancies at either station.

Recommendation:

Develop and implement, in a timely manner, a systematic preventative maintenance program that address safety and security elements of station facilities. Develop a standard operating procedure to formalize the scope of the preventative maintenance program for station facilities.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	31	Date of Audit	June 24, 1999	Persons Contacted: Mike Wiley Gene Moir Bill Grizard
Department	Auditors: .			
SAFETY CONFIGURATION MANAGEMENT REVIEW COMMITTEE	Kartik Shah Len Hardy			

REFERENCE CRITERIA

PC-SOP-96001, Dated 04/30/96

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

CONFIGURATION MANAGEMENT

Randomly select two or more projects involving operational changes (changes made after cut-over to revenue service) from the Document Control file and for each selected determine whether or not:

1. request for changes were reviewed and logged by the Project Integration Coordinator (PIC)
2. the Safety /Configuration Management Review Committee (S/CMRC) approved the changes
3. drawings indicating the changes (green for addition and red for deletion) were provided to Engineering Services Division
4. as-built drawings were updated with the changes and were distributed to the Operating Division and the Document Department

RESULTS / COMMENTS

Arbitrarily selected four projects subject to the configuration process and requested to see the approval documentation and the as-built drawings.

Found that the review and signoff documentation for two of the projects (97-002 and 97-003) was incomplete. The reason given was that one of these projects was never implemented while the other was folded into a larger contract for the Mather Field extension. The configuration process was not followed, however, since the documentation should have been returned to the Project Integration Coordinator (PIC) with responses and for formal closure. Were told that the process lingers due to the fact that documentation is circulated to the various parties in series. Consideration is currently being given to modify the process so that documentation can be circulated simultaneously to all parties involved in the configuration process.

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Found that the review and signoff documentation for the other two projects (97-005 and 97-006) was completed and returned to the PIC. Drawings were marked up to show changes (color coded with green for additions and red for deletions). Revised as-built drawings, however, were not available. Were told that the document control process is generally not completed and ends with the color coded mark-ups. See also Checklist No. 26 which found that drawings in a signal cabinet had several marked-up design changes, some dating back several years, without the as-builts being updated.

Recommendation:

Take action to ensure that as-built drawings are updated in a timely manner to reflect implemented design changes.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	32	Date of Audit: June 24, 1999	Persons Contacted:
Department		Auditors:	Mike Wiley Gene Moir Bill Grizard
SAFETY CONFIGURATION MANAGEMENT REVIEW COMMITTEE		Kartik Shah Len Hardy	

REFERENCE CRITERIA

PC-SOP-96001, Dated 04/30/96 : Configuration Management Procedure

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

SAFETY / CONFIGURATION MANAGEMENT REVIEW COMMITTEE FUNCTIONS

Review the Safety / Configuration Management Review Committee meeting minutes and other pertinent documentation to determine whether or not:

1. a process is in place to foster interdepartmental participation for reviewing safety-related modifications to equipment, policies, plans, rules, procedures, and training in order to provide comments to the board
2. safety related modifications are reviewed and approved by the board

RESULTS / COMMENTS

Reviewed the Configuration Management SOP and found that there is a process in place to foster interdepartmental participation and review. Found that implemented safety related modifications that are identified and entered the configuration management process are approved by the routed members. See Checklist No. 31.

There was no minutes of Safety / Configuration Review Committee meetings to review. Safety / Configuration Review Committee meetings are only held when routed members do not agree on a proposed changes and fail to resolve their concerns informally. This has not occurred in recent years.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	33	Date of Audit: June 22, 1999	Persons Contacted:
Department		Auditor:	Bill Grizard
SAFETY DEPARTMENT		Kartik Shah	

REFERENCE CRITERIA

SRTD Safety Certification Program, Dated 01 October 1998

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

SAFETY CERTIFICATION

Select one recently completed project that was safety certified and determine whether or not:

- the designer for each contract work package identified the specific safety criteria that applies
- forms were completed that demonstrate that the safety criteria was incorporated in the design specifications and plans
- specification conformance was conducted to verify that safety -related criteria requirements were incorporated in the as-built system or facility
- training needs were identified and training was certified when completed
- any non-compliance (open items) was recorded and resolved

RESULTS / COMMENTS

Reviewed safety configuration documentation for the Mather Field Double Track Project.

Found that the formal Safety Certification Summary Sheets have yet to be completed for this project. In response to this item, the safety manager demonstrated that, in fact, safety criteria conformance, safety specification conformance, and safety related testing were all satisfactorily completed prior to cutover to revenue service based on the safety department's informal records and witnessing of tests performed. The formal Safety Certification Summary Sheets were yet to be completed due to a delay on the part of the contractor performing the work. According to the safety manager, future contracts will stipulate the timely submittal of formal safety certification documentation.

Additionally, reviewed the Rail Activation Committee documentation and found that prior to revenue service training needs were identified, training was conducted and documented, and all items on the safety critical items list were adequately resolved.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	34	Date of Audit	June 24, 1999	Persons Contacted: Bill Grizard Alan Storey Tracy Britten Rob Hoslett
Department SAFETY	Auditors: Kartik Shah			

REFERENCE CRITERIA

1. CPUC General Order 164A, 9/3/97, Paragraph 5 Reporting Accidents And Paragraph 7 Investigating Accidents.
2. SRTD Rule Book, Page 15
3. SRTD LR-SOP-86-11T, Dated 09/12/86: LRT Accident Investigation
4. LR-SOP-86-17T, Rev. 071290, Dated 01/05/87: Derailment Investigation
5. 49 CFR Part 659.41 Investigations And Part 659.43 Corrective Actions
6. CPUC General Order 143A, 4/6/94, Paragraph 15 Accident Reporting Requirements

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

ACCIDENT/INCIDENT REPORTING & INVESTIGATION

Randomly select at least 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 SRTD 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 for corrective action has either been completed or is up-to-date

RESULTS / COMMENTS

Selected three accident investigation reports that involved injuries, for accidents that occurred on 9/8/98, 2/8/99, and 3/20/99. All accident investigation reports were satisfactorily completed, except for the report regarding the accident that occurred on 2/8/99. This accident involved a collision between two trains on the Sacramento Bee Bridge. The investigation report contained a corrective action measure to revise the procedure that governs the moving of a disabled LRV by April 1999. This corrective action measure has not been addressed to date.

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Recommendation:

SRTD should address corrective action measures identified as a result of accident investigations in a timely manner. As a specific case, SRTD should take action to satisfy the corrective action measure to revise the procedure that governs the moving of a disabled LRV, as soon as possible.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	35	Date of Audit: June 22, 1999	Persons Contacted:
Department		Auditor:	Bill Grizard
SAFETY DEPARTMENT		Kartik Shah	

REFERENCE CRITERIA

1. SRTD Light Rail Division Emergency Plan & Accident Investigation Plan, Dated 11/15/96
2. SRTD System Security Program Master Plan, Section 5.3.1, Dated 11/20/97

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

EMERGENCY RESPONSE

Review available records to determine whether or not:

1. fire / life safety goals and standards have been developed as described in the reference documentation
2. planning sessions have been conducted with outside agencies to discuss fire / life safety strategies
3. scenarios of possible fire, or other emergency, conditions have been defined, and appropriate responses determined for responders
4. drills have been conducted on a regular basis, involving local emergency response units, and follow-up lessons-learned meetings were held

RESULTS / COMMENTS

Reviewed the Light Rail Division Emergency Plan / Accident Investigation Plan. Additionally, reviewed SRTD's Light Rail Disaster Drill Mass Casualty Incident Report dated August 19, 1999 and the planning minutes for the drill. Determined that fire life safety goals and standards were developed, planning sessions with outside agencies were conducted, scenarios of emergency conditions were defined, and training drills with follow-up meetings were held.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	36	Date: June 21, 1999	Persons Contacted: Bill Girzard Rob Hoslett
Department	SAFETY DEPARTMENT	Auditor: Kartik Shah	

REFERENCE CRITERIA

1. SRTD System Safety Program Plan ,Chapter 5 (5.2.4.2)
2. SRTD Hazardous Materials Management Plan Chapter II (Accident Response): Section B (Reporting Requirements: page 5A2-1)
3. Appendix G. Reporting Form Instructions & Follow-Up Notice

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

HAZARDOUS MATERIAL SPILLS REPORTS

Randomly select a minimum of three hazardous material spills that occurred during the past two years and review the corresponding reports from the Safety Department's file of Hazardous Material Spills to determine whether or not the reports contain the following minimum information:

1. date and time of incident
2. incident location
3. SRTD 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. copies of citations that may have been issued
8. current status and location of released spill material

RESULTS / COMMENTS

Determined by interviews with the persons contacted that SRTD has never experienced a hazardous material spill in its light rail operation.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	37	Date of Audit: June 22, 1999	Persons Contacted: Bill Grizard
Department	SAFETY DEPARTMENT	Auditor: Kartik Shah	

REFERENCE CRITERIA

SRTD Program Manual, Chapter 3.

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

INJURY AND ILLNESS PREVENTION PROGRAM

Review appropriate documentation and interview the manager in charge of the program to determine whether or not:

1. the persons responsible for implementing different aspects of the program are clearly identified
2. a system in place for identifying and evaluating workplace hazards
3. procedures exist, and are being followed, for investigating occupational injuries and illness and for correcting unsafe or unhealthy conditions in a timely manner
4. the program includes occupational health and safety training for employees
5. records are maintained to verify compliance with training and inspection requirements

RESULTS / COMMENTS

Reviewed SRTD's System Safety Program Plan, Department Safety Action Plan, Hazard Report form, Standard Operating Procedure for Workers' Compensation Claim Reporting & First Aid Claims, Safety Help Line form, and safety meeting minutes.

Determined that persons responsible for implementing different aspects of the program are clearly identified, a system is in place for identifying and evaluating workplace hazards, a procedure exists for investigating workplace injuries and illnesses, a program is in place for occupational health and safety training for employees, and training and inspection records are maintained.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	38	Date of Audit: June 24, 1999	Persons Contacted:
Department		Auditors:	Bill Grizard
SAFETY DEPARTMENT		Kartik Shah Erik Juul	

REFERENCE CRITERIA

1. System Safety Program Plan, Section 7.2.2, Rev. 01/01/98
2. California Public Utilities Commission General Order 164A, Section 4
3. Code Of Federal Regulations, CFR 49 Part 659

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

INTERNAL AUDIT PROGRAM

Review the status of the current SRTD internal audit program to determine whether or not:

1. a schedule that outlines the audits to be performed through the year is in place
2. internal audits have been performed to date according to the schedule
3. corrective action plans in response to audit findings have, either been completed, or are scheduled for implementation

RESULTS / COMMENTS

SRTD did not perform an internal safety audit last year and is currently not in compliance with 49 CFR Part 659 and General Order 164-A regarding this requirement. However, SRTD has hired a person to conduct internal safety audits in the future and has established a schedule to perform internal safety audits for this year. No internal audits have been performed this year to date.

Recommendation:

Develop and implement an internal safety audit program using the CPUC checklist in RTSS-5 (recently distributed to all transit agencies) as a guide.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	39	Date of Audit	June 24, 1999	Persons Contacted
Department EMPLOYEE RELATIONS	Auditors: Raed Dwairi Len Hardy		Dan Bailey Julie Fong	

REFERENCE CRITERIA

1. SRTD Guidelines for Administering the Drug & Alcohol Testing and Rehabilitation Program Dated February 1998
2. FTA 49 CFR Part 653
3. FTA 49 CFR Part 654

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

DRUG AND ALCOHOL TESTING PROGRAM

For each rail transit employee that tested positive for drugs or alcohol over the past two years and who is currently employed in a safety sensitive position, review the records to determine whether or not:

1. the individual was evaluated and released to duty by a substance abuse professional
2. the individual was administered a return-to-duty test with verified negative results
3. follow-up testing was performed as directed by the substance abuse profession, with not less than six follow-up tests performed with verified negative results during the first 12 months after returning to duty

RESULTS / COMMENTS

Reviewed drug and alcohol records specific to the rail transit portion of the transit agency for individuals in safety sensitive positions for the period June 1, 1997 to May 31, 1999.

This review and subsequent discussions showed that 3 individuals tested positive for drugs, one individual submitted an adulterated specimen, and no individuals tested positive for alcohol.

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The individual with the adulterated specimen was terminated. One individual that tested positive for drugs was on probation and was also terminated. The other two individuals were evaluated by a substance abuse professional, were administered return-to-duty testing with negative results and have been subjected to follow-up tests (one subjected to 17 tests and the other 16 tests) during the first 12 months, all with negative results.

Further review of the records showed that during the subject two-year period, 228 tests were scheduled, 84 tests were excused, and 12 tests were excused for inappropriate reasons. To reduce or totally eliminate the number of inappropriate excused tests the manager-in-charge has recently modified the program so that selected individuals can be taken for testing on any day in the following week, rather than just on a specific day in the week.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	40	Date of Audit: June 22, 1999	Persons Contacted:
Department SYSTEM SECURITY	Auditors: Raed Dwairi Len Hardy		Jim Jarosick Nancy Talbot Dennis Whitney

REFERENCE CRITERIA

System Security Program Master Plan, Section 4.4.3, Submitted 11/20/97

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

SECURITY AND LAW OF ARREST TRAINING

1. Review records of Light Rail Supervisors to determine whether or not they received 40 hours of instruction in the Laws of Arrest as covered under California Penal Code Section 832, and that they received one-week of security training as required by the reference criteria.
2. Review the records of fare inspection officers and light rail maintenance workers to determine whether or not they received one week of security training

RESULTS / COMMENTS

Arbitrarily selected four Light Rail Supervisors and four Fare Inspection Officers, and reviewed records to verify whether or not each individual received the required instructions. Management summary lists showed that each individual received the Code Section 832 training and the one-week of security training as required by the reference criteria. The summary lists of the one-week security training were supported by signed-off training records. Additionally, copies of Certificates of Completion for the Code Section 832 training were available for three individuals, but absent for the remaining five. This was discussed with the manager in charge who explained that copies of the certificates could be requested from the college administering the training, if needed. Nevertheless, the manager in charge agreed with the audit team that the transit agency should keep copies of the certificates on file to verify the qualifications of its personnel, and committed to doing so for all future individuals receiving such certificates.

No exceptions were noted.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	41	Date of Audit: June 22, 1999	Persons Contacted:
Department	SYSTEM SECURITY	Auditors: Raed Dwairi Len Hardy	Jim Jarosick

REFERENCE CRITERIA

System Security Program Master Plan, Section 6.2, page 6A-91, Submitted 11/20/97

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

IMPLEMENTATION SCHEDULE

Evaluate whether or not the schedule within the System Security Program Master Plan (page 6A-91) is being implemented as planned.

RESULTS / COMMENTS

Evaluated the Security Department's progress in implementing a selection of tasks in the transit agency's Security Plan.

Determined that the Security Breach Committee and the Proactive Security Committee were formed as planned. They have since been combined because the functions of evaluating security breaches and determining proactive measures are interrelated. Learned, however, that the meetings are not being held on a regular basis (quarterly) as stipulated in the plan. In questioning the frequency of the meetings, were told that the committee is dependent on a program to collect, analyze, and review statistical data to determine vulnerabilities, and that this program has not been implemented. The committee has identified the inputs, outputs, and scope of the program to fulfil the subject Security Plan requirement and believes it is dependent on a computer program (database) to effectively and systematically continue with the committee's work.

Recommendation:

SRTD should implement, on a timely basis, a program to systematically collect, process, and evaluate security breach information, by a computer program or other means, and to develop mitigating measures in response to the security breach trends identified.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	3	Date of Audit	June 21, 1999	Persons Contacted:
Department	Auditor:		Bill Metcalf	
RAIL OPERATIONS	Audrey Chiu		Dennis Whitney	
			Alan Storey	

REFERENCE CRITERIA

1. SRTD LRV Operator Training Course Syllabus
2. G.O. 143-A, Section 13.03

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

TRAINING AND CERTIFICATION RECORDS FOR TRAIN OPERATORS, WAYSIDE PERSONNEL, AND METRO CONTROL PERSONNEL

Randomly select operator rulebook training and certification records of at least two train operators, two on-track equipment operators, and two Metro Control personnel for the past two years to determine whether or not:

1. Each individual successfully completed the required initial and/or refresher training program
2. Each individual, performing safety sensitive duties, is currently certified to do so.

RESULTS / COMMENTS

Reviewed recertification records from January 1996 to the present for the following safety sensitive employees: 37 train operators, 15 wayside personnel, 28 vehicle maintenance personnel, and 15 supervisors / controllers.

SRTD requires annual recertification for train operators and vehicle maintenance personnel. Found that over the review period 10 train operators and 11 vehicle maintenance personnel were overdue for their training by 4 months or more, with the worst case being overdue by 8 months.

SRTD requires biennial recertification for wayside personnel, and no discrepancies were found for this classification.

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Requirements for the recertification of supervisors / controllers are contained in a draft SOP. Was told that supervisors / controllers currently receive rule book training annually but no record of this training was available for review.

Recommendations:

1. Evaluate and modify, if necessary, the draft SOP regarding the frequency of retraining train operators and vehicle maintenance personnel and ensure that they are all routinely recertified within the period required by the draft SOP. Additionally, formally approve and adopt the draft SOP addressing the requirements for the recertification of supervisors / controllers in a timely manner.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	4	Date of Audit: June 24, 1999	Persons Contacted:
Department		Auditors:	Dennis Whitney
RAIL OPERATIONS		Audrey Chiu Erik Juul	

REFERENCE CRITERIA

1. SRTD Rule Book: page 15, rule 1.6
2. CPUC G.O. 164-A, Sections 5

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

OCCURRENCE REPORTS AND ACCIDENT REPORTING

Review at least five occurrence reports prepared within the past two years to determine whether or not:

1. Required information is included
2. G.O. 164-A Requirements for Reporting Accidents is met

RESULTS / COMMENTS

Reviewed all 1999 Occurrence Reports (Jan 1 – June 19) totaling 97. All reports reviewed contained the required information but 5 lacked the Department Manager's signature. The issue of the missing signatures was discussed with the manager-in-charge who said he would ensure that all reports would be signed off in the future.

Reviewed the log of accident reports kept by the Superintendent of Transportation for the 6 month period of Nov 98 – April 99. Found that all accidents meeting the G.O. 164-A reporting criteria were, in fact, reported to the CPUC as required.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	5	Date of Audit: June 24, 1999	Persons Contacted:
Department		Auditors:	Dennis Whitney
RAIL OPERATIONS		Audrey Chiu Erik Juul	

REFERENCE CRITERIA

CPUC G.O. 143-A, Sections 12.01b, and 12.04

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

HOURS OF SERVICE

Randomly select the names of at least four train operators and review appropriate work records for the last 12 months to determine whether or not they abided by the hours-of-service rules as required by the reference criteria.

RESULTS / COMMENTS

Rather than using the random process specified above, all dates on which an accident occurred from July 98 to June 24, 99 were used. The log of Accident Reports kept by the Superintendent of Transportation revealed 24 dates.

Review of the Transportation Summary binder and the Operator Timekeeping binder of all operators working on these dates revealed no violations of the Hour of Service rule.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	6	Date of Audit	June 21, 1999	Persons Contacted: Dennis Whitney Alan Storey
Department	RAIL OPERATIONS	Auditor:	Audrey Chiu	

REFERENCE CRITERIA

1. SRTD Light Rail Operations Ride Check Report
2. G.O. 143-A, Section 13.04
3. Standard Operating Procedure Operator Efficiency Test

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

TRAIN OPERATOR PERFORMANCE EVALUATIONS BY SUPERVISORS

Randomly select train operator ride check reports for four different train operators for the last two years to determine whether or not:

1. each train operator was evaluated on a sixty day basis for compliance with the criteria listed on the Operator Efficiency Test Form
2. a supervisor discussed operating performance with each train operator at least once every six months
3. each train operator was evaluated on a yearly basis for compliance with signal indications and proper switch alignment
4. the checklists were appropriately filled in and signed by the supervisor
5. re-instruction was given or other follow-up action taken in cases of substandard performance

RESULTS / COMMENTS

The log tracking the dates of efficiency testing was reviewed from its creation in 1995 to the present for all operators. Additionally, individual evaluation records were reviewed on a sample basis.

SRTD has three levels of evaluation testing:

Level I – at least once every 60 days - supervisor evaluates the operators performance on-board the train and discusses the results with the operator shortly after.

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Level II – at least once every 6-months - supervisor discusses various aspects with the operator including Level 1 tests, observation reports, passenger reports, and accident/incident reports.

Level III – at least once during a 12-month period – Includes observations of operator regarding signal indications, switch alignment, and grade crossing protection.

Found that records were orderly and well organized. The operator efficiency test program is thorough, comprehensive and aggressive in evaluating the efficiency of operators. However, SRTD's requirements for efficiency testing are not being totally met.

Level I

No one received an efficiency test at least once every 60 days. Some operators received Level I tests once in a year while others received Level I testing up to four times in a year.

Level II

Approximately 50% of operators never received Level II tests. The other 50% received some Level II tests, but they only received this testing once during the year instead of every 6 months.

Level III

The majority of the operators did receive this test. This was found to be the most consistently performed.

Recommendation:

Evaluate and modify, if necessary, the SOP for train operator efficiency testing regarding the frequency of testing, and ensure that train operator efficiency tests are conducted within the period specified in the SOP.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	7	Date of Audit	June 21, 1999	Persons Contacted: Dennis Whitney
Department	RAIL OPERATIONS	Auditor:	Audrey Chiu	

REFERENCE CRITERIA

1. SRTD Light Rail Operating Ride Check Report
2. G.O. 143-A, Section 7.09 and 13.01
3. Transportation Notice
4. RT Metro Rail Operations Rules

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

TRAIN OPERATOR PERFORMANCE-MAINLINE

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 performs in compliance with the governing rules and procedures
 - each operator possesses the required equipment in the cab, including a functional portable radio
2. Interview not less than four randomly selected train operators from the current roster to determine their understanding of rules, procedures, and policies related to train operations.

RESULTS / COMMENTS

Observed the performance of five train operators to determine compliance with the following requirements:

- Adherence to speed limits
- Audible warnings at grade crossings and departing stations
- Use of mirrors prior to departing a station
- Station stop alignment with disabled boarding ramp

Found that all train operators complied with the aforementioned requirements.

Interviewed four train operators to determine their familiarity with operating rules and procedures, including their knowledge of the operating bulletins of the day, the rule of the day, speed limits in different areas and in slow zones, evacuation procedures, and procedures at grade crossings when the approach circuit is disabled. All operators demonstrated adequate knowledge regarding the questions asked.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	8	Date of Audit: June 24, 1999	Persons Contacted: Dennis Whitney
Department RAIL OPERATIONS		Auditor: Audrey Chiu	

REFERENCE CRITERIA

1. SRTD Light Rail Operating Rule Book , Rule 2.0, 2.2, 5.6 & 5.8
2. LRV Pre-trip Inspection

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

TRAIN OPERATOR PERFORMANCE -YARDS

Observe train operations in the yard for a period of not less than one hour to determine whether or not train operators are following appropriate rules and procedures, including: inspecting the LRV for defects and filling in defect cards where warranted (trains departing for revenue service), complying with speed limits, and performing proper coupling and uncoupling operations.

RESULTS / COMMENTS

On the date of observation, 8 trains were scheduled to pull out from 4:12 – 5:47 am. Observed 6 pre-trip inspections. No coupling or uncoupling of LRVs was made.

All 6 train operators made appropriate pre-trip inspections and complied with the speed limit in the yard. All equipment checked was operable - no defect cards were completed.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	9	Date of Audit: June 22, 1999	Persons Contacted: Alan Storey Dennis Whitney
Department RAIL OPERATIONS		Auditor: Audrey Chiu	

REFERENCE CRITERIA

1. LR-SOP-86-09T, Rev. 131088-A, Dated 09/12/86: Dispatch/Control
2. SRTD Light Rail Operating Rule Book
3. SRTD Supervisor Re-certification Program
4. G.O. 143-A, Section 13.01

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

METRO CONTROL CENTER (MCC) SUPERVISOR PERFORMANCE

1. Observe MCC supervisors for not less than two hours in connection with the Reference Criteria policy, rules and procedures.
2. Interview not less than two randomly selected MCC supervisors regarding the rules and procedures listed under the Reference Criteria.
3. Review Track Warrants and the Daily Control Log for the past six months to determine whether or not they are being properly prepared and maintained.

RESULTS / COMMENTS

Observed the performance of Metro Controllers for more than 2 hours. No discrepancies were noted.

Interviewed several controllers regarding requirements in the reference criteria. Controllers demonstrated adequate knowledge and understanding of the rules and procedures covered in the interview.

Track warrants and the Metro Control log were reviewed for the past month. No discrepancies noted.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	10	Date of Audit: June 22&24,99	Persons Contacted:
Department		Auditor:	Larry Davis
RAIL OPERATIONS		Audrey Chiu	

REFERENCE CRITERIA

SRTD Rule Book, Rule 1.3 and Rule 2.4

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

ON - TRACK EQUIPMENT PERFORMANCE

1. Observe on-rail equipment operators for at least one hour on the mainline to determine whether or not they are following the rules for safe operations.
2. Interview not less than one certified on-rail operator to determine whether or not he/she understands the controlling rules and procedures for on-rail vehicle operation.

RESULTS / COMMENTS

Observed on-rail equipment operators on two separate dates for half an hour each day. No discrepancies were noted.

Interviewed three wayside personnel regarding their understanding of rules relevant to on-rail vehicle operation and wayside protection. Found that all three wayside personnel were familiar with the procedures and had a general understanding of the rules relevant to on-rail vehicle operation and wayside protection. None, however, were familiar with the Operating Bulletins in effect. A procedure is currently in draft form that will require on-rail equipment operators to acquire and have in their possession the latest operating bulletin upon requesting permission from Metro Control to enter the main line.

Recommendation:

Finalize and implement, in a timely manner, the draft procedure addressing the requirement for on-rail equipment operators to be in possession of the latest operating bulletin upon requesting permission to enter the main line.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	11	Date of Audit	June 22, 1999	Persons Contacted:
Department VEHICLE MAINTENANCE	Auditors: Raed Dwairi Len Hardy Joey Bigornia		Jim Jarosick Dennis Whitney	

REFERENCE CRITERIA

1. System Security Program Master Plan, Section 5.1.1.1 Phase 1
2. LR-SOP-86-201, Rev. 050890-C, Dated 08/86: LRV Weekly Inspection
3. Fare Inspector Training Program

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

ON-TRAIN SECURITY PREPAREDNESS

1. Randomly select four light rail vehicle records for a recent three month period to determine whether or not:
 - weekly inspections of the Passenger Emergency Button (PEB) were performed
 - any malfunctioning PEBs were repaired in a timely manner
2. Randomly interview at least two Fare Inspection Offers and at least two Transportation Supervisors to determine whether or not:
 - they were issued the appropriate security equipment
 - they are conversant with the action they should take during a life-threatening security breach

RESULTS / COMMENTS

1. Selected four vehicles (Nos: 101, 111, 128, & 136) and reviewed the weekly inspection records dated January 1999 to June 1999. The passenger Emergency Button (PEB) inspections were all performed at the specified interval. No PEB's required repair in the sample selected. We're informed that if PEB's do require repair they are either repaired immediately or the vehicle is not permitted to return to revenue service.
2. Interviewed three arbitrarily selected Fare Inspection Officers and determined that appropriate security equipment were issued to each officer. Presented two hypothetical security breach scenarios to each officer, and found that they were conversant with the appropriate action they should take.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	12	Date of Audit	June 23, 1999	Persons Contacted
Department	Auditors:		Mark Noontenboom	
VEHICLE MAINTENANCE	Joey Bigornia Raed Dwairi		Mike Ornelas	

REFERENCE CRITERIA

1. LR-SOP-86-200, Revision 111897-F : LRV Daily Inspection
2. LR-SOP-86-201, Revision 051095-E : LRV Weekly Inspection
3. LR-SOP-86-202, Revision 071096-B : LRV Mileage Based Inspection (10K, 20K, 30K)

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

PREVENTIVE MAINTENANCE PROGRAM DOCUMENTATION FOR TRANSIT VEHICLES

Randomly select a minimum of 4 cars and for each selected, review the completed Preventive Maintenance Inspection (PMI) reports for the five different types of inspections and other applicable 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 noted during the inspections and that required unscheduled repairs were properly documented and closed out in a timely manner

RESULTS / COMMENTS

Selected four SRTD vehicles (Nos. 101, 111, 128, & 136) and reviewed selected samples of the preventative maintenance records for daily, weekly, and monthly inspections.

Daily Inspection Reports

Reviewed the daily inspection reports from January 1999 to June 1999. All inspection reports were in order except for three inspection forms dated 3/1/99, 3/11/99, and 3/17/99. These forms were left blank. The three missing inspection forms were brought to the attention of the manager-in-charge.

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Weekly Inspection Reports

Reviewed the weekly inspection reports from January 1999 to June 1999. The reports showed that the inspections were performed at the required frequency, were properly documented, and that defects were corrected in a timely manner.

Mileage Based Inspection Reports

Reviewed the mileage based inspection reports from January 1998 to May 1999. The reports showed that inspections were performed at the required frequency and that defects were properly documented and tracked. However, Section XII of the vehicle inspection form was left blank on several occasions (three times on car numbers 101 & 128, twice on car number 111, and once on car number 136).

Recommendations:

Determine the reason that Section XII on the mileage based inspection reports is being missed on a significant number of inspections, and take corrective action to rectify the discrepancy. Implement monitoring of inspection reports by management to ensure the success of the corrective action taken.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	13	Date of Audit	June 22, 1999	Persons Contacted:
Department		Auditor:		Robert Richtberg
VEHICLE MAINTENANCE		Joey Bigornia		

REFERENCE CRITERIA

No SOPs available

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 the vehicle maintenance shop. Randomly select two each of SRTD's micrometers, torque wrenches, and multi-meters. From a combination of procedure and record reviews as well as visual inspections, determine whether or not:

1. the selected items are properly inventoried, controlled, calibrated 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

It was determined that in the vehicle maintenance department there is no formal standard operating procedure in place that identifies the measuring and testing equipment subject to calibration control and the frequency of calibration required. There is, however, a list of measuring and testing equipment that contains a record of calibration dates based on each piece of equipment being calibrated annually.

Randomly selected two torque wrenches (ID. # F5594 and # F5595), two micrometers (ID # J0349 and # J0355), two depth micrometers (ID # J0366 and # J0367), and two multimeters (ID # M4794 and # M4796). The equipment list showed that each piece of equipment selected was calibrated on 3/18/98 and again on 4/1/99 - very close to the annual requirement. Additionally, each piece of equipment was labeled with a calibration sticker that showed the last date of calibration, and the due date of the next calibration.

Recommendation:

SRTD should develop a formal directive (addition to the SSPP or SOP) to formalize the practice of calibrating selected measuring and test equipment to ensure that adequate controls are in place regarding the scope, frequency, and change of the calibration process.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	14	Date of Audit	June 22, 1999	Persons Contacted:
Department		Auditor:		Mark Nootenboom
VEHICLE MAINTENANCE		Joey Bigornia		

REFERENCE CRITERIA

LR-SOP-86-202, revision 071096-B and attachments 2-3-1 PMM (Preventive Maintenance Manual)

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

WHEEL FLANGE THICKNESS - MEASUREMENT

Randomly select 2 wheel sets on three different transit vehicles and measure the wheel flange thickness of each wheel with an AAR Wheel Gauge to determine whether or not the wheel flange thickness meets the specified minimum criteria in the applicable inspection procedure and/or maintenance standards.

RESULTS / COMMENTS

Determined the wheel flange condemning limit used by the transit agency.

Selected three vehicles in the maintenance shop (Car numbers 107, 120, and 130), and using the electronic wheel gauge, checked the wheel flange thickness and tire diameter for six wheels on each vehicle. All wheels checked were within safe tolerances.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	15	Date of Audit: June 24, 1999	Persons Contacted:
Department	VEHICLE MAINTENANCE	Auditors: Joey E. Bigornia Raed Dwairi	Mark Noontenboom Donnell Williams

REFERENCE CRITERIA

Preventive Maintenance Manual (several volumes of info located at RTD Light Rail)

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

PERFORMANCE OF PREVENTATIVE MAINTENANCE ACTIVITIES FOR TRANSIT VEHICLES

Review the schedule of planned preventative maintenance (P.M.) activities to be performed by SRTD during the time the CPUC audit takes place. Witness the performance of the P.M. activities taking place to determine whether or not:

1. the P.M. activities are being performed in accordance with the applicable P.M. procedures
2. the required inspections are being properly documented
3. noted defects are being either corrected or recorded for further attention

RESULTS / COMMENTS

Witnessed the performance of a 20,000 Mileage Inspection conducted on car No. 133 at the Operations and Maintenance Facilities. This activity included a pre-inspection, pantograph & main circuit inspection, undercar component inspections of the traction motor, motor alternator, camshaft controller, and low voltage equipment.

An inspection checklist was being used and each item on the checklist was being appropriately checked off and initialed. There were no defects found and no exceptions were noted.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	16	Date of Audit	June 21, 1999	Persons Contacted:
Department		Auditor:		Mark Noontenboom Mike Ornelas
VEHICLE MAINTENANCE		Joey Bigornia		

REFERENCE CRITERIA

SRT Course Outline for Electromechanics Trainee Phase 1, 10-26-93.

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

TRAINING AND CERTIFICATION OF TRANSIT VEHICLE EQUIPMENT MAINTENANCE PERSONNEL

Obtain a copy of SRTD's list of qualified electromechanics and utility workers. Randomly select at least two 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 re-certification records are in compliance
2. the current training lesson plans and testing for certification / re-certification reflects the persons assigned duties

RESULTS / COMMENTS

It was determined that there is no formal standard operating procedure that identifies the training and certification requirements of Electromechanics and Utility Workers. However, a training record is available on file for each maintenance worker that identifies the initial, annual, triennial, and specialized training that the individual has received.

Reviewed initial training and certification records for three Electromechanics and three Utility Workers. Additionally, reviewed annual and triennial recertification training records for the same group of workers from 12/85 to the present.

The annual training records showed that all six workers were overdue by 2 to 5 years for MSDS training.

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Recommendations:

1. Develop a formal directive (addition to the SSPP or SOP) to clearly define the scope of training, frequency of training for the different training elements, and the requirements for certification, for each classification of vehicle maintenance worker. Additionally, ensure that all elements of the training are routinely conducted within the period specified in the directive.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	17	Date of Audit: June 23, 1999	Persons Contacted:
Department		Auditor:	Mark Nootenboom
VEHICLE MAINTENANCE		Joey Bigornia	

REFERENCE CRITERIA

LR-SOP-95-224 Material Safety Data Sheets (MSDS)

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

HAZARDOUS MATERIALS MANAGEMENT AT THE VEHICLE MAINTENANCE SHOP

Inspect the vehicle maintenance shop to determine whether or not:

1. a hazardous material spills log is maintained and has been adequately filled out
2. hazardous materials discharge incident reports are kept on file at the facility
3. Material Safety Data Sheets (MSDS) are available and current at the facility
4. health and safety related chemicals and other materials are adequately labeled and stored

RESULTS / COMMENTS

Determined that there have been no reportable spills or events at the Light Rail Vehicle Maintenance facility.

Reviewed the MSDS binder kept on file at the Vehicle Maintenance Department. There are currently 244 types of products used by the department according to the MSDS log dated 5/19/99. The Cadweld Electrical Welding Material MSDS, page 58, was incorrectly identified in the MSDS index – this was brought to the attention of the manager-in-charge and will be corrected. No other discrepancies were found.

Checked the hazardous material liquid and solid waste containers and determined that they were adequately labeled with shipping tags appropriately attached.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	18	Date of Audit	June 22, 1999	Persons Contacted: Larry Davis
Department WAYSIDE	Auditor: Joey Bigornia			

REFERENCE CRITERIA

1. LR-SOP-87-414, revision 122789B
2. LR-SOP-87-416, revision 020290C

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

TRACK INSPECTIONS

Arbitrarily select not less than 8 consecutive weekly track inspection reports and not less than two years of other track inspection reports to determine whether or not:

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

RESULTS / COMMENTS

Track Inspection Reports

It was determined that the weekly, monthly, and biannual track inspection results are recorded on repair orders prepared by the inspector whether or not a defect was found. There are no specific track inspection forms used to document the different types of inspections conducted.

Reviewed repair orders on file for the period February 1999 to June 1999. Although the repair orders contained the scope of the inspections, defects noted, and repairs performed, they failed to identify the type of inspection conducted (weekly, monthly, or biannual). The type of inspection conducted, however, could be deduced by evaluating the scope of the inspection on each repair order, but this was a cumbersome task. Suggested to the manager-in-charge that SRTD identifying the type of inspection conducted on the records either by developing specific inspection forms for weekly, monthly, and biannual inspections, or by labeling the repair orders.

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Ultrasonic Tests

By the transit agency's standard operating procedures, ultrasonic tests should be performed annually. Reviewed the ultrasonic test report file for the past 5 years. Found that there were no test records for the years 1996, 1997, and 1999. Ultrasonic tests reports for 1995 and 1998 showed that there were no defects found. Was told by the manager-in-charge that the department is in the process of revising the frequency of ultrasonic testing from annual to biennial.

Recommendation:

Determine the frequency of ultrasonic testing, update the standard operating procedure if needed, and follow the procedure on a routine basis.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	19	Date of Audit : June 22, 1999	Persons Contacted:
Department WAYSIDE		Auditors: Joey Bigornia	Larry Davis

REFERENCE CRITERIA

1. LR-SOP-87-413, revision 082093-D: Turnout Inspection
2. LR-SOP-89-406, revision 110393-B: Power Switch Quarterly Inspection
3. LR-SOP-91-424: Disconnect Switch Operation

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

MAINLINE SWITCHES INSPECTIONS

Review SRTD's file of completed Mainline Switch Inspection reports (weekly, bi-weekly, quarterly) for not less than five randomly selected switches for 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 Turnout Inspection Forms and in the Quarterly Switch Inspection Reports
3. noted defects were corrected in a timely manner

RESULTS / COMMENTS

Selected three mainline power switches (N-21, N-41, & N-61) and three mainline non-powered switches (F-101, F-111, & F-113) and reviewed the weekly, bi-weekly, and quarterly inspection records for the past 12 months.

The review of the records showed that all of the required inspections were performed at the required frequency and were properly documented. Defects found during the inspections were corrected in a timely manner and were also adequately documented.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	20	Date of Audit: June 24, 1999	Persons Contacted:
Department	WAYSIDE	Auditor: Joey E. Bigornia	Larry Davis

REFERENCE CRITERIA

LR-SOP-90-410, Rev. No. 110393-B Dated 11/03/93

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

INTERLOCKING TESTS

Randomly select not less than three interlockings and review the associated inspection and test reports (monthly and quarterly) for the past 2 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 were satisfactorily completed and documented in the appropriate test reports
3. noted defects were corrected in a timely manner

RESULTS / COMMENTS

Selected the following mainline interlockings (N37RC, N41RC, & N61RC) and reviewed the monthly inspection reports dated June 1997 to June 1999. The review showed that the required monthly inspections were conducted at the specified frequency and the results were properly documented. The records also showed that all defects have been corrected in a timely manner.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	-21	Date of Audit: June 24, 1999	Persons Contacted: Larry Davis
Department WAYSIDE		Auditor: Joey E. Bigornia	

REFERENCE CRITERIA

LR-SOP-86-408, Rev. 110393 Dated 11/03/93

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

GRADE CROSSING PROTECTION

Review SRTD's file of completed grade crossing protection inspection reports for at least 3 randomly selected grade crossings for the past 12 months to determine whether or not:

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

RESULTS / COMMENTS

Reviewed procedure (LR-SOP-86-408) for the subject inspections. The review showed that only monthly inspections are specified in the SOP. The manager-in-charge, however, has expanded the inspections program to include quarterly and annual inspections are well.

Reviewed the monthly, quarterly, and annual grade crossing reports for Evergreen-West, Evergreen-East, and Roseville Road grade crossing dated January 1998 to June 1999. The review showed that all of the monthly, quarterly, and annual inspection reports were properly documented and that noted defects were addressed in a timely manner.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	22	Date of Audit: June 25, 1999	Persons Contacted:
Department WAYSIDE		Auditors: Joey E. Bigornia Raed Dwairi	Larry Davis

REFERENCE CRITERIA

LR-SOP-91-422, Rev. 111693-A Dated 11/16/93

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

VITAL RELAYS

Randomly select at least four vital relays. From a combination of procedure and record reviews, as well as visual inspections of the selected items, determine whether or not:

1. the vital relays are properly controlled and tested at prescribed intervals as required by applicable procedures
2. vital relays found defective are immediately replaced
3. vital relays have been marked, tagged or otherwise identified to show their calibration status
4. test equipment is calibrated as required in the reference criteria

RESULTS / COMMENTS

Selected two vital relays from the Roseville Road grade crossing signal case (SXSR and EOR) and two vital relays from Interlocking 21RC (N736NBA1R and 20ASR). Records for the past four years were reviewed for the 4 selected relays.

Results of the review showed that the records for the relays were satisfactory. Field inspection of the relays established that all relays were properly marked, tagged, and identified.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	23	Date of Audit: June 23, 1999	Persons Contacted:
Department	WAYSIDE	Auditors: Joey E. Bigornia Raed Dwairi	Larry Davis

REFERENCE CRITERIA

1. LR-SOP-86-405, Dated 11/26/86 : Traction Power OCS-Quarterly Inspection
2. LR-SOP-89-421, Dated 07/26/89 : RT Metro O.C.S. - Disconnect Switch Operation

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

OVERHEAD CATENARY SYSTEM

Review SRTD's file of completed Overhead Catenary System (OCS) Inspection reports prepared during the past 2 years to determine whether or not:

1. the 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

Selected three sections of overhead catenary system (Watt/180 tail track to SW21, Marconi to North Yard Limit I/B, and Royal Oaks Station to Del Paso O/B) and reviewed the overhead contact system quarterly inspection reports dated June 1997 to June 1999.

The review showed that all of the required quarterly inspection reports were properly documented and that noted defects were addressed in a timely manner.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	24	Date of Audit	June 21, 1999	Persons Contacted: Larry Davis William Metcalf
Department WAYSIDE	Auditor: Joey Bigornia			

REFERENCE CRITERIA

1. 49 CFR Part 234 212.231
2. 49 CFR Part 236
3. PUC G.O. 143A Section 10.01b
4. Electrical Safety Order : Article 1- Definition; Article 36- Work Procedures
5. SRT Traction Power Substation Training, 3-25-97
6. SRT Overhead Contact System Staff Training Program, 6-96
7. Lineman Certification Program, 10-9-89
8. Trackworker Qualification Exam.

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

RAIL MAINTENANCE WORKERS and LINEMAN INSPECTOR QUALIFICATIONS

Obtain a copy of SRTD's list of qualified rail maintenance workers and lineman inspectors.

Randomly select 3 inspectors from each category and then review the training and examination records for those selected to determine whether or not they are qualified.

RESULTS / COMMENTS

It was determined that there is no formal standard operating procedure that identifies the training and certification requirements of rail maintenance workers and lineman inspectors. However, a training record is available on file for each maintenance worker that identifies the initial, annual, biennial, triennial and specialized training that each individual has received.

Reviewed initial training and certification records for three rail maintenance workers and three lineman inspectors. Additionally, reviewed annual, biennial, and triennial training records for the same group of workers from 5/87 to the present.

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The annual training records showed that all six workers were overdue by 2 years for CPR and MSDS, overdue by 5 years for Respirator Fit/Use, and overdue by 2 to 6 years for High Voltage Electrical Safety.

Recommendation:

1. Develop a formal directive (addition to the SSPP or SOP) to clearly define the scope of training, frequency of training for the different training elements, and the requirements for certification, for each classification of wayside worker. Additionally, ensure that all elements of the training are routinely conducted within the period specified in the directive.

**CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT**

Checklist No.	25	Date of Audit	June 29, 1999	Persons Contacted: Larry Davis
Department WAYSIDE	Auditors: Raed Dwairi Len Hardy CPUC Inspectors: Joe Farley (Track) Bill Mealor (Signal)			

REFERENCE CRITERIA

1. Code of Federal Regulations CFR 49, Part 213
2. LR-SOP-91-424, Dated 09/25/91

ELEMENT / CHARACTERISTICS AND METHOD OF VERIFICATION

TURNOUT INSPECTION - CPUC INSPECTORS

Randomly select a minimum of three mainline turnouts (at no less than two different locations on the system) and utilizing the services of a FRA certified track inspector perform a detailed visual inspection and dimensional measurement inspection to determine whether or not the selected items are in compliance with SRTD's track maintenance standards. Additionally, using the services of a FRA certified signal inspector perform an adjustment and functional check of at least one switch machine for each of the turnouts selected.

RESULTS / COMMENTS

PUC employees, Mr. Joe Farley (FRA certified track inspector) and Mr. Bill Mealor (FRT certified signal inspector) inspected three turnouts (N-35, N-33A, and N-21).

The following elements were checked at each turnout:

- Gage ahead of switch points, behind switch points, at frogs, at guard rails, and at various arbitrary locations throughout the turnout
- Surface ware of tracks, switch points, guard rails, and frogs
- Condition of fasteners and clips for track, switches, guard rails, and frogs
- Switch lock rod adjustments (obstruction test)
- Switch detector rod adjustment

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