PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Consumer Protection and Safety Division
Rail Transit Safety Section

Resolution ST-58
January 16, 2003

R E S O L U T I O N

RESOLUTION ST-58. GRANTING APPROVAL OF A FINAL REPORT OF A SAFETY AUDIT OF THE SACRAMENTO REGIONAL TRANSIT DISTRICT PERFORMED BY THE RAIL TRANSIT SAFETY SECTION

Summary

This resolution approves the Consumer Protection and Safety Division's final audit report titled, "Triennial On-Site Safety Audit of the Sacramento Regional Transit District," dated December 18, 2002. Sacramento Regional Transit District is ordered to implement the recommendations contained in the report and to provide quarterly progress reports to the Consumer Protection and Safety Division.

Background

Commission General Order No. 164-B, "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.

Staff of the Rail Transit Safety Section of the Commission's Consumer Protection and Safety Division conducted an on-site, safety audit of the Sacramento Regional Transit District's (SRTD) light rail transit system during the period from June 24 to June 28, 2002.

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 Attachment 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. Seven checklists contain recommendations

Protests

On September 18, 2002, staff provided SRTD with the preliminary draft triennial audit report. The letter directed attention to the draft recommendations and requested SRTD to review and comment on the report within thirty-days (30).

On October 17, 2002, SRTD provided staff with one (1) comment regarding the draft audit report. SRTD disagreed with the report's identification of a nonconforming condition regarding Rule 74.4-F of General Order 95. SRTD stated that Rule 74.4-F of General Order 95 does not apply to conductor dead ends and terminations of constant tension catenary. In making this comment, SRTD concurred with the position taken by the General Order 95 Trolley Ad Hoc Sub Committee, transmitted in a September 12, 2002 letter to Commission staff, on the inapplicability of the aforementioned Rule to conductor dead ends and terminations.

Discussion

By a letter dated October 17, 2002, staff responded to the General Order 95 Trolley Ad Hoc Sub Committee stating that Rule 74.4-F does apply to terminations and dead ends since these are included in the definition of suspensions or fastenings. Staff also stated that Rule 74.4-F does not contain an exception for dead ends or terminations as it applies to all parts of an overhead contact conductor including its "dead ends and

terminations". Staff discussed the letter with SRTD, as well as, SRTD's comment regarding General Order Rule 74.4-F.

On November 15, 2002, staff reached an agreement with SRTD regarding the aforementioned recommendation. SRTD agreed to develop and implement a plan to achieve conformance with General Order 95, Rule 74.4-F.

Staffs of both the SRTD and the Rail Transit Safety Section were able to reach full agreement on all the recommendations. SRTD will perform the necessary follow up actions to assure that the recommendations in seven 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 no later than 60 days from the effective date of this resolution. In addition, no later than 90 days from the submission of its implementation plans and schedules, SRTD will provide the staff of the Rail Transit Safety Section with its first quarterly status report. Thereafter, additional quarterly reports will continue until all recommendations are fully implemented. These quarterly status reports will include updates that show the work completed and the work remaining for each recommendation.

The Consumer Protection and Safety 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 December 18, 2002. It is also recommended that the Commission order SRTD to:

- Submit a report to the Rail Transit Safety Section containing plans and schedules for implementing the recommendations contained in seven of the checklists.

- Implement all recommendations in accordance with the plans and schedules submitted.

- On the first day of each quarter, provide the Rail Transit Safety Section with quarterly reports on the status of the recommendations until all recommendations are fully implemented.

Comments

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

Public Utilities Code Section 311(g)(2), the otherwise applicable 30-day period for public review and comment is being waived.

Therefore, IT IS ORDERED that:

1. The Consumer Protection and Safety 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 December 18, 2002, is granted.

2. 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 no later than 60 days from the effective date of this resolution.

3. Sacramento Regional Transit District (SRTD) shall implement all recommendations contained in the report, in accordance with the plans and schedules submitted to the Rail Transit Safety Section staff.

4. SRTD shall prepare and submit quarterly status reports to the Rail Transit Safety Section. These reports shall contain detailed information on the implementation of all recommendations contained in the final audit report. The first of these reports shall be due no later than 90 days from the date SRTD submits its implementation plans and schedules. Thereafter, quarterly status reports shall continue to be submitted until all recommendations are fully implemented.

5. This resolution is effective today.

I certify that this resolution was adopted by the Public Utilities Commission of the State at its regular meeting in California held on January 16, 2002. The following Commissioners voting favorably thereon:

WESLEY M. FRANKLIN
Executive Director

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

FINAL REPORT

December 18, 2002

PREPARED BY:

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

MEMORAMDUM

The California Public Utilities Commission's Rail Transit Safety Section conducted the audit.

Auditors:

Raed Dwairi, Team Leader

Joey Bigornia

Anton Garabetian

Mahendra Patel

Gary Rosenthal

CALIFORNIA PUBLIC UTILITIES COMMISSION

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

INTRODUCTION

The Rail Transit Safety Section (Staff) of the California Public Utilities Commission's (Commission) Consumer Protection and Safety Division conducted the second triennial, on-site, safety audit of the Sacramento Regional Transit District (SRTD) from June 24 to June 28, 2002.

The Commission's General Order (GO) No. 164-B and the Federal Transit Administration's (FTA) Final Rule, 49 Code of Federal Regulations 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. System safety programs are reviewed by the Commission before being adopted and are the blueprint for transit agency safety activities.

The audit results show that SRTD has the organizational structure and controls in place to operate its rail system safely. The 2002 audit verified that the 1999 audit recommendations were fully implemented. The audit also revealed a need for improvement in 6 of the 25 areas examined. SRTD personnel agreed with Staff's recommendations. Implementation of this audit's recommendations will enhance the safety and reliability of the rail system at SRTD.

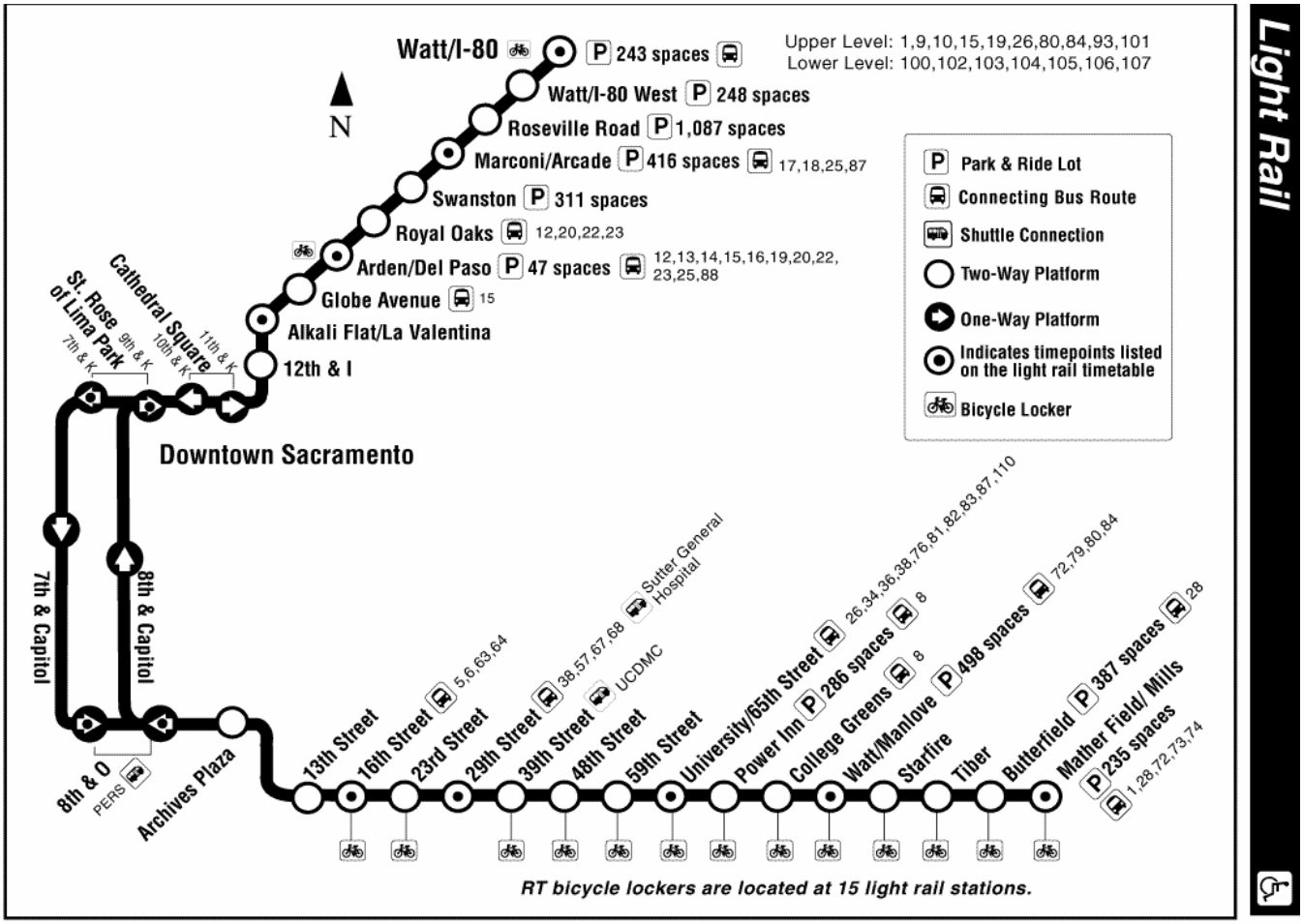
SYSTEM PROFILE

The Sacramento Regional Transit District (SRTD) operates 20.6 miles of light rail, from 4:30 a.m. to 1:00 a.m. daily, with service every 15 minutes during the day and every 30 minutes in the evening. Passenger amenities include 30 light rail stops or stations, nine light rail transfer centers, and 10 free park-and-ride lots. Annual ridership on the light rail system averages about 29,000/weekday.

SRTD is governed by a seven-member Board of Directors comprised of members of the Sacramento City Council and the Sacramento County Board of Supervisors. The fiscal year 2001-02 operating budget (both bus and rail) is $88.9 million, with a capital program of $33.9 million.

As light rail ridership continues to increase, SRTD is extending the rail system. SRTD completed its first light rail extension in September 1998 with the opening of the Mather Field/Mills station. By the end of 2004 the light rail system will be 39 miles long with 18.4 miles of new track to the city of Folsom, the Sacramento Amtrak station and Meadowview Road in south Sacramento.

SRTD LIGHT RAIL SYSTEM MAP



Folsom Extension

The Amtrak/Folsom light rail extension will begin at the newly completed Mather Field/Mills station and will extend light rail into the city of Folsom. This project also includes the half-mile downtown Sacramento extension to the Sacramento Amtrak Depot where light rail will connect with Amtrak inter-city and Capitol Corridor service as well as local buses and commuter buses. It is scheduled to be operational in December 2004.

South Sacramento Extension

The South Sacramento Corridor Project is a 6.3-mile extension south of the downtown area. It is scheduled to be operational by September 2003. This new line is expected to increase daily light rail ridership by 15,000 passengers by 2015.

PROCEDURE

The audit was conducted in accordance with the Commission's procedure RTSS-4, Procedure for Performing Triennial Safety Audits of Rail Transit Systems. Staff developed the criteria, to evaluate the various departments with system safety responsibilities, using FTA and American Public Transit Association guidelines and the staff's knowledge of the transit system. Each set of criteria became a checklist and was used to document the audit.

Each checklist identifies the safety-related elements and characteristics, the SRTD reference documents that established the acceptance requirements, and the method that Staff used for evaluating compliance with the requirements. The methods used include:

- 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

We used 25 checklists for the audit. The checklists concentrated on

requirements that affect the safety of train operations, and that are known or believed to be important to reducing safety hazards and preventing accidents (See Appendix A for a list of the checklists).

In designing the checklists for the 2002 audit, the corrective actions implemented as a result of the 1999 audit recommendations were a key consideration. The corrective actions taken in response to the 1999 audit recommendations either involved the completion and approval of procedures that were in draft form at the time of the 1999 audit, or the development and implementation of new programs that clearly identify certain departmental requirements. It was therefore important that the 2002 triennial safety audit reexamines these areas to gauge the effectiveness and proper implementation of these revised procedures and newly developed programs.

STATUS OF THE 1999 AUDIT RECOMMENDATIONS

Staff conducted the first triennial, on-site, safety audit of SRTD from June 21 to June 29, 1999. This audit was conducted in accordance with the same procedures outlined above and resulted in Resolution ST-43. Resolution ST-43 ordered SRTD to develop an appropriate corrective action plan and implementation schedule to carry out 16 recommendations and to advise the Staff of SRTD's progress through semi-annual reports.

SRTD submitted the first semi-annual progress report in January 2000 and followed it with timely submissions in January and July of each following year until the recommendations were fully implemented in March, 2002. The individual reports included evidence showing the completion of corrective actions satisfying the recommendations. Completion of corrective actions was also verified during the Year 2002 audit.

YEAR 2002 AUDIT FINDINGS

The majority of documents reviewed, activities observed, and items inspected complied with the requirements of SRTD's System Safety Program. The audit revealed 6 of the 25 areas examined needed improvement. The findings for each element/characteristic audited are summarized below, broken out by SRTD

department (See Appendix C for the complete checklists). Based upon the audit findings, recommendations for improvement to the SRTD system safety program were presented to the SRTD staff at the post audit exit meeting. Staff recommendations are included below and are separately attached as Appendix B.

Wayside Maintenance:

The Wayside Maintenance Department is responsible for the maintenance of track, traction power (Overhead Contact System and Substations), and wayside signaling (both Manual Block Signal and Automatic Block Signal systems).

Findings – Conforming Conditions

1. The adjustment and functional check of track switches found no exceptions.
2. No exceptions were found with the reflective striping on crossings gate arms, alignment of flashing lights, and on-gate voltages in both the AC and DC (stand-by) mode operations.
3. No exceptions were found in the vertical clearance and insulation requirements of GO 95 when the Overhead Contact System (OCS) was inspected.
4. No exceptions were found when reviewing OCS maintenance records for the years 2000, 2001, and 2002. Inspections were documented properly and noted defects were corrected as required.
5. No exceptions were found when reviewing substation maintenance records for the last three years. Inspections were documented properly and noted defects were corrected as required.
6. No exceptions were found when reviewing circuit controller inspection records at switches 111 and 113 for the last three years. Inspections were documented properly and noted defects were corrected as required.
7. No exceptions were found when reviewing Automatic Block Signal vital relay records prepared during the last three years for the five gated crossings selected. Inspections were documented properly and noted defects were corrected as required.
8. No exceptions were found when reviewing track inspection records prepared during the last two years. All required track inspections (weekly, biannual, and

biennial ultrasonic) were performed at the required frequencies and noted defects were corrected as required.

9. No exceptions were found when reviewing signal and relay case inspections records prepared during the years 2000, 2001, and 2002. Inspections were performed at the required frequencies, documented properly, and noted defects were corrected as required.
10. No exceptions were found when reviewing the initial training, biennial training, and triennial training requirements of the agency's lineworker certification program. Staff also verified that the agency complied with the 1999 audit recommendation of developing a lineworker certification program by the issuance of LR-SOP-01-425 that became effective on March 5, 2001.

Findings – Non-Conforming Conditions

11. Current OCS design and construction is in violation of Rule 74.4-F of GO 95. The nature of this violation is such that it makes it possible for live conductors to come within unsafe distances in the case of a failure of a single suspension.
12. An exception was noted in the Material Data Safety Sheet (MSDS)/Hazardous Materials annual training requirement of the lineworker certification program. No records were found for this training element after 1997. This was also found when auditing Hazardous Materials Programs/ Environmental Management and will therefore be treated through the recommendation that appears in the section concerning the Safety Department.
13. The same exception in item 12 above was also recorded against the rail worker certification program resulting in a recommendation that will also be treated through the recommendation issued to the Safety Department.

Recommendation

1. Develop and implement a plan to correct achieve conformance with GO 95, Rule 74.4-F, Overhead Trolley Contact Conductors. (Checklist No. 3)

Safety Department:

The department is responsible for the annual internal safety audit program,

accident investigations, on-track safety training, and hazardous materials management.

Findings – Conforming Conditions

1. No exceptions were noted when reviewing the annual internal safety audit reports for the years 1999, 2000, & 2002. SRTD developed its internal audit program (SA-SOP-01-007) in compliance with the findings and recommendations of the 1999 CPUC triennial audit. All the required elements were audited and satisfactorily completed.
2. No exceptions were noted in the accident notification, reporting, and investigation responsibilities of SRTD.
3. No exceptions were noted in SRTD's performance and documentation of the ongoing safety certification activities for both the new LRV procurement and the South Sacramento extension projects.
4. Respirator use training was provided as required by the Injury Prevention Plan in January 2001. Safety Department had the proper documentation records for this training. Hazard communication, MSDS and spill response training was last provided in January 1996 as required and the Safety Department had the proper documentation records for this training.

Findings – Non-Conforming Conditions

5. No documentation was found to show that the required hazard communication, MSDS, and spill response training were provided beyond January 1996.
6. No documentation was found to show that new employees received the required training within six months after their employment or assignment to a new position at the facility. Nor was documentation found showing whether the area manager/supervisor provided the required annual refresher training. Staff found the Human Resources Department and the Safety Department failed to adequately communicate information pertaining to the hiring of new employees or the reassignment of employees to new positions. This information is needed in order for the Safety Department to provide the training required by the agency's

Hazardous Material Management Plan.

7. No controls currently exist to ensure that the training programs developed and utilized by the Training Section of the Human Resources Department are reviewed by the Safety Department for adequate safety content. This non-conforming finding along with those mentioned above negatively impact the effectiveness of the hazardous materials program at SRTD.

Recommendations

1. SRTD should ensure that:
   a. All new employees complete their Hazardous Material Training within six months of their employment or assignment to a new position at the facility,
   b. The area manager/supervisor provides the required annual refresher Hazardous Materials (including MSDS) Training,
   c. The programs developed by the Training Department, which affect the Hazardous Materials/Environmental Management area, are reviewed by the Safety department for adequate safety content, and
   d. A formal procedure is developed to make certain Training and Safety Departments are aware of all new employees and employee assignments to new positions (Checklist No. 12, also affects Nos. 24 & 25).

Vehicle Maintenance:

The Vehicle Maintenance Department is responsible for the regular inspection and repair of the light rail vehicle (LRV) fleet at SRTD.

Findings – Conforming Conditions

1. No exceptions were recorded when visual inspections were performed to check on the condition of safety appliances such as brake systems, coupling mechanisms, and truck/wheel components. The maintenance records reviewed indicated that inspections were regularly performed and work orders closed out in a timely manner.
2. No exceptions were found when the maintenance records of three randomly

selected LRV's were reviewed. The required inspections were performed regularly, documented properly, and noted defects closed out in a timely manner. Further, we verified that the 1999 recommendation of ensuring the completion of Section XII of the mileage-based inspection forms was fulfilled.

3. No exceptions were noted when examining the Calibration Program (LR-SOP-01-224 became effective February 2, 2001 and specifies an annual calibration frequency interval). Proper calibration certificates were found for the equipment selected showing that the equipment was calibrated in 2001 and again in May 2002. The next calibration date for all equipment is in May 2003.
4. No exceptions were noted in the LRV Maintenance Employee Training Program (LR-SOP-00-226) that became effective in September 2000 as a result of the 1999 triennial audit. The training records of selected employees showed that they were trained in compliance with applicable procedures.

Engineering Department:

The department is responsible for the design, construction, project and configuration management activities at SRTD.

Findings – Conforming Conditions

1. SRTD Document Control Procedure #7 (DC-7), which was developed in response to the 1999 audit, is being followed. Design documents are scanned and stored in a computer program (Application Extender) which can be accessed by project personnel. Design Change Notices (DCN) are developed for design changes and design drawings are revised accordingly and issued to the Construction Manager for implementation of the change. A Contract Change Order Log is maintained to document all contract change orders. An audit of two randomly selected safety critical contract change orders and their documentation verified that the procedure was followed.

Findings – Non-Conforming Conditions

2. No documentation was found to show that the work plans addressing the issues

raised by the Safety Configuration Management Review Committee (S/CMRC) were completed, documented and returned to S/CMRC for final approval. Safety related decisions taken by management should be documented.

Recommendation

1. SRTD should ensure that thorough documentation exists showing that all change requests reach a clear closure. (Checklist No. 8)

Human Resources:

This department is responsible for employee recruitment, training, and the administration and enforcement of the Drug and Alcohol policies at SRTD.

Findings – Conforming Conditions

1. Drug and alcohol policies of SRTD were precisely applied to the only two rail employees who tested positive for illegal drugs or misuse of alcohol since 1995. Evaluation of the records of these employees showed that only one of them was allowed to return to duty after the successful completion of the prescribed rehabilitation program and a verified negative return-to-duty test. In the first year since returning to duty, this employee was randomly tested thirteen times. At the time of the audit, this employee had just completed the yearly follow up program with no positive results. No exceptions were noted.

Police Services Unit:

The department is responsible for the security of the light rail agency. It gathers and reviews transit crime reports, and identifies security breach causes to recommend additions or changes to policies and procedures.

Findings – Non-Conforming Conditions

1. No documentation was found that shows security breach trend analysis, resulting in mitigating actions, was performed. SRDT explained that significant variables associated with security incidents change so frequently, that long-term data

collection and trend analysis are not useful tools in 1) predicting future needs and 2) establishing appropriate corrective actions. SRDT believes the most effective way to respond to any security incident is to investigate and analyze the facts so that appropriate corrective actions can be determined and implemented as soon as possible. This viewpoint is not consistent with the agency's existing System Security Program Plan, revised February 1999, that was subsequently filed with the Commission.

Recommendation

1. SRTD should carefully and promptly evaluate its data collection and trend analysis policies to determine its current needs. SRDT should report the results of this evaluation to staff. The report should describe the scope of the evaluation, the methodology utilized, the findings, a discussion of the findings, conclusions and recommendations for any changes to the SRTD System Security Program Plan. If any proposed changes deviate from the Commission's requirements, SRTD should secure authority from the Commission before those changes are implemented. (Checklist No. 10)

Light Rail Operations:

This department oversees all aspects of safely operating current light rail system, supports operational training of rail employees, and ensures compliance with all operations procedures

Findings – Conforming Conditions

1. SRTD Operations personnel meet on quarterly basis with the Sacramento Fire Department and have conducted emergency response drills with the SWAT team.
2. Operator training records were found to be in compliance with the agency's record keeping requirements and the training and certification requirements of General Order 143-B.
3. No exceptions were noted with the hours of services requirements of General

Order 143-B. None of the eight train operators selected worked in excess of twelve hours during any twenty four hour period and each had at least eight hours off duty prior to beginning work.

Findings – Non-Conforming Conditions

1. No documentation was found to indicate that emergency response exercises were carried out with the participation of the Sacramento City Police, Sacramento County Sheriff, Metro Fire, and Sacramento City Fire since 1998 as required by the Emergency Response Plan of SRTD. These exercises are important to identify any inadequacies that may exist in the emergency response program of transit agencies.
2. The Operations Supervisor and Controller Training Program was found to be in need of further formal structuring actions. This is particularly needed in light of the continuing expansion of the system and training needs of both controllers and supervisors.

Recommendations

1. SRTD should develop and implement a program which effectively schedules, plans, and carries out emergency drills on a regular basis, at least annually, with the participation of the appropriate or affected emergency responders. (Checklist No. 11)
2. SRTD should evaluate the training and certification needs (both current and future) of its operations personnel particularly rail supervisors and train controllers. Based on an analysis of the findings and LR-SOP-99-02929 as a baseline document, SRTD should take appropriate action that should include developing and implementing a formally structured training program for the affected positions. (Checklist No. 13)

COMMENTS AND ANALYSIS

Staff provided a copy of the draft report including the checklists to SRTD personnel. Full agreement has been reached between Staff and SRTD personnel on

the above recommendations.

RECOMMENDATIONS

The Commission should adopt the Staff's report and require SRTD to implement the recommendations contained in this report. For each recommendation, SRTD should prepare and implement a corrective action plan and a schedule that identifies each step of the work to be done, when each step will be done, and the person responsible for completion. This planning and scheduling information shall be provided to the Staff for review and acceptance no later than 45 days from the adoption of this report.

SRTD should provide the Commission staff with quarterly status reports until all work implementing the recommendations is completed. The status reports should include plan and schedule updates that show the work completed since the last report, work remaining for each recommendation, and any changes in schedule with the reason for the change.

Appendix A

CPUC TRIENNIAL SAFETY AUDIT
OF
SACRAMENTO REGIONAL TRANSIT DISTRICT

INDEX OF CHECKLISTS

Checklist No.	Element / Characteristic	Checklist No.	Element / Characteristic
1	Gated Grade Crossings Warning Devices – CPUC Inspector	14	Hours of Service
2	Track Inspection – CPUC Inspector	15	Overhead Contact System
3	Traction Power Inspection – CPUC Inspector	16	Substation Inspections
4	Light Rail Vehicle Inspection – CPUC Inspector	17	Switch Circuit Controller Maintenance
5	Internal Audit Program	18	A.B.S. Vital Relay Inspections
6	Accident / Incident Reporting & Investigation	19	Track Inspections
7	Safety Certification	20	Wayside Signal and Equipment Inspections
8	Configuration Management	21	LRV Maintenance
9	Drug & Alcohol Policy	22	Calibration Program
10	Light Rail Security	23	LRV Maintenance Employee Training
11	Emergency Response	24	Lineworker Certification Program
12	Hazardous Materials Programs / Environmental Management	25	Rail Maintenance Worker Certification Program
13	Light Rail Training, Retraining, and Certification		

Appendix B

CPUC TRIENNIAL SAFETY AUDIT
OF
SACRAMENTO REGIONAL TRANSIT DISTRICT

2002 Recommendations

Checklist 3 – Traction Power Inspection

1. Develop and implement a plan to achieve conformance with GO 95, Rule 74.4-F, Overhead Trolley Contact Conductors.

Checklist 8 – Configuration Management

2. SRTD should ensure that thorough documentation exists showing that all change requests reach a clear closure.

Checklist 10 – Light Rail Security

3. SRTD should carefully and promptly evaluate its data collection and trend analysis policies and needs and provide a report to staff explaining its findings and recommendations for any changes to SRTD System Security Program Plan revised in 2/99. The report should describe the scope of the evaluation, the methodology utilized, the findings, a discussion of the findings, conclusions and recommendations for any changes to aforementioned plan. If any proposed changes deviate from the Commission's requirements, SRTD should secure authority from the Commission before those changes are implemented.

Checklist 11 – Emergency Response

4. SRTD should develop and implement a program which effectively schedules, plans, and carries out emergency drills on a regular basis, but at least annually, with the participation of the appropriate or affected emergency responders.

Checklist 12 - Hazardous Materials Programs/Environmental Management

5. SRTD should ensure that:
   a. All new employees complete their Hazardous Material Training within six months of their employment or assignment to a new position at the facility,
   b. The area manager/supervisor provides the required annual refresher Hazardous Materials (including MSDS) Training,
   c. The programs developed by the Training Department, which affect the Hazardous Materials/Environmental Management area, are reviewed by the Safety department for adequate safety content, and
   d. A formal procedure is developed to make certain Training and Safety Departments are aware of all new employees and employee assignments to new

positions (Checklist No. 12, also affects Nos. 24 & 25).

Checklist 13 – Light Operator Training and Certification

6. SRTD should evaluate the training and certification needs (both current and future) of its operations personnel particularly rail supervisors and train controllers. Based on an analysis of the findings and LR-SOP-99-02929 as a baseline document, SRTD should take appropriate action that should include developing and implementing a formally structured training program for the affected positions.

Checklist 24 – Lineworker Certification Program

7. SRTD should ensure that the area manager/supervisor provide annual refresher training (this language appears in recommendation #5 above).

Checklist 25 – Rail Maintenance Worker Certification Program

8. SRTD should ensure that the area manager/supervisor provide annual refresher training (this language appears in recommendation #5 above).

Appendix C

CPUC TRIENNIAL SAFETY AUDIT
OF
SACRAMENTO REGIONAL TRANSIT DISTRICT

Audit Checklists

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT

Checklist No.	**1**	Persons Contacted
Date of Audit	**5/29/02**	Larry Davis – Superintendent, Wayside Maintenance
Auditors	**Bill Mealor** **Raed Dwairi**	
Department	**Wayside Maintenance**	

REFERENCE CRITERIA

1. LR-SOP-86-408
2. CFR 49 Part 234

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

GATED GRADE CROSSINGS WARNING DEVICES – CPUC INSPECTOR

Utilizing the expertise of a FRA certified signal inspector from the Commission's Railroad Safety Branch, select a minimum of 4 gated crossings and perform detailed inspections to determine whether or not the selected crossings are in compliance with the applicable criteria.

RESULTS/COMMENTS

CPUC employee, Bill Mealor (FRA certified signal inspector) inspected gated grade crossings at the following intersections:

- Routier Rd. & Folsom Blvd.
- Horn Rd. & Folsom Blvd.
- Starfire Rd. & Folsom Blvd.

The scope of the inspections included checking the alignment of the warning lights, checking reflective striping on gate arms, and checking the voltage levels of the warning lights both in normal mode (AC power) and in standby mode (DC battery power).

No exceptions were noted. Signal inspector was impressed with the quality of the gated grade crossings preventive maintenance program at SRTD.

Recommendations:

None.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT

Checklist No.	**2**	Persons Contacted
Date of Audit	**5/29/2002**	Larry Davis – Superintendent, Wayside Maintenance
Auditors	**Tim Pendleton** **Bill Mealor** **Raed Dwairi**	
Department	**Wayside Maintenance**	

REFERENCE CRITERIA

1. Code of Federal Regulations CFR 49, Part 213-Track Safety Standards
2. GO 143-B, Section 14.04-Track Maintenance Practices
3. LR-SOP-91-424

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

TRACK INSPECTION – CPUC INSPECTORS

Randomly select at least two road crossing and two turnout/diamond crossing areas from the track system. Utilizing the expertise of a FRA certified track inspector from the Commission's Railroad Safety Branch, perform detailed visual & dimensional inspections/measurements to determine whether or not all track components within the areas selected are in compliance with the applicable track maintenance standards. Additionally, utilizing the expertise of a FRA certified signal inspector from the Commission's Railroad Safety Branch, perform an adjustment and functional check of at least one switch machine for each of the turnouts selected.

RESULTS/COMMENTS

CPUC employees, Tim Pendleton (FRA certified track inspector) and Bill Mealor (FRA certified signal inspector) inspected six turnouts, two crossovers, and one mile of track just west of the Matherfield Station.

Track Inspections included the following:

- Inspecting track structures (switches, turnouts, and track components such as pins),
- Inspecting track geometry (gauge, surface, and alignment),
- Inspecting the roadbed for both drainage and vegetation,

Signal inspections included the following:

- An adjustment and functional check of the switches associated with the turnouts selected (switches 196A & 199A). This included obstruction and detector rod tests.
- An observation of the way circuit controllers are configured on the switches in the areas selected.

All track and signal inspections were satisfactory with no exceptions noted. Inspectors also noted

that SRTD has an excellent on-track safety program and are always very cooperative with safety related matters pertaining to the shared right-of-way operation with the Union Pacific Railroad.

Recommendations:

None.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT

Checklist No.	**3**	Persons Contacted
Dates of Audit	**5/30/2002 & 7/19/2002**	Larry Davis – Superintendent, Wayside Maintenance Cameron Beach – Chief Operating Officer Alan Storey – Manager, Light Rail Jeff Gualco – Manager, Civil Design
Auditors	**Julian Ajello Raymond Fugere Raed Dwairi**	
Department	**Wayside Maintenance**	

REFERENCE CRITERIA

1. CPUC General Order 95-Rules for Overhead Electric Line Construction
2. GO 143-B, Section 10-Traction Power Requirements, Section 14.06-Traction Power System Inspections
3. LR-SOP-86-405

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

TRACTION POWER INSPECTION – CPUC INSPECTOR(S)

Engineer(s) from the Commission's Utility Safety Branch will randomly select and inspect a minimum of 3 Overhead Contact System (OCS) sections to determine whether or not the sections selected are in compliance with Commission's General Order (GO) 95 requirements and applicable SRTD standards.

RESULTS/COMMENTS

On 5/30/2002, CPUC employee Raymond Fugere, Utilities Engineer of the Utility Safety Branch inspected several sections of the Overhead Contact System (OCS) and found these sections to be in compliance with the clearance and insulation requirements of Commission's General Order (GO) 95. The sections selected are:

- Marconi/Arcade (N-Line)
- Swanston (N-Line)
- Globe Avenue (downtown)
- St. Rose of Lima Park (downtown)
- 8th and O (downtown)
- 48th Street (F-Line)

No exceptions were noted.

On 7/19/2002, CPUC employees Julian Ajello and Raymond Fugere of the Utility Safety Branch inspected the area just east of the Light Rail Yard facilities at 2700 Academy Way and recorded a violation with Rule 74.4-F of CPUC General Order (GO) 95, Rules for Overhead Electric Line Construction which states:

"All overhead trolley contact conductors shall be so supported and arranged that the

breaking of a single suspension or fastening will not allow the trolley conductor, or live span wire, or current carrying connections to come within 10 feet from the ground or from any platform accessible to the general public".

This violation has been recorded against other light rail systems in the State that employ dynamic weight tensioning in their design and construction of the OCS. Some of these systems have experienced failures of the fiberglass rod insulators and live conductors have fallen to the ground or onto trains because of this violation. This is a hazardous design and a serious violation of GO 95, Rule 74.4-F.

Recommendation:

1. Develop and implement a plan to achieve conformance with GO 95, Rule 74.4-F, Overhead Trolley Contact Conductors.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT

Checklist No.	**4**	Persons Contacted
Date of Audit	**5/31/2002**	Vern Barnhardt – Superintendent, LRV Maintenance Barry Fong – Supervisor, LRV Maintenance
Auditors	**Don Miller** **Raed Dwairi**	
Department	**Vehicle Maintenance**	

REFERENCE CRITERIA

1. CPUC GO 143-B Section 14.04-Light Rail Vehicle Maintenance Practices
2. LR-SOP-86-200 through 202

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

LIGHT RAIL VEHICLE INSPECTION – CPUC INSPECTOR

Utilizing the expertise of a FRA certified inspector from the Commission's Railroad Safety Branch, a random selection and inspection of at least four light rail vehicles will be performed to determine whether or not the vehicles selected are in compliance with the applicable maintenance standards of SRTD.

RESULTS/COMMENTS

CPUC employee, Don Miller (FRA certified inspector) inspected Light rail Vehicle (LRV) numbers 105, 118, 122, and 134 at the LRV Maintenance Facilities, 2700 Academy Way.

The scope of inspections included:

- Visual checks of the passenger cab/safety appliances, operator cab/appurtenance, truck/wheel components, traction motors, brake systems, pantographs, and coupling mechanisms,
- Reviews of maintenance records including Operator Report, Daily Bulb Defect Report, Weekly Inspection Reports, and Mileage-Based Inspection Reports,
- Interviews with and observations of workmen during preventive maintenance inspections/repairs of LRV's in the shop,
- Comparisons of Operator Reports against Work Orders, and
- Observation of the operation of an electronic gauge used to measure wheel flange thickness.

No exceptions were noted.

Recommendation:

None.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT

Checklist No.	**5**	Persons Contacted
Date of Audit	**6/25/2002**	Rob Hoslett – Safety Specialist (Acting Safety Manager)
Auditors	**Joey E. Bigornia**	
Department	**Safety**	

REFERENCE CRITERIA

1. SRTD System Safety & Security Master Plan, Revised 1/7/2002, Section 7.2.2 Internal Audits, Page 2A-13
2. SRTD Internal Safety Audit Program Manual, Effective 3/2001
3. SA-SOP-01-007, Internal Safety Audit Program, Dated 04/15/01
4. CPUC General Order 164-B, Section 4 – Internal Safety Audit Requirements, Effective 12/2/9
5. Code of Federal Regulations, CFR 49 Part 659
6. APTA Rail Safety Audit Program, Section 9 - Internal Safety Audit

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

INTERNAL AUDIT PROGRAM

Review the agency's Annual Internal Safety Audit Reports for the years 1999, 2000, and 2001 to determine whether or not the agency's Internal Safety Audit Program complies with the requirements of the reference criteria.

RESULTS/COMMENTS

The 1999 PUC Triennial Audit Recommended that SRTD's Safety Department develop and implement an internal safety audit program using the CPUC checklist in RTSS-5 as a guide. SRTD did not perform an internal safety audit in 1998 and was not in compliance with 49 CFR Part 659 and General Order No. 164-A regarding the requirements at the time of the 1999 Triennial Audit. SRTD has now satisfied the PUC's 1999 recommendation by developing and issuing SRTD Internal Safety Audit Program Manual on March 2001 and SA-SOP-01-007 Internal Safety Audit Requirements dated April 15, 2001 which support the Internal Safety Audit Program.

Requested copies of SRTD's Annual Reports to the Commission for 1999 – 2001 and reviewed each report. The reports contain the checklists used by SRTD to conduct their Internal Safety Audit, a summary of the items that were scheduled for audit, and the status of each internal report. The individual checklists identify the Department audited, contact person(s) interviewed, results of audit, findings if any, and recommendations.

SRTD Safety Department staff tracks recommendations from findings and closure of items through an internal computer database called *Transit Watch.* This program is accessible by the Safety Manager to make revisions and provide updates to any Corrective Actions or Open Action Items.

Each Annual Report was submitted to the Commission staff by February 15th as required by General Order No. 164-B and each report identified the American Public Transit Association (APTA) element that was evaluated for the previous year and the status of item.

SRTD performed each of the required APTA elements as follows:

Audit Year	APTA Element
2000	Facilities Inspections (includes Systems Equipment & Rolling Stock)
1999	Maintenance Audits/Inspections (all systems and facilities)
1999	Rules/Procedures Review
1999	Training and Certification Review/Audit
2001	Emergency Response Planning, Coordination, Training
2001	System Modification Review/Approval Process
2001	Safety Data Acquisition/Analysis
2001	Inter-departmental/Interagency Coordination
2001	Configuration Management
2001	Employee Safety Program
2000	Hazardous Materials Programs
2001	Drug and Alcohol Abuse Programs
2001	Contractor Safety Coordination
2001	Procurement
2001	Security

SRTD has completed their review of the APTA elements in accordance with the APTA Rail Safety Audit Program, Manual for the Development of Rail Transit System Safety Program Plans within the 3-year period required and will begin the second cycle of Internal Safety Audits in Year 2002. No exceptions were noted.

Recommendation:

None.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE

SACRAMENTO REGIONAL TRANSIT DISTRICT

Checklist No.	**6**	Persons Contacted
Date of Audit	6/25/2002	Rob Hoslett - Safety Specialist (Acting Safety Manager) Bill Metcalf – Transportation Superintendent
Auditors	**Joey E. Bigornia**	
Department	**Safety**	

REFERENCE CRITERIA

1. SRTD System Safety & Security Master Plan, Revised 1/7/2002, Section 5.2.5.1 (Page 2A-8) & Section 5.2.5.2 (Page 2A-9)
2. SA-SOP-00-006, Rail Accident Investigation Procedure, Dated 02/15/01
3. CPUC General Order 164-B, Sections 5 & 6, Effective 12/2/99
4. Code of Federal Regulations, CFR 49 Parts 659.41 Investigations & 659.43 Corrective Actions
5. APTA Rail Safety Audit Program, Section 8 – Accident/Incident Reporting & Investigation

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

ACCIDENT/INCIDENT REPORTING & INVESTIGATION

Review of the agency's accident investigation records to determine whether or not the agency complied with the requirements of the applicable reference criteria.

RESULTS/COMMENTS

Reviewed copies of SRTD's Accident Reports for Year 2001 kept on-file at the Safety Department. There were 5 accidents that were initially reported to the Commission's designated Rail Transit Safety Section staff representative to SRTD as "immediately reportable" types of accidents in accordance with G.O. 164-B requirements. The accidents reported are as follows:

1. January 4, 2001: 12th Street and North B Street
2. January 5, 2001: Arden / Del Paso Station
3. January 21, 2001: 7th Street & Capitol Avenue
4. July 24, 2001: 12th Street & Ahern
5. December 1, 2001: Starfire Station

Commission staff was notified of these accidents within the 4-hour requirement by voice mail followed by a Form "R" generated by SRTD Safety Department. Each accident was classified by SRTD's Safety Manager as "injury" type based upon information initially known at the time of the accident.

SRTD's Safety Manager later determined that 4 of the 5 accidents were considered "minor " and the Commissions' designated representative was notified by Form T & V end of the month submittals also required by G.O. 164-B. The LRV-Pedestrian Accident on December 1, 2001 at the Starfire Station resulted in a "**serious injury**" as reported by SRTD Safety Department and was the only accident for Year 2001 that required an Accident Investigation Report submittal according to SRTD's Rail Accident Investigation Procedure dated 02/15/01.

Reviewed SRTD's Accident Investigation Report for the December 1, 2001 Starfire Station transmitted to the Commissions' designated representative on January 18, 2002. The Final report included documentation detail for the probable cause, investigation notes, light rail vehicle maintenance data reviewed, Wayside Maintenance data review, recommendations, and one recommendation of discipline assessed upon the train operator. The recommendation for discipline upon the train operator was implemented on January 7, 2002 and therefore closed out the Accident Report.

No exceptions were noted.

Recommendation:

None.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT

Checklist No.	**7**	Persons Contacted
Date of Audit	**06/27/02**	Rob Hoslett – Safety Specialist (Acting Safety Manager)
Auditors	**Mahendra Patel**	
Department	**Safety**	

REFERENCE CRITERIA

1. SRTD System Safety Program Master Plan, Revised 2/1999, Chapters 6 & 7
2. APTA Element #22 – Construction Contractor Operations, Element 23-Procurement, Element 15 – System Modification/Approval Process, Element 7-Hazard Identification/Resolution Process, Element 13-Training, Element 18-Configuration Mgmt/Control
3. SRTD Safety Certification Program, Revised January 2001

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

SAFETY CERTIFICATION

For the ongoing South Sacramento extension and new LRV procurement projects, determine through review of relevant documentation and interviews with the manager-in-charge, whether or not the applicable safety certification program tasks were performed and documented as required by the reference criteria.

RESULTS/COMMENTS

The agency has prepared "Volume 1 Integrated Test Plan" (Draft No. 3 dated March 29, 2002) as a part of South Sacramento Corridor Project Integrated Testing Program. This document is put together by PGH Wong Engineering, Inc. and describes the Integrated Testing Plan including objectives, testing, methodology, work plan, schedule, organization chart, responsibilities, program management and controls, and comprehensive test summaries for each integrated test. The safety manager stated that this is not an approved plan yet, but would be approved by engineering in the near future. The auditor suggested that the approved Integrated Test Plan should have a signature sheet.

The safety manager also stated that the agency is in the process of hiring an outside consultant to assist in the completion of the safety certification of the South Line light rail extension, the new light rail vehicles, and the modifications to the existing fleet of light rail vehicles. He presented the auditor a draft contract for this. The auditor suggested that the agency should ensure that the consultant follows the requirements of Agency's System Safety Master Plan and Safety Certification Program in the safety certification process.

The auditor reviewed the documentation pertaining to Preliminary Safety Report, Fault Tree Analysis, Preliminary Hazard Analysis, and Failure Modes and Effects Analysis between CAF (CONSTRUCCIONES Y AUXILIAR DE FERROCARRILES, S. A.) and LTK Engineering Services for the new LRV procurement projects. The documentation was found to be adequate as required by the reference criteria. No exceptions noted.

Recommendation:

None.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT

Checklist No.	**8**	Persons Contacted
Date of Audit	**06/27/02 & 06/28/02**	Dave Conover, Project Manager Art Chan, Program Control Manager John Segerdell, Engineering Manager Gene Miller, Project Integration Coordinator
Auditors	**Mahendra Patel**	
Department	**Engineering**	

REFERENCE CRITERIA

1. Procedure DC-7: Document Control Procedures, Drawing/Document Revision Release Control, Dated 10/1/99.
2. PC-SOP-96-001: Configuration Management, Dated 04/30/96
3. SRTD System Safety Program Master Plan, Revised 2/1999, Section 5.2.2 (Page 2A-7)
4. APTA Element #18 – Configuration Management

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

CONFIGURATION MANAGEMENT

Track a sample of changes introduced to the ongoing South Sacramento extension project to determine whether or not the agency complied with its Configuration Management & Document Control procedures.

RESULTS/COMMENTS

The agency stated that Application Extender (software program) is extensively used for documentation. Documents are scanned and stored in this program and can be accessed by any project personnel. Original documents are kept at the affected sites and copies are distributed as required. Any required information can be lifted off the stored document into a database. For any design change, a Design Change Notice (DCN) is developed and design drawings are revised as applicable and issued to construction manager for implementation of the change. Entranco is the construction contractor for the South Sacramento extension project. Contract Change Order Log is used to document all contract change orders. Entranco has its own Construction Management Manual. The auditor reviewed Section 5 (Construction Management Quality Assurance Plan Quality Program), Section 9 (Change Control Procedures), and Section 11 (Document Control) of this manual and found that the manual follows the requirements of SRTD Procedure No. DC-7 (Document Control Procedures). The auditor reviewed the documentation of two safety critical contract change orders and found that the agency complied with the reference criteria.

The auditor reviewed Safety Configuration Management Review Committee (S/CMRC) meeting notes of January 24, 2000 meeting. Seven Configuration Management Change Requests were reviewed in this meeting. The auditor found that the reference criteria requirements are generally followed for SCMRC meeting. S/CMRC action involved approval, conditional approval, approval in concept, or deferral of the change request as applicable. However, no documentation was found to show that the provisions stipulated by S/CMRC actions were successfully addressed to a closure.

- No documentation was found to show that the work plans addressing the issues raised by the S/CMRC action for a configuration management change request were completed, documented and taken back to S/CMRC for final approval.

Recommendations:

- SRTD should ensure that thorough documentation exists showing that all change requests reach a clear closure.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT

Checklist No.	**9**	Persons Contacted
Date of Audit	**June 26, 2002**	Dan Bailey, Employee Relations Manager Mariza Montung, Administrative Assistant II
Auditors	**Gary Rosenthal**	
Department	**Human Resources**	

REFERENCE CRITERIA

1. CFR 49 Parts 653, 654 & 655
2. CPUC GO 143-B Section 12.03 Use of Alcohol, Narcotics, or Drugs
3. SRTD Drug & Alcohol Program

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

DRUG & ALCOHOL POLICY

For each rail transit employee who tested positive for drugs or alcohol in the period between July, 1999 to present and who is also currently employed in a safety sensitive position, review the appropriate records to determine whether or not:

1. The individual was evaluated and released to duty by a Substance Abuse Professional (SAP)
2. The individual was administered a return-to-duty test with verified negative results
3. Follow-up testing was performed as directed by the SAP according to the required follow-up testing frequencies of the reference criteria after the employee has returned to duty.
4. Consequences for repeat offenders were carried out as required by the D&A policy of SRTD.
5. Random testing of safety sensitive employees is performed within the allowed period without excusing individuals for illegitimate reasons as required.

RESULTS/COMMENTS

Dan Bailey and Mariza Montung reported that only two SRTD rail transit employees have tested positive for illegal drugs or misuse of alcohol since 1995. Only one of those employees has been returned to work in a safety sensitive rail transit position. A review of records for that employee disclosed that:

- The employee was evaluated and released to duty by a Substance Abuse Professional after successfully completing a prescribed rehabilitation program;
- The employee was administered a return-to-duty test with verified negative results;
- As prescribed by the Substance Abuse Professional, thirteen randomly scheduled follow-up tests were performed in the first year after the employee was returned to duty;
- The employee had just completed the first year of the follow up program at the time of the audit with no positive test results.

No exceptions were noted.

Recommendation:

None

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT

Checklist No.	**10**	Persons Contacted
Date of Audit	**June 25, 2002**	Mark Sakauye – Lieutenant, Police Services Unit
Auditors	**Gary Rosenthal**	
Department	**SRTD Police Services**	

REFERENCE CRITERIA

1. SRTD System Security Program Plan, Revised 2/99

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

LIGHT RAIL SECURITY

Interview the Chief of SRTD's Police Services Unit and review relevant documentation to determine whether or not appropriate mitigating measures were developed and implemented in response to the security breach trends identified as a result of the statistical data collected by the department.

RESULTS/COMMENTS

Mark Sakauye explained that SRTD Police Services does not find the analysis of security breach trends to be of any significant value to the SRTD security program. He stated that the most effective way to respond to any security incident is to investigate and analyze as the facts so that appropriate corrective actions can be determined and implemented soon as possible. He also noted that the significant variables associated with security incidents change so frequently that long term data collection and trend analysis does not provide the kinds of information that are useful in predicting future needs and establishing appropriate corrective actions. No documentation concerning trend analysis resulting in mitigating actions was presented or reviewed.

Recommendation:

SRTD should carefully and promptly evaluate its data collection and trend analysis policies and needs and provide a report to staff explaining its findings and recommendations for any changes to SRTD System Security Program Plan, Revised 2/99. The report should describe the scope of the evaluation, the methodology utilized, the findings, a discussion of the findings, conclusions and recommendations for any changes to the SRTD System Security Program Plan. If any proposed changes deviate from the Commission's requirements, SRTD should secure authority from the Commission before those changes are implemented.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT

Checklist No.	**11**	Persons Contacted
Date of Audit	**June 26&27, 2002**	Alan Storey – Light Rail Manager Bill Metcalf – Transportation Superintendent Rob Hoslett – Safety Specialist (Acting Safety Manger)
Auditors	**Gary Rosenthal**	
Departments	**SRTD Metro Operations & System Safety**	

REFERENCE CRITERIA

1. SRTD Light Rail Emergency Plan, Dated 11/15/96
2. SRTD System Security Program Plan, Revised 2/99
3. APTA Element #14 – Emergency Response Planning, Coordination, Training

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

EMERGENCY RESPONSE

Through an interview with the manager-in-charge of the program and record review determine whether or not:

1. Emergency drills were scheduled, planned, and carried out with the participation of the appropriate external agencies (Sacramento City Police, Sacramento County Sheriff, Metro Fire, and Sacramento City Fire).
2. Drills were evaluated and critiqued in a timely manner.

Review selected elements of the SRTD Light Rail Emergency Plan to insure that it is current and complete.

RESULTS/COMMENTS

As planned, the auditor interviewed Alan Storey and Bill Metcalf at the SRTD Metro Division offices to review emergency drill activities. According to Storey and Metcalf there have been no required emergency exercises scheduled, planned, and carried out with the participation of the Sacramento City Police, Sacramento County Sheriff, Metro Fire, and Sacramento City Fire since 1998. As a result there have been no emergency drills evaluated and critiqued in a timely manner that would identify any inadequacies in the knowledge or performance of SRTD or the emergency response participants. Storey and Metcalf explained that responsibility for the administration of the Emergency Drills was transferred to the SRTD System Safety. They also stated that they continue to meet quarterly with the fire departments and have conducted security drills with the Sacramento PD SWAT team.

The auditor met with Rob Hoslett of SRTD System Safety. Hoslett confirmed that the emergency drills have not been performed since 1998. He also noted that the next emergency drill would not be performed until the next line extension is preparing to open.

A review of the SRTD Light Rail Emergency Plan, Dated 11/15/96 disclosed that it has:

a. No table of contents or index;

b. No identification of the issuing authority, effective date or revision number and;

A number of directives which are incorrect, out of date or conflict with other SRTD documents.

The auditor strongly suggests that SRTD review and revise the SRTD Light Rail Emergency Plan, Dated 11/15/96 to correct inaccurate information and reformat this safety critical document to

effectively serve as a user-friendly emergency reference manual.

Recommendations:

1. SRTD should develop and implement a program which effectively schedules, plans, and carries out emergency drills on a regular basis, but at least annually, with the participation of the appropriate or affected emergency responders.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT

Checklist No.	**12**	Persons Contacted
Date of Audit	**06/26/02**	Rob Hoslett, Safety Specialist (Acting Safety Manager)
Auditors	**Mahendra Patel**	
Department	**Safety**	

REFERENCE CRITERIA

1. SRTD Hazardous Materials Management Plan, Revised July 1, 00. Section 3.3 Employee Training (pg. 5A-9&10)
2. SRTD System Safety Program Master Plan, Revised 2/99, Section 6.1.5 System Training Requirements
3. APTA Element #20 – Hazardous Materials Programs

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

HAZARDOUS MATERIALS PROGRAMS/ENVIRONMENTAL MANAGEMENT

Interview the manager-in-charge and review relevant documentation to determine whether or not rail employee training has been provided that emphasizes safe handling of hazardous materials as required by the reference criteria.

RESULTS/COMMENTS

The safety manager stated that generally very little (less than 5 tons per year) hazardous material is generated in the light rail operation. Hazardous material management training comprises of on the job training, hazard communication training, right to know training, MSDS training, and respirator training. Right to know training and Hazard communication training are basic hazardous material management training programs as a part of injury prevention plan.

Respirator use training fall under qualification level of training category. The last such training was given in January 2001. Safety department had copies of the training records for this training.

Hazard communication, MSDS and spill response training falls under approval level of training category. The last such training was given in January 1996. Safety department had copies of the training records for this training. However, there was no record of documented training since January 1996. Section 3.3 of the Hazardous Materials Management Plan requires all new employees to complete their training within six months after their employment or assignment to a new position at the facility and the area manager/supervisor to provide annual refresher training. There appears to be a lack of information transfer between Training and Safety departments for new employees or assignment to a new position at the facility. This precludes safety from ensuring the completion of the required training within six months. Also, no documentation was found showing that the safety department reviews training programs for adequate safety content and identifies safety requirements for training programs.

- No documentation was found to show that all new employees completed their training within six months after their employment or assignment to a new position at the facility as required by the Hazardous Materials Management Plan (Section 3.3).
- No documentation was found to show that the area manager/supervisor provided annual refresher training as required by the Hazardous Materials Management Plan (Section 3.3).

- No documentation was found showing that the Training and Safety departments are kept aware of the new employees or employee assignment to a new position at the facility and that the safety department reviews training programs for adequate safety content and identifies safety requirements for training programs.

Recommendations:

1. SRTD should ensure that:
   a. All new employees complete their Hazardous Materials Training within six months after their employment or assignment to a new position at the facility,
   b. The area manager/supervisor provide the refresher Hazardous Materials (including MSDS) Training on an annual basis as required,
   c. The programs developed by the Training Department , which affect the Hazardous Materials/Environmental Management area, are reviewed by the Safety Department for adequate safety content and to identify the safety requirements, and
   d. A formal procedure is developed to make certain that the Training and Safety Departments are aware of all new employees or employee assignments to a new position.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT

Checklist No.	**13**	Persons Contacted
Date of Audit	**June 24, 2002**	Alan Storey, Light Rail Manager
Auditors	**Gary Rosenthal**	Bill Metcalf, Transportation Superintendent
Department	**SRTD Metro Operations**	Gabe Avila, Training Supervisor

REFERENCE CRITERIA

1. LR-SOP-99-02930, Light Rail Operator Training Lesson Plan, Dated 06/30/99
2. APTA Element #13 – Training and Certification Review

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

LIGHT RAIL TRAINING, RETRAINING, CERTIFICATION, AND RECERTIFICATION

Review relevant documentation to determine whether or not Rail Transportation operators comply with the established rail-training plan of SRTD.

RESULTS/COMMENTS

The auditor interviewed Alan Storey and Bill Metcalf regarding the light rail vehicle operator training program described is LR-SOP-99-02930. The auditor reviewed training documents and train operator records to determine if SRTD train operators' training and certification is in compliance with the training requirements of GO 143-B and the SRTD rail-training plan.

The names of eight of the forty train operators on the SRTD train operator seniority roster were arbitrarily selected for review of their training and certification records. The records of each train operator's initial training and certification and all subsequent refresher training and re-certification were reviewed. All records for each selected train operator were found to be in compliance record keeping requirements and verified compliance with the training and certification requirements of General Order 143-B.

Training requirements in the SRTD LR-SOP-99-02930 also appeared to be in compliance with that document except that the annual re-training requirement was consistently being extended a month or two beyond the 12-month requirement. Further review indicated that resources currently allocated to operations training are strained to meet the SRTD training needs. Since the training needs will increase significantly as the system's new extensions are nearing completion, prompt attention to this matter is paramount.

While discussing train operator training, the auditor also questioned Storey and Metcalf about the supervisors and controllers training program. They explained that supervisor and controller training has been carried out successfully but not particularly methodically. They went on to explain that in recent weeks, while training a new supervisor/controller, they had concluded that a more formally structured training program should be implemented. Based on their experience and in anticipation of the continuing expansion of the system, they also concluded that the knowledge, abilities and performance of train controllers differs and significantly exceeds that necessary for other operations supervisory activities. Staff notes that SRTD LR-SOP-99-02929 contains a comprehensive

supervisor and controller certification program.

Recommendation:

SRTD should evaluate the training and certification needs (both current and future) of its operations personnel particularly rail supervisors and train controllers. Based on an analysis of the findings and LR-SOP-99-02929 as a baseline document, SRTD should take appropriate action that should include developing and implementing a formally structured training program for the affected positions.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT

Checklist No.	**14**	Persons Contacted
Date of Audit	**June 25, 2002**	Alan Storey, Light Rail Manager
Auditors	**Gary Rosenthal**	Bill Metcalf, Transportation Superintendent
Department	**SRTD Metro Operations**	

REFERENCE CRITERIA

1. CPUC General Order 143-B, Section 12.01b, and 12.04
2. APTA Element #19 – Employee Safety Program

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

HOURS OF SERVICE

Randomly select the names of at least four train operators and two supervisors/controllers and review their 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

The auditor met with Alan Storey and Bill Metcalf to review hours of service reporting and record keeping procedures and practices. Storey and Metcalf explained the SRTD processes and provided access to the requested records.

The auditor arbitrarily selected the names of eight train operators and four operations supervisor/controllers and reviewed the appropriate time reporting and recording records. Each selected employee's hours of service records from November 2001 through June 15, 2002 were reviewed.

The records disclosed that during the seven and one half month period, none of the eight train operators were on duty in excess of twelve hours during any twenty-four hour period and each had at least eight hours off duty prior to beginning work. During that same period, records indicated that one of the four operations supervisor/controllers had worked 30 minutes beyond the twelve-hours allowed by General Order 143-B. The employee involved is a supervisor responsible for operations training, a program which is addressed in checklist 13.

Recommendation:

None

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT

Checklist No.	**15**	Persons Contacted
Date of Audit	**June 27, 2002**	Larry Davis, Wayside Maintenance Superintendent Ron Reneau, Wayside Supervisor
Auditors	**Anton Garabetian**	
Department	**Wayside Maintenance**	

REFERENCE CRITERIA

1. LR-SOP-806-405, Traction Power OCS-Quarterly Inspection, Dated 11/26/86

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

OVERHEAD CONTACT SYSTEM

Review the records of completed Overhead Contact System (OCS) inspections prepared during the last three years to determine whether or not:

1. OCS was inspected and adjusted at the required frequencies as specified in the reference criteria
2. Inspections were properly documented
3. Noted defects were corrected in a timely manner

RESULTS/COMMENTS

The CPUC auditor checked the Wayside Power and Signal Inspection Reports for the years 2000, 2001 and 2002. These reports included the OCS monthly and quarterly inspection records. The SRTD wayside linesmen inspected the OCS at required frequencies as specified in the reference criteria and documented the inspections properly. They corrected some defects in a timely manner. SRTD wayside linesmen inspect the OCS by sections and complete the whole system inspection in few days. If a linesman detects the need for a repair on the OCS, he issues a Repair Order, repairs the defect and notifies the supervisor about the repair. If the repair requires additional monitoring, the supervisor records it on his Repair Order Form and monitors it until the repair is completed. The process of issuing a Repair Order, every time that a linesman sees the need for a repair, produces excessive number of Repair Order forms which is cumbersome for the auditor to track if each defect was corrected in timely manner. Thus the auditor suggested to the superintendent to better organize the Repair Order Forms. No exceptions noted.

Recommendation:

None.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT

Checklist No.	**16**	Persons Contacted
Date of Audit	**June 27, 2002**	Larry Davis, Wayside Maintenance Superintendent
Auditors	**Anton Garabetian**	
Department	**Wayside Maintenance**	

REFERENCE CRITERIA

1. LR-SOP-86-403, Traction Power Substations-Quarterly Inspection, Dated 11/03/93
2. LR-SOP-86-404, Traction Power Substations-Biennial Inspection, Dated 11/03/93

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

SUBSTATION INSPECTION

Review the records of completed substation quarterly and biennial inspections prepared during the last three years to determine whether or not:

1. Substations were inspected at the required frequencies as specified in the reference criteria
2. Inspections were properly documented
3. Noted defects were corrected in a timely manner

RESULTS/COMMENTS

The CPUC auditor randomly selected and checked the quarterly and biennial inspection records for the last three years for the following substations:

Substation	Quarterly Inspection Dates	Biennial Inspection Dates
#1 N6	11/12/99 to 5/6/02	5/19/97 to 5/26/01
#6 N1	3/1/00 to 5/20/02	6/6/97 to 11/26/01
#13 F7	6/21/99 to 5/9/02	5/26/98 to 7/24/00

The records showed that SRTD inspected the substations at the required frequency as specified in the reference criteria and properly documented these inspections. The auditor confirmed from the Repair Orders that SRTD corrected some defects in a timely manner. SRTD Wayside personnel inspect the substations and if a need for a repair of the substation is noted, they issue a Repair Order to correct the defect and notify the supervisor about the repair. If the repair requires additional monitoring, the supervisor records it on his Repair Order Form and monitors it until the repair is completed. The process of issuing a Repair Order produces excessive number of forms, which is cumbersome to track to completion. The auditor suggested to the Superintendent to devise a better system to organize the Repair Order Forms. No exceptions noted.

Recommendation:

None.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT

Checklist No.	**17**	Persons Contacted
Date of Audit	**June 27, 2002**	Larry Davis, Wayside Maintenance Superintendent Rick Steward, Wayside Supervisor
Auditors	**Anton Garabetian**	
Department	**Wayside Maintenance**	

REFERENCE CRITERIA

1. LR-SOP-88-419, Switch Circuit Controller Maintenance, Dated 2/17/88

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

SWITCH CIRCUIT CONTROLLER MAINTENANCE

Review the records of completed switch circuit controller inspections at switches 111 & 113 prepared during the last three years to determine whether or not:

1. Switch circuit controllers were inspected at the required frequencies as specified in the reference criteria
2. Inspections were properly documented
3. Noted defects were corrected in a timely manner

RESULTS/COMMENTS

The CPUC auditor reviewed the records of completed switch circuit controller inspections at switches 111 & 113 prepared during years 2000, 2001 and 2002. The auditor determined that SRTD inspected the switch circuit controllers at the required monthly frequencies as specified in the reference criteria. SRTD properly documented these inspections. According to the supervisor, SRTD tested the switch circuit controller #111 in February 2002 and found no defects. The auditor could not inspect the test records because they were on a Repair Order form and it was cumbersome for the auditor to go through all the Repair Orders for the Year 2002 in order to verify the tests. The auditor suggested to the superintendent to devise a better system to organize the Repair Order forms. No exceptions were noted.

Recommendation:

None

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT

Checklist No.	**18**	Persons Contacted
Date of Audit	**June 28, 2002**	Larry Davis, Wayside Maintenance Superintendent
Auditors	**Anton Garabetian**	
Department	**Wayside Maintenance**	

REFERENCE CRITERIA

1. LR-SOP-91-422, A.B.S. Vital , Dated 2/17/88

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Automatic Block System (A.B.S.) VITAL RELAY INSPECTIONS

Review the records of completed A.B.S. vital relay inspections prepared during the last three years to determine whether or not:

1. A.B.S. vital relays were inspected at the required frequencies as specified in the reference criteria
2. Inspections were properly documented
3. Noted defects were corrected in a timely manner

RESULTS/COMMENTS

The CPUC auditor randomly selected and checked the biennial A.B.S. vital relay inspection records for the last three years for the following crossings:

Substation	Biennial Inspection Dates
Roseville Rd. Crossing	10/3/97 to 12/24/01
Evergreen Crossing	10/15/97 to 9/17/01
Royal Oaks Station Crossing	10/5/95 to 8/13/01
Alhambra Crossing	10/18/96 to 4/16/02
65th Street Crossing	10/1/96 to 5/10/02

The records showed that SRTD inspected the A.B.S. vital relays at the required frequency and properly documented these inspections. When a review of the calibration data was requested, the superintendent told the auditor that the manufacturer calibrates the A.B.S. vital relays which are installed by the contractor. The auditor could not verify all the defect correction records because they were on a Repair Order form and it was cumbersome for the auditor to go through all the Repair Orders. The auditor suggested to the superintendent to devise a better system of organizing the Repair Order Forms. No exceptions were noted.

Recommendation:

None.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT

Checklist No.	**19**	Persons Contacted
Date of Audit	**June 28, 2002**	Larry Davis, Wayside Maintenance Superintendent Rick Steward, Wayside Supervisor
Auditors	**Anton Garabetian**	
Department	**Wayside Maintenance**	

REFERENCE CRITERIA

1. LR-SOP-87-416, Track Inspections and Maintenance Standards, Dated 1/5/87

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

TRACK INSPECTIONS

Review the records of completed track inspections prepared during the last two years to determine whether or not:

1. Track was inspected at the required frequencies as specified in the reference criteria
2. Inspections were properly documented
3. Noted defects were corrected in a timely manner

RESULTS/COMMENTS

The CPUC auditor reviewed the records of completed track inspections prepared during the last two years and determined that SRTD inspected the track at the required frequencies as specified in the reference criteria and properly documented.

Weekly Track Inspection:

The CPUC auditor determined that SRTD track inspector recorded the weekly track inspection results on Repair Orders. SRTD corrected some track defects in a timely manner. SRTD personnel inspect the tracks weekly by riding the train. SRTD monthly track inspection is part of the weekly track inspection program. According to the supervisor, spring switches are inspected weekly on foot and other switches are inspected biweekly on foot. When a track inspector detects the need for a repair on the track, he issues a Repair Order, repairs the defect and notifies the supervisor about the repair. If the repair requires additional monitoring, the supervisor records it on his Repair Order Form and monitors it until the repair is completed. The process of issuing a Repair Order every time that a linesman sees the need for a repair produces excessive number of Repair Order forms which is cumbersome for the auditor to track if each defect was corrected in timely manner. Thus the auditor suggested to the superintendent to better organize the Repair Order Forms.

Biannual track Inspection:

The CPUC auditor checked the biannual track inspections from 12/14/99 to 12/26/01. SRTD track inspectors inspected the track biannually on foot. SRTD properly documented the track inspections.

Biennial Track Ultrasonic Tests:

The CPUC auditor reviewed the records of completed ultrasonic track tests performed from 4/29/00 to 6/21/02 and determined that SRTD ultrasonically tested the tracks at the required frequencies as specified in the reference criteria. SRTD properly documented the track ultrasonic test and

corrected the noted defects in a timely manner. No exceptions were noted.

Recommendation:

None.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT

Checklist No.	**20**	Persons Contacted
Date of Audit	**June 28, 2002**	Larry Davis, Wayside Maintenance Superintendent
Auditors	**Anton Garabetian**	
Department	**Wayside Maintenance**	

REFERENCE CRITERIA

1. LR-SOP-86-411, Wayside Signal & Equipment Inspections, Dated 11/3/93
2. LR-SOP-86-411, Wayside Signal Troubleshooting and Repair, Dated 1/5/87

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

WAYSIDE SIGNAL & EQUIPMENT INSPECTION AND REPAIR

Review the records of completed signal and relay case (signal, crossing, or interlocking) inspections prepared during the last two years to determine whether or not:

1. Signals and equipment were inspected at the required frequencies as specified in the reference criteria
2. Inspections were properly documented
3. Noted defects were corrected in a timely manner

RESULTS/COMMENTS

The CPUC auditor reviewed the records of completed signal and relay case (signal, crossing, or interlocking) inspections prepared during years 2000, 2001 and 2002 and determined that SRTD inspected signals and equipment at the required frequencies as specified in the reference criteria. SRTD properly documented the inspections and corrected some noted defects in a timely manner. If a wayside signal and equipment inspector detects the need for a repair on the wayside signals and equipment, he issues a Repair Order, repairs the defect and notifies the supervisor about the repair. If the repair requires additional monitoring, the supervisor records it on his Repair Order Form and monitors it until the repair is completed. The process of issuing a Repair Order every time that an inspector sees the need for a repair produces excessive number of Repair Order forms which is cumbersome for the auditor to track if each defect was corrected in timely manner. The auditor suggested to the superintendent to better organize the Repair Order Forms. No exceptions were noted.

Recommendation:

None.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT

Checklist No.	**21**	Persons Contacted
Date of Audit	**6/26/02**	Vern D. Barnhardt – Maintenance Superintendent Barry Fong – Maintenance Training Supervisor
Auditors	**Joey E. Bigornia**	
Department	**Light Rail Vehicle**	

REFERENCE CRITERIA

1. LR-SOP-86-200, LRV Daily Inspection, Revision 101001-G
2. LR-SOP-86-201, LRV Weekly Inspection, Revision 060999-E
3. LR-SOP-86-202, LRV Mileage-Based Inspection Intervals, Revision 071096-B

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

LRV Maintenance

Randomly select a minimum of three vehicles and for each selected review inspection records to determine whether or not:

1. Vehicles were inspected at the required frequencies as specified in the reference criteria
2. Inspections were properly documented
3. Noted defects were corrected in a timely manner

RESULTS/COMMENTS

The **daily yard inspection,** LRV consist exterior inspection, checks the following for proper operations: exterior fault lights and turn signal lights/lens, exterior push buttons and fault light / lens, exterior passenger emergency lights / lens, tail lights / lens, headlight/lens, railroad lamps on the ends of the leading ends of the consists, and clearance lights/lens on both ends of the consists. The LRV Operator Cab is checked for the following: inspect and test of the destination sign lighting on the consists, set headsign for proper destination on leading ends of the consists, and operation of the consist from each end (tow test).

The **weekly inspection** checks 7 items on the LRV exterior, door inspection, passenger interior compartment, cab inspection, operator dash function tests, roof top, and undercar. The exterior check consists of the glass, push button lights & lenses, and exterior running light and lenses. The door inspection check s the push button light & stop request lights, door sensitive edge operation, light barrier function, closing cycle, and elderly / handicap platform security & adjustments. The passenger interior check consists of the seats & lighting, flooring, interior glass, and replacement of vandalized graphics as needed. The cab inspection checks the operator seat, sunshade operation, destination signage, rear view mirrors, cab door, door window, and train operator side window. The operator dash function inspection tests the headlights, signal lights, horn/gongs, public address system, windshield wipers, operator & passenger emergency buttons for annunciation, and resistor fan monitoring circuit. The rooftop inspection checks the pantograph insulators, carbons & shunts, public address speakers, air conditioner housing, lighting arrestor, and pantograph head spring cup bolt security. The under car inspection checks the trucks, center brake pads, cow catcher boards & frame hardware, sand hoses & track brake height, gearbox oil leaks, shock absorbers & hardware, motor alternator ducting & housing, buffer/coupler, center truck wheel/flange lubers, and flanges & rubber spacers.

The **mileage-based inspection (10K, 20K, 30K)** is performed every 10,000 miles where the LRV

car body, roof equipment, truck system, main circuit (traction motor, motor alternator, camshaft controller, main breaker, and load cell), control circuit, brakes, doors (all), air comfort (a/c), and coupler are inspected. A performance check of the LRV occurs as the final inspection task for the 10,000 miles inspection. The 20,000 miles inspection is the same as the 10,000 miles inspection however the low-voltage equipment check is added to this inspection interval. The 30,000 miles inspection is the same as the 20,000 miles inspection however the inspection of the truck system, main circuit (traction motor, motor alternator, camshaft controller, main breaker, and load cell), control circuit, brakes, low voltage equipment, doors (all), and air comfort (a/c) is expanded.

Selected four SRT light rail vehicles (#105, #115, #121 & #131) and reviewed maintenance records of the daily inspections (January 2002 – June 2002), weekly inspections (January 2002 – June 2002), and mileage-based (10k-20k-30k) inspections (February 2001 – June 2002).

The records indicate that the daily, weekly and mileage-based inspections were performed at the required frequency intervals and documented properly. A review of the work orders files associated with each vehicle reviewed indicates that defects noted have been closed out. SRT has also satisfied the PUC's 1999 Triennial Audit Recommendation regarding Section XII of the **mileage-based inspection records.** The review of the **mileage-based inspection** records for the 4 LRV's indicates that Section XII is being completed.

One exception was noted on the **weekly inspection** records where Section VIII requires the LRV inspector to "check defect reports on status board". The possible entry codes on the STATUS box for each report are as follows: 1 = OK, 2 = Not OK, 3 = Defect Previously Noted, and 4 = Item not checked. The inspection reports showed Car #105 (19 of 27 inspection records), Car #115 (19 of 25 inspection records), Car # 121 (19 of 25 inspection records), and Car #131 (18 of 25 inspection records) showed a Code 4 entry (Item not checked) in the STATUS box entry.

Staff spoke with Mr. Vern Barnhardt regarding this matter and it was explained to CPUC staff that the weekly vehicle inspections are performed by two different groups of mechanics (Mechanic "A" or Mechanic "C") depending upon the work shift. The Code 4 entry was correctly entered by the Mechanic "A" vehicle inspector since the duty of the assigned mechanic does not require a check of the "trouble reports". The weekly inspection records where a Code 1 (OK) entry is shown in Section VIII was actually performed by a Mechanic "C" which is a duty of this Mechanic category as he/she inspects the LRV's for the weekly inspections. The LRV Shift Supervisor ultimately signs off on the Weekly Inspection records when completed but also confirms that the "defect reports on status board" has been cleared prior to releasing the LRV into revenue service.

Staff and SRT staff agree that the Code 4 entry by a Mechanic "A" on Section 9 does not affect the safe operations or maintenance of the SRT vehicles. This is evidenced by CPUC staffs' further review of the mileage-based inspection records that reveal noted defects have been closed out in a timely manner. SRT staff suggested that the "Weekly Inspection" form be modified to revise Section VIII requirements of the LRV mechanic inspector to perform this additional task since the LRV Shift Supervisor already performs this task. No exceptions were noted.

Recommendation:

None.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT

Checklist No.	**22**	Persons Contacted
Date of Audit	**6/24/02**	Vern Barnhardt – Maintenance Superintendent Reggie Silva – Maintenance Supervisor
Auditors	**Joey E. Bigornia**	
Department	**Vehicle Maintenance**	

REFERENCE CRITERIA

1. LR-SOP-01-224, Equipment Calibration, Dated 02/02/01.

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

CALIBRATION PROGRAM

Randomly select a minimum of three items subject to calibration control and for each selected review calibration records to determine whether or not:

1. Items selected are properly calibrated at the required frequencies as specified in the reference criteria
2. Calibration program is effective

RESULTS/COMMENTS

The 1999 PUC Triennial Audit Recommended that SRTD's Vehicle Maintenance Department should develop a formal directive (addition to the System Safety Program Plan or Standard Operating Procedure) 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. Prior to the PUC's 1999 Triennial Audit, SRTD had been contracting with an independent Micro-Precision Calibration, Inc. to perform this task although a formal Standard Operating Procedure did not exist at the time of the 1999 Triennial Audit. SRTD has satisfied the PUC's 1999 recommendation by developing and issuing LR-SOP-01-224 on February 2, 2001 that describes the calibration program requirements.

Mr. Vern Barnhardt explained to Staff that SRTD subcontracts with Micro-Precision Calibration, Inc. to calibrate all inspection equipment used by vehicle mechanics for the scheduled maintenance inspection intervals of the light rail vehicles. Micro-Precision Calibration, Inc. checks the tolerances of SRTD's equipment, makes adjustments if necessary to any defective equipment, places a calibration label on the equipment that shows date of inspection and next scheduled due date, and generates a calibration inspection record for each individual equipment that was checked.
All equipment is subjected to an **annual** calibration frequency interval.

Reviewed Calibration/ Service Certificates of the following equipment: Multimeter (s/n 76290355), Outside Micrometer (RTM#483M), digital caliper (s/n 7047585), 1" Outside Caliper (RTM#286), Fowler Depth Caliper 0-25MM (J0367), and Capacitance Meter (s/n/ 1491) used at the Light Rail Vehicle Maintenance Department shops.

The Calibration / Service Certificates filed in the Calibration Binder for each equipment selected for review showed that all equipment were calibrated in Year 2001 and on May 2002. The next

scheduled calibration date for **all** equipment is May 2003. No exceptions were noted.

Recommendation:

None.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT

Checklist No.	**23**	Persons Contacted
Date of Audit	**6/26/2002**	Vern D. Barnhardt – Maintenance Superintendent Barry Fong – Maintenance Training Supervisor
Auditors	**Joey E. Bigornia**	
Department	**Light Rail Vehicle**	

REFERENCE CRITERIA

1. LR-SOP-00-226, LRV Maintenance Employee Training, Dated 09/08/00

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

LRV MAINTENANCE EMPLOYEE TRAINING

Randomly select the names of at least three Light Rail (LR) maintenance employees and determine through a review of their training records in the last two years whether or not they received the required training and certification.

RESULTS/COMMENTS

The 1999 PUC Triennial Audit Recommended that SRTD's Light Rail Vehicle Department issue a Standard Operating Procedure to identify the training elements and requirements for LRV mechanics. Prior to the PUC's 1999 Triennial Audit, SRT had kept a record of each individual mechanic and the training that had been received to date although a formal Standard Operating Procedure did not exist to support this task at the time of the 1999 Triennial Audit. SRT has satisfied the PUC's recommendation by developing and issuing LR-SOP-00-226, on September 8, 2000, which describes the requirements for LRV mechanics.

Reviewed the initial training and certification for six LRV Maintenance workers and reviewed the annual and triennial recertification training records for the same group of workers from Year 2000 to present. The training records of all were complete with the exception of 2 employees who have been recently hired by the LRV Maintenance Department and are currently undergoing the employee training program. No exceptions were noted.

Recommendation:

None.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT

Checklist No.	**24**	Persons Contacted
Date of Audit	**6/25/2002**	Larry Davis – Superintendent Wayside Maintenance
Auditors	**Joey E. Bigornia**	
Department	**Wayside**	

REFERENCE CRITERIA

1. LR-SOP-01-425, Lineworker Certification, 3-5-01.

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

LINEWORKER CERTIFICATION PROGRAM

Review all available records pertaining to the lineworker certification program to determine whether or not the required training and certification was completed per the required frequencies.

RESULTS/COMMENTS

The 1999 PUC Triennial Audit Recommended that SRTD's Wayside Department develop a formal directive (addition to the System Safety Program Plan or Standard Operating Procedure) to clearly define the scope of training, frequency of training for the different training elements, and the requirements for certification for each classification of lineworker. Prior to the PUC's 1999 Triennial Audit, SRTD had kept a record of each individual lineworker and the training that had been received to date although a formal Standard Operating Procedure did not exist to support this task at the time of the 1999 Triennial Audit. SRTD has satisfied the PUC's 1999 recommendation by developing and issuing LR-SOP-01-425 on March 5, 2001 which describes the Lineworker Certification Program.

Reviewed the individual Initial Training, Annual Training, Biennial Training, and Triennial Training records of 3 lineman and 2 lineworkers dated 1987 to present date kept on-file at the Wayside Department. The Initial Training, Biennial Training, and Triennial Training dates for each employee was clearly identified and no exceptions were noted.

An exception was noted in the **Annual Training** requirement for Material Data Safety Sheet / HazMat Class (MSDS) for all employees. The records indicate that 2 Lineman took the MSDS class in 1997 and no date was found for 1 Lineman. 1 Lineworker received the MSDS class in 2000, and no date could be found for the other Lineworker. No further dates for MSDS classes could be found after 1997.

Recommendation:

See Checklist #12 Hazardous Material Programs / Environmental Management.

CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR THE
SACRAMENTO REGIONAL TRANSIT DISTRICT

Checklist No.	**25**	Persons Contacted
Date of Audit	**6/25/2002**	Larry Davis – Superintendent Wayside Maintenance
Auditors	**Joey E. Bigornia**	
Department	**Wayside**	

REFERENCE CRITERIA

1. LR-SOP-01-426, Rail Maintenance Worker Certification, 3-5-01.

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

RAIL MAINTENANCE WORKER CERTIFICATION PROGRAM

Review all available records pertaining to the rail maintenance worker certification program to determine whether or not the required training and certification was completed per the required frequencies.

RESULTS/COMMENTS

The 1999 PUC Triennial Audit Recommended that SRTD's Wayside Department develop a formal directive (addition to the System Safety Program Plan or Standard Operating Procedure) to clearly define the scope of training, frequency of training for the different training elements, and the requirements for certification for each classification of rail maintenance worker.

Prior to the PUC's 1999 Triennial Audit, SRTD had kept a record of each individual rail maintenance worker and the training that had been received to date although a formal Standard Operating Procedure did not exist to support this task at the time of the 1999 Triennial Audit. SRTD has satisfied the PUC's 1999 recommendation by developing and issuing LR-SOP-01-426 on March 5, 2001, which describes the Rail Maintenance Worker Certification Program.

Reviewed the individual Initial Training, Annual Training, Biennial Training, and Triennial Training records of 3 Rail Maintenance Workers dated 1987 to present date kept on-file at the Wayside Department. The Initial Training, Biennial Training, and Triennial Training dates for each employee was clearly identified and no exceptions were noted.

An exception was noted in the **Annual Training** requirement for Material Data Safety Sheet / HazMat Class (MSDS) for all employees. The records indicate that all 3 rail maintenance workers last took the MSDS class in 1997 and no further dates were found.

Recommendation:

See Checklist #12 Hazardous Material Programs / Environmental Management