2006
TRIENNIAL ON-SITE SAFETY AUDIT OF THE BAY AREA RAPID TRANSIT

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

May 29, 2007

FINAL REPORT

Richard W. Clark, Director
Consumer Protection and Safety Division

2006 ON-SITE SAFETY AUDIT OF THE

BAY AREA RAPID TRANSIT DISTRICT'S

RAIL TRANSIT SAFETY PROGRAM

ACKNOWLEDGEMENT

The California Public Utilities Commission's Rail Transit Safety Section staff, with the assistance of staff from the Railroad Operations Safety Branch, conducted this system safety program audit. Staff members directly responsible for conducting audit and inspection activities include:

Claudia Lam, Lead Auditor	Anton Garabetian
Joey Bigornia	Georgetta Gregory
Sherman Boyd	Don Miller
Brian Chavez	Gary Rosenthal
William Dockery	Brian Yu
Raed Dwairi	

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1. EXECUTIVE SUMMARY

The California Public Utilities Commission's (Commission) Consumer Protection and Safety Division (CPSD), Rail Transit Safety Section staff (staff), with the assistance of staff from the Railroad Operations Safety Branch (staff), conducted an on-site safety audit of the Bay Area Rapid Transit District's (BART) safety program in August 2006.

The on-site audit was preceded by a pre-audit conference with BART personnel, including BART's General Manager, Chief Safety Officer, and Chief of Police, on August 14, 2006. Transportation Safety Administration (TSA) representatives were invited to attend the meeting and participate in the reviewing of BART's security plan.

The 2006 On-site Safety Audit was conducted in two phases. The first phase consisted of facilities and equipment inspections on August 1, 7, and 8, of 2006, completing audit checklists number one through four. During phase two of the audit, staff conducted the on-site safety audit from August 14 to August 21, 2006, completing the remaining twenty-nine (29) checklists. The remaining checklists focused on verifying the effective implementation of the safety and security program plan.

A post-audit conference with BART personnel and TSA representatives followed the On-site Safety Audit on September 6, 2006. Staff provided BART personnel with a synopsis of the preliminary audit findings and possible recommendations for corrective actions. TSA representatives utilized the Surface Transportation Action Review checklist to review and baseline the internal processes, procedures, and policies inherent in the BART system relating to BART system security. Appendix A provides the TSA Executive Summary.

The audit results indicate that BART has a comprehensive System Safety Program Plan (SSPP) and has effectively carried out that plan. Exceptions, however, were noted during the audit. These exceptions are described, where applicable, in the Findings/Comments Section of each checklist along with recommendations to correct identified exceptions. Of the 33 checklists, staff made 12 recommendations for corrective action. Recommendations for corrective action are directed in the areas of maintenance activities, safety audit programs, emergency response planning and training, transit vehicle maintenance, train equipment inspections and tests, signal maintenance training and certification, and operations safety compliance program.

The Introduction for this report is presented in Section 2. The background, in Section 3, contains a description of the BART rail system and the 2003 audit results. Section 4 describes the audit procedure. The audit findings and recommendations are depicted in Section 5. The BART 2006 Triennial Audit Safety Checklist Index and the Recommendations List are included, respectively, in Appendices B and C. The Safety Audit Checklists are presented in Appendix D.

2. INTRODUCTION

The Commission's General Order (GO) 164-C, *Rules and Regulations Governing State Safety Oversight of Rail Fixed Guideway Systems*, and the Federal Transit Administration's (FTA) Rule, Title 49 Code of Federal Regulations (CFR) Part 659, *Rail Fixed Guideway Systems; State Safety Oversight*, require the designated State Safety Oversight Agencies to perform a review of each rail transit agency's system safety program at a minimum of once every three years. The purpose of the triennial audit is to verify compliance with and evaluate the effectiveness of each rail transit agency's System Safety Program Plan (SSPP) and to assess the level of compliance with GO 164-C as well as other Commission safety requirements. BART was last audited in October 2003.

On July 21, 2006, staff mailed a letter to the BART General Manager (GM), advising him that the triennial audit would be scheduled for early August, 2006. The letter included 33 checklists that served as the basis for the audit. Four of the 33 checklists outlined inspection of track, signals, electric power systems, and vehicles. The remaining 29 checklists focused on the verification of the effective implementation of the safety and security program plan.

On August 14, 2006, staff conducted a pre-audit conference with BART's General Manager, Chief Safety Officer, and Chief of Police. TSA representatives attended the pre-audit conference to describe the methods and checklists they will be using to review BART's security program.

Staff conducted the on-site safety audit and records review from August 14, 2006 to August 21, 2006. At the conclusion of each audit activity, staff provided the BART representative with a summary of the preliminary findings and discussed any recommendations for corrective actions.

On September 6, 2006, staff conducted a post-audit exit meeting with BART's General Manager, Chief of Police, and Chief Safety Officer with TSA representatives in attendance. Attendees were given a synopsis of the findings from the 33 checklists and discussed the need for corrective actions where applicable. Staff also answered questions about the findings and explained that a preliminary draft audit report would be prepared for BART to review and comment.

3. BACKGROUND

A. SYSTEM DESCRIPTION

Original revenue operation year and track miles

BART began operation on September 11, 1972 with 28 miles of track in the Alameda County, servicing from Oakland to Fremont. The second segment opened on January 29, 1973 with 12 miles of track extending the service from Fremont to Richmond. The third segment opened on May 21, 1973 with 17 additional miles of track marking the opening of the Concord Line. On November 5, 1973, service began between Montgomery Street Station in downtown San Francisco and Daly City Station, adding another 7.5 miles of track to the system. Transbay service began on September 16, 1974, bringing the full 71.5 miles of track into service. On May 27, 1976, the Embarcadero Station officially opened for revenue service, bringing the total station count to 34. The Embarcadero Station added no additional track miles.

Extensions added by the years and added track miles

The extension to North Concord/Martinez Station opened on December 16, 1995, adding 2.25 miles of track north of the Station. On February 24, 1996, Colma Station opened for revenue service, adding 1.6 miles of track south of the Daly City Station. The Pittsburg/Bay Point Station was the next to be opened for revenue service on December 7, 1996, completing a 7.8-mile segment of the Pittsburg/Antioch Extension from the Concord Station. The Dublin/Pleasanton extension opening followed on May 10, 1997, adding 14 miles of track and two stations to the system. The San Francisco Airport extension opened on June 22, 2003 adding four stations and 8.7 miles of track. Currently, the system has approximately 119 miles of track.

On-going Extension Projects

Warm Springs Extension

The Warm Springs Extension Project will add 5.4 miles of track, extending BART's railway system from the Fremont Station to the Warm Springs Station in South Fremont. Staff has reviewed and approved the Safety and Security Certification Plan for this project.

Santa Clara Valley Transportation Authority/Silicon Valley Rapid Transit Project

The Santa Clara Valley Transportation Authority/Silicon Valley Rapid Transit Project (VTA/SVRT Project) is a 16.3-mile extension beginning at the Warm Springs BART Station in South Fremont, extending along the Union Pacific Railroad line to Milpitas and then continues on to 28th and Santa Clara Streets in San Jose. The extension will then proceed underground through Downtown San Jose to the Diridon Caltrain Station. The BART extension will then turn north under the Caltrain line and terminate at the Santa Clara Station. The project is in the preliminary engineering stage.

B. 2003 TRIENNIAL AUDIT

Staff's previous audit of BART's System Safety Program was performed in October 2003. Twenty-two (22) recommendations for corrective action resulted from thirty-six checklists. The majority of the recommendations focused on preventive maintenance inspections and training/recertification programs.

The report on the 2003 Safety Audit of BART was granted by Commission Resolution ST-70, dated May 27, 2004. BART has developed and completed corrective actions to implement the recommendations prior to the 2006 audit.

4. AUDIT PROCEDURE

Staff conducted the audit in accordance with the Rail Transit Safety Section Procedure RTSS-4, *Procedure for Performing Triennial Safety Audits of Rail Transit Systems*.

Staff developed thirty-three (33) checklists to cover various aspects of system safety responsibilities, using FTA guidelines, American Public Transportation Association (APTA) guidelines, and the staff's knowledge of the transit system. The 33 checklists are included as Appendix D.

Each checklist identified the APTA elements and characteristics audited, results of the audit, and recommendations for improvement, where applicable. The methods used to perform the audit include:

- Discussions with BART 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
- Follow-up to the 2003 BART Triennial Audit

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

5. FINDINGS AND RECOMMENDATIONS

The auditors and inspectors concluded that the BART rail transit system has a comprehensive System Safety Program Plan (SSPP) and that BART has been effective in implementing that plan.

Audit findings identified areas where changes should be made to further improve BART's system safety program. The audit results were derived from activities observed, documents reviewed, management discussions, and items inspected, confirming that BART is generally in compliance with its SSPP. The audit identified 12 recommendations from the 33 checklists outlined below:

1. Tack Inspection

No deficiency – No recommendation.

2. Vehicle Inspection

No deficiency – No recommendation.

3. Signal Inspection

No deficiency – No recommendation.

4. GO 95 Inspection

Deficiencies found:

- "Danger Electric Third Rail Keep Away" signs posted on the chain-link fencing were covered with graffiti.
- "Danger Electric Third Rail Keep Away" signs posted on the third rail cover boards throughout the underground stations were covered with thick layers of dust, making the signs not readily visible.
- "Danger Electric Third Rail Keep Away" signs posted on the third rail cover boards at the outdoor stations have found to be fading and peeling.
- "Danger Electric Third Rail Keep Away" signs posted on the chain-link fencing were covered with tree leaves.
- Traction Power Substation (TPSS) at the Ashby Substation had water leaking from the inside wall and accumulating on the floor.

- At various locations along the BART A-Line, trees and shrubbery have not been properly trimmed and or removed. More specifically:
  - At certain locations near aerial structures, tree branches have found to be touching third rail cover boards.
  - At certain locations, tree/shrubbery branches were growing over/through the fencing, partially blocking the maintenance walkways.

    The specific areas noted were:

    - Mile Post 3.1 on A2 track side
    - Mile Post 12.2 on A2 track side
    - Mile Post 19.8 on A2 track side
    - Mile Post 23.4 on A2 track side

Recommendations:

1. BART should survey the entire system to ensure that signs are provided and maintained in accordance with GO 95, Section 79.5 requirements and replace/re-label the "Danger Electric Third Rail Keep Away" signs where needed.
2. BART should survey the entire system and trim/eradicate vegetation/tree growing near the right-of-way where necessary.
3. BART should investigate the water leakage in the TPSS and take corrective action in accordance with GO 128, Section 30 requirements. The corrective action should also prevent future occurrence of the same problem.

5. Third Rail Maintenance

No deficiency – No recommendation.

6. Reporting and Investigating Accidents and Investigation Procedures

No deficiency – No recommendation.

7. Review Operating Rules and Procedures Manual and Operating Bulletins

Deficiencies found:

- Management Procedure No. 34 requires an annual review of the BART Operating Rules and Procedures (OR&P) without establishing the criteria in which the document is required to be revised.
- Management Procedure No. 34 requires an annual review of the Operating Bulletins without establishing the criteria in which the bulletins are required to be revised.

- Management Procedure No. 34 refers to three BART Supplementary Operations Manuals but failed to identify them.

Recommendations:

4. BART should revise the appropriate control document to describe annual review process of the OR&P and the Operating Bulletins, including activities involved in the process and how the process (such as making findings, reaching conclusions, and recommending actions… etc.) is documented.
5. BART should list or provide a reference to all of the Supplementary Operations Manuals that apply to Management Procedure No. 34.

8. Review Employee Safety Program

No deficiency – No recommendation.

9. Internal Safety Audit Program

No deficiency – No recommendation.

10. Inter-departmental Safety Audit Program

Deficiencies found:

- Interdepartmental and interagency coordination was not included as a specific element of the BART internal safety audit program.
- Although the interdepartmental and interagency coordination process and requirements are discussed in the BART System Safety Program Plan, they are not defined in detail or specifically referenced. The System Safety Program Plan also failed to identify the BART Fire Life Safety Committee.
- BART identified and reviewed communications deficiencies with emergency responders and other participating agencies following emergency exercises and actual events. In cases where communications deficiencies were found to be the responsibility of emergency responders or other participating agencies, there was no clear evidence that BART tracked the corrective actions and verified the satisfactory resolution of the deficiencies.

Recommendations:

6. BART System Safety Program Plan should identify or reference all of the respective interdepartmental and interagency coordination programs, processes, and procedures, including the Fire Life Safety Committee (See Checklist No. 14).

7. BART should adopt and implement procedures to track and verify that all identified communications deficiencies affecting BART are tracked until the deficiencies are corrected (See Checklist No. 14).

11. Safety and Security Certification Plan (Warm Springs Extension)

No deficiency – No recommendation.

12. Hazardous Materials Management Program

No deficiency – No recommendation.

13. Data Acquisition Analysis

No deficiency – No recommendation.

14. Emergency Response Planning and Training

Deficiencies found:

- The Fire Life Safety Committee or its function was not described, specified, or referenced in BART's System Safety Program Plan.
- BART departments and other participants are invited to critique emergency drills and actual emergency events after the exercises or events are completed. Although deficiencies effecting BART are identified and reviewed by the participants, there is no record that corrective actions are established and tracked and the deficiencies corrected.

Recommendations:

6. BART System Safety Program Plan should identify or reference all of the respective interdepartmental and interagency coordination programs, processes, and procedures, including the Fire Life Safety Committee (See Checklist No. 10).
7. BART should adopt and implement procedures to track and verify that all identified communications deficiencies affecting BART are tracked until the deficiencies are corrected (See Checklist No. 10).

15. Drug and Alcohol Testing Program

No deficiency – No recommendation.

16. Security Program - BART Police and Security Audits

No deficiency – No recommendation.

17. Train Operator, Line Supervisor, and Central Control Supervisor Training and Recertification

No deficiency – No recommendation.

18. Hours of Service for Train Operators, Train Controllers, and Tower Fore Workers

No deficiency – No recommendation.

19. Calibration of Measuring and Testing Equipment

No deficiency – No recommendation.

20. Track Inspection and Turnout Inspection Records

No deficiency – No recommendation.

21. Exclusive Right-Of-Way Fence Inspection Records

Deficiencies found:

- Certain inspection records did not have the status of corrective actions taken.
- Certain inspection records were incomplete and corrective action completion could not be confirmed.

Recommendation:

8. BART should ensure that their fore workers and supervisors properly document the inspection, corrective actions, and completion status of the corrective actions to allow efficient and effective follow-up.

22. Transit Vehicle Maintenance

No deficiency – No recommendation.

23. Quality Assurance of Transit Vehicles

Deficiency found:

- For the cars selected at the Richmond Yard Shop (B cars: 1551, 1562, and 1567, C1 cars: 2557 and 2537, and C2 cars: 365 and 429), each had at least one missing Quality Assurance (QA) stamp on a Maintenance Discrepancy/Correction Sheet (D/C Form) in the Car History Book corresponding to the requirement of “To Be Released by QA Only.”

Recommendation:

9. BART should review its applicable Quality Assurance (QA) procedures which pertain to the use of QA stamps to achieve consistency between Car History Books and archived files.

24. Train Control Equipment Inspection and Tests

Deficiency found:

- Two Trouble Tickets associated with multiplexer (MUX) inspections were not closed out in a timely manner. Trouble Ticket TC-C76-BATT remained open since October 2004 and TC-W45-SM151 remained open since May 2004.

Recommendation:

10. BART should follow up on open Train Control Equipment Trouble Tickets by generating a report listing the tickets, reasons behind the open status of those tickets, and a plan to resolve the issues and close the open tickets in a timely manner.

25. Emergency Ventilation Fans and Associated Dampers

No deficiency – No recommendation.

26. Vital Relays

No deficiency – No recommendation.

27. Fire Alarms and Sprinkler Systems

No deficiency – No Recommendation.

28. Wet Stand Pipe, Sprinkler Systems, and Line Pumps

No deficiency – No recommendation.

29. Under-Car Deluge System

No deficiency – No recommendation.

30. Gap Breakers and Wayside Equipment

No deficiency – No recommendation.

31. Signal Maintenance Training and Certification

Deficiencies found:

- The record of a selected Train Control Maintenance Technician indicated that the employee failed the Vital Processor Interlocking (VPI) Hardware Recertification test on September 29, 2005 and did not attend the April 17, 2006 General Railway Signal (GRS) VPI Hardware Certification training course.
- No documentation was found to explain the employee's failure to attend the class or to indicate if a Restricted Status was placed on this employee to prevent him from performing maintenance work on any equipment requiring VPI Certification as required by BART Employee Certification Plan dated January 2005.
- The class roster of the April 17, 2006 GRS VPI Hardware Certification Class obtained from the Pathlore Learning Management System listed those who attended the class, their test scores, and those who cancelled their registration. However, the roster did not provide an explanation of their cancellation.

Recommendation:

11. BART should ensure that Train Control Technicians who failed their recertification test are not working on equipment requiring their success in being recertified. BART should have proper documentation explaining the technician's failure to be recertified.

32. Contractor Safety Coordination

No deficiency – No recommendation.

33. Review Operations Safety Compliance Program

Deficiency found:

- BART Transportation Department, BART Maintenance and Engineering Department, and BART Operations Liaisons have developed and adopted safety compliance programs, but have not implemented these programs.

Recommendation:

12. BART should implement the Operations Safety Compliance Program plans for the Transportation Department, BART Maintenance and Engineering Department, and BART Operations Liaisons.

APPENDIX A
TSA EXECUTIVE SUMMARY

September 29, 2006

U.S. Department of Homeland Security

Transportation Security Administration

EXECUTIVE SUMMARY

State of California Public Utilities Commission CPUC,
Consumer Safety and Protection Division, Rail Operations and Safety Branch
320 w. 4th Street, Room 500
Los Angeles, CA 90013

Transportation Security Administration
Surface Transportation Security Inspections Program (STSIP)
Southwest – BUR/PHX Office
2919 W. Empire Ave. Burbank, CA 91504

Re: State of California Public Utilities Commission (CPUC) Tri-ennial Safety and Security Audit of the Bay Area Rapid Transit (BART) System

Ms. Gregory,

On behalf of the Surface Transportation Security Inspection Program (STSIP), the following reflects the results of our involvement with your organization and the BART system safety/security personnel during the week of 14 August, 2006 in Oakland, CA, as part of CPUC's Tri-ennial Safety and Security Audit process. Acting as your "security agent" in this process, we utilized the Surface Transportation Action Review (STAR) checklist to review and baseline the internal processes, procedures and policies inherent to the BART system in light of the most recent CFR 49 Part 659 (49-659) requirements (2006) and TSA's security directives (SD-RAILPAX-04-01 of 2004).

The information collected was reflective of several document sources to include the: System Security Plan (SSP), System Safety Program Plan (SSPP), Emergency Response Plan, Terrorist Response Annex (TRA), Buffer Zone Protection Plan, Security Briefings (threat specific – LLNL), System Analysis and Testing (LLNL/BART), and the Operational Rules and Procedures Manual. Personnel interviews were also conducted with: Safety Specialists, BART Chief of Police, BART Police Officers, Chief Transportation Officer, Sr. Operations Officer, Chief Engineer, Assistant General Manager; along with making general system observations in the field.

The overall security portion of the process (inclusive of 274 security line items) was comprised of the TSA's and Federal Transportation Administration's revised list of seventeen recommended security practices, divided categorically; the results of which will not be made public or part of the final report to the commission. The final and complete comprehensive checklist and its associated supplemental addendums regarding "items of consideration," will only reside with BART and TSA at this time. This Executive Summary provides a summation of these items regarding 49-659 requirements, with the results being made a part of your final report to the commission and includes the following:

- 659.25 (a) TA to conduct an annual review of its security program
- 659.25 (c) TA must make available new draft (modifications and changes) SSP to SSO
- 659.27 (a) TA to develop and document a process for the performance of on-going internal security audits [includes 30-day notification to SSO and annually submitting a report documenting reviews, (c) and (f) respectively]
- Overall and in light of our checklist criteria, cumulative review of documents, interviews and system observations, the BART system has an effective security program in place

Based on our interaction during this effort, the TSA believes that the STSI Program can continue to be a valuable part of your audit process, while continuing to increase our security awareness of the transportation sector, identify effective security practices and facilitate an understanding to correctly identify ways for dealing with root security issues/concerns that affect transit systems nationally.

Again, thank you for your time and professionalism. We look forward to continuing this Homeland Security partnership well into the future.

Sincerely,

Bill Woodward
TSA, Surface Transportation Security Inspector Program
Regional Director, Southwest

APPENDIX B

BART 2006 TRIENNIAL SAFETY AUDIT INDEX OF CHECKLISTS

BART 2006 TRIENNIAL SAFETY AUDIT

INDEX OF CHECKLISTS

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2	Vehicle Inspection	19	Calibration of Measuring and Testing Equipment
3	Signal Inspection	20	Track Inspection and Turnout Inspection Records
4	GO 95 Inspection	21	Exclusive Right-Of-Way Fence Inspection Records
5	Third Rail Maintenance	22	Transit Vehicle Maintenance
6	Reporting and Investigating Accidents and Investigation Procedures	23	Quality Assurance of Transit Vehicles
7	Review Operating Rules and Procedures Manual and Operating Bulletins	24	Train Control Equipment Inspection and Tests
8	Review Employee Safety Program	25	Emergency Ventilation Fans and Associated Dampers
9	Internal Safety Audit Program	26	Vital Relays
10	Inter-departmental Safety Audit Program	27	Fire Alarms and Sprinkler Systems
11	Safety and Security Certification Plan (Warm Springs Extension)	28	1) Wet Stand Pipe, 2) Sprinkler Systems, and 3) Line Pumps
12	Hazardous Materials Management Program	29	Under-Car Deluge System
13	Data Acquisition Analysis	30	Gap Breakers and Wayside Equipment
14	Emergency Response Planning and Training	31	Signal Maintenance Training and Certification
15	Drug and Alcohol Testing Program	32	Contractor Safety Coordination
16	Security Program - BART Police and Security Audits	33	Review Operations Safety Compliance Program
17	Train Operator, Line Supervisor, and Central Control Supervisor Training and Recertification		

APPENDIX C
BART 2006 TRIENNIAL AUDIT RECOMMENDATIONS LIST

BART 2006 TRIENNIAL SAFETY AUDIT RECOMMENDATIONS LIST

No.	Recommendation	Checklist No.
1	BART should survey the entire system to ensure that signs are provided and maintained in accordance with GO 95, Section 79.5 requirements and replace/re-label the "Danger Electric Third Rail Keep Away" signs where needed.	4
2	BART should survey the entire system and trim/eradicate vegetation/tree growing near the right-of-way where necessary.	4
3	BART should investigate the water leakage in the TPSS and take a corrective action in accordance with GO 128 section 30 requirements. The corrective action should also prevent future occurrence of the same problem.	4
4	BART should revise the appropriate control document to describe annual review process of the OR&P and the Operating Bulletins, including activities involved in the process and how the process (such as making findings, reaching conclusions, and recommending actions… etc.) is documented.	7
5	BART should list or provide a reference to all of the Supplementary Operations Manuals that apply to Management Procedure No. 34.	7
6	BART System Safety Program Plan should identify or reference all of the respective interdepartmental and interagency coordination programs, processes, and procedures, including the Fire Life Safety Committee.	10, 14
7	BART should adopt and implement procedures to track and verify that all identified communications deficiencies affecting BART are tracked until the deficiencies are corrected.	10, 14
8	BART should ensure that their fore workers and supervisors properly document the inspection, corrective actions, and completion status of the corrective actions to allow efficient and effective follow-up.	21
9	BART should review its applicable Quality Assurance (QA) procedures which pertain to the use of QA stamps to achieve consistency between Car History Books and archived files.	23
10	BART should follow up on open Train Control Equipment Trouble Tickets by generating a report listing the tickets, reasons behind the open status of those tickets, and a plan to resolve the issues and close the open tickets in a timely manner.	24
11	BART should ensure that Train Control Technicians who failed their recertification test are not working on equipment requiring their success in recertification. BART should have proper documentation explaining the technician's failure to be recertified.	31
12	BART should implement the Operations Safety Compliance Program plans for the Transportation Department, BART Maintenance and Engineering Department, and BART Operations Liaisons.	33

APPENDIX D

BART 2006 TRIENNIAL AUDIT CHECKLISTS (1 THROUGH 33)

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	1	Element	Track Inspection
Date of Audit	8/8/2006	Department	Maintenance and Engineering Way and Facilities Maintenance
Auditors / Inspectors	Brian Chavez Claudia Lam Gary Rosenthal	Persons Contacted	Ken Cook

REFERENCE CRITERIA

Track Standards Manual, June 1, 1995

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

FRA certified track inspector, from the Commission's Railroad Operations Safety Branch, will perform detailed visual and dimensional inspections/measurements of three sections of mainline track, four switches, four crossovers, and four turnouts to determine if the selected components are in compliance with the Code of Federal Regulation maintenance standards.

ACTIVITIES/RESULTS/COMMENTS

Findings:
The inspector performed switch inspections for compliance with Code of Federal Regulations Title 49, part F 213.235 and reviewed quarterly and annual procedures. The inspector also performed inspections of rail joints, including insulated joints. All switches inspected were lined both in the normal and reverse position by the dispatcher before the work group left the area to ensure they were working as intended.

The inspected switches and rail joints, including insulated joints, were within FRA and BART's guidelines, with the switches found to be well maintained and in good shape. Rail anchoring procedures need to be followed more closely due to newly installed rail anchors that were spaced 1/4"-1/2" away from the tie plate.

Comments:
BART's track maintenance practices are effective. BART's maintenance manual and check-off list cover each procedure in a comprehensive manner.

Recommendations:
None.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	2	Element	Vehicle Inspection
Date of Audit	8/9/2006	Department	Rolling Stock and Shops
Auditors / Inspectors	Don Miller Chris Ducote Claudia Lam William Dockery	Persons Contacted	Rich Burr

REFERENCE CRITERIA

Book 42: Automatic Train Control Maintenance Procedures

Book 50: C Car Maintenance Procedures

Book 86: A2/B2 Car Maintenance Procedures

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

CPUC Inspectors will select and inspect at least two B cars, one A car, and one C car from the Richmond Shop to determine if BART is maintaining its vehicles properly and adequately.

ACTIVITIES/RESULTS/COMMENTS

Findings:
The inspectors selected and inspected BART vehicles number 2517C, 421C, 1243A, 1250A, 1692B, and 1769B at the Richmond Maintenance Facility. The scope of the inspection included:

a) Visual inspection of the passenger cab, operator cab, door operation, safety appliances, truck / wheel components, traction motors, brake system, coupler assemblies and current collectors.
b) Review of maintenance records of vehicle undergoing preventive maintenance inspection.
c) Interview with and observation of maintenance personnel during preventive maintenance inspection/repairs.
d) Review of recently released vehicle maintenance record for completeness and accuracy.
e) Review of the maintenance standards used to perform vehicle maintenance.

The inspected vehicles were in compliance with no exception noted.

Comments:
None.

Recommendations:
None.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT

Checklist No.	3	Element	Signal Inspection
Date of Audit	8/8/2006	Department	Maintenance and Engineering Systems Maintenance
Auditors / Inspectors	Sherman Boyd Claudia Lam Gary Rosenthal	Persons Contacted	Don Allen

REFERENCE CRITERIA

Operation Rules & Procedures

BART computer program – DataStream

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

FRA certified signal inspector, from the Commission's Rail Operations Safety Branch, will perform detailed inspections of selected mainline train control and signal systems and components.

ACTIVITIES/RESULTS/COMMENTS

Findings:
The inspector performed switch obstruction tests and reviewed monthly maintenance records to verify compliance with BART's' maintenance instruction manual on 315 E, 115 A, 213, and 413 F switches. The inspector also reviewed quarterly and annual procedures and visually inspected 12 insulated joints. All inspected switches were lined both in the normal and reverse position by the dispatcher before the work group left the area to ensure they were working as intended.

All inspected switches and insulated joints were within FRA and BART's guidelines and all the applicable documents and check-off procedures reviewed by the inspector were followed. All inspected switches were well maintained and in good shape. One of the switches inspected had a new set of controller contacts as part of a new program to change out the controller contacts.

Comments:
BART's maintenance practices and trouble reporting procedures are well honed and effective.

BART has a maintenance manual and check-off list to cover each procedure in a comprehensive manner. The maintainers did the work in a safe and efficient manner. They had the proper tools to do the job correctly and were well prepared.

Recommendations:
None.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	4	Element	GO 95 Inspection
Date of Audit	8/1/2006	Department	Maintenance and Engineering Way and Facilities Maintenance
Auditors / Inspectors	Brian Yu	Persons Contacted	Randy Clark Richard Leonard

REFERENCE CRITERIA

CPUC GO 95, Section 79.5 and Section 35

CPUC GO 128, Section 30

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The Inspector will inspect a minimum of three separate third rail segments to determine if they are in compliance with the General Orders.

The Inspector will also inspect a minimum of three Substations to determine if they are in compliance with the General Orders.

ACTIVITIES/RESULTS/COMMENTS

Findings:

1. Traction Power Substation (TPSS) maintenance was in good standing.
2. Gap breaker maintenance was in good standing.
3. “Danger Electric Third Rail Keep Away” signs posted on the chain-link fencing were covered with graffiti.
4. “Danger Electric Third Rail Keep Away” signs posted on the third rail cover boards throughout the underground stations were covered with thick layers of dust, making the signs not readily visible.
5. “Danger Electric Third Rail Keep Away” signs posted on the third rail cover boards at the outdoor stations have found to be fading and peeling.
6. “Danger Electric Third Rail Keep Away” signs posted on the chain-link fencing were covered with tree leaves.
7. Traction Power Substation (TPSS) at Ashby Station had water leaking from the inside wall and accumulating on the floor.
8. At various locations along the BART A-Line, trees and shrubbery have not been properly

trimmed/removed. More specifically:

- At certain locations, near aerial structures, tree branches have found to be touching third rail cover boards.
- At certain locations, trees/shrubbery branches were growing over/through the fencing, partially blocking the maintenance walkways.

The specific areas noted were:

- Mile Post 3.1 on A2 track side
- Mile Post 12.2 on A2 track side
- Mile Post 19.8 on A2 track side
- Mile Post 23.4 on A2 track side

Comments:
None.

Recommendations:
1. BART should survey the entire system to ensure that signs are provided and maintained in accordance with GO 95, Section 79.5 requirements and replace/re-label the “Danger Electric Third Rail Keep Away” signs where needed.
2. BART should survey the entire system and trim/eradicate vegetation/tree growing near the right-of-way where necessary.
3. BART should investigate the water leakage in the TPSS and take corrective action in accordance with GO 128, Section 30 requirements. The corrective action should also prevent future occurrence of the same problem.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	5	Element	Third Rail Maintenance
Date of Audit	8/16/2006	Department	Maintenance and Engineering Power/Mechanical Maintenance
Auditors / Inspectors	Brian Yu	Persons Contacted	Randy Clark, BART Power and Mechanical Maintenance Clifton Black, BART Power and Mechanical Maintenance

REFERENCE CRITERIA

Book 31: Electrical Maintenance Procedures, Chapter 1, Section 17

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The auditor will select a minimum of four separate sections of third rail and review the relevant maintenance inspection records to determine if:

1. The required monthly and annual inspections were performed during the past 12 months as required by the referenced procedure.

2. The inspections were properly documented and noted discrepancies were corrected in a timely manner.

ACTIVITIES/RESULTS/COMMENTS

Findings:

1. Staff reviewed BART Third Rail Maintenance Annual Inspection records for the following four sections:

    - AR 13: 2003, 2004, 2005
    - CL 09: 2005, 2006
    - MR 11: 2004, 2005, 2006
    - WR 06: 2004, 2005, 2006

2. Staff reviewed BART Third Rail Maintenance Monthly Inspection records for 2005 and 2006.

3. Staff interviewed the BART Section Manager during and after the record review.

4. Third Rail Maintenance records were properly documented.

5. Completion status of the Work Orders generated from the scheduled maintenance inspections was traceable. The tracking of the work orders and the status of their completion is being done manually.

Comments:
BART could benefit from using a computerized work tracking system instead of the current manual tracking method.

Recommendations:
None.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	6	Element	Reporting and Investigating Accidents and Investigation Procedures
Date of Audit	8/15/2006	Department	System Safety
Auditors / Inspectors	Claudia Lam	Persons Contacted	Ken Cook Jeff Lau

REFERENCE CRITERIA

Management Procedure 48, March 6, 2001

System Safety Program Plan (SSPP), Chapter 8

CPUC GO 164-C, Sections 5 and 6

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The auditor will randomly select at least five accidents involving an injury or fatality reportable to the CPUC during the past 24 months and determine if:

1. The accident was reported to the CPUC representative within 4-hours, and the written report was provided within 30 days from the last day of the month during which the accident occurred.

2. The incident investigated was in compliance with CPUC approved BART Accident Investigation Procedures.

3. An investigation report identified:

   a. Each item covered by the investigation.

   b. The investigation findings of the most probable cause.

   c. Underlying contributing causes.

   d. A corrective action plan has been prepared to addresses the identified causes and that it minimize the incident from recurring.

   e. A schedule for implementing the corrective action plan has been prepared and has been completed or is being monitored on an on-going basis.

ACTIVITIES/RESULTS/COMMENTS

Findings:
Filed copies of five accident reports for the past 24 months were reviewed to determine the completeness of the investigation requirements.

The accidents selected were:

a) Pittsburg/Bay Point Station, August 20, 2006,
b) Fruitvale Station Platform, October 25, 2004,
c) San Leandro Station, August 26, 2005,
d) Fruitvale Station, December 25, 2005, and
e) Union City Station, May 15, 2006.

1. Two immediately reportable accidents were not reported to the CPUC representative within four hours as required by CPUC GO 164-C. Fruitvale Station Platform accident occurred on October 25, 2004 at 6:28 p.m. and was reported by October 26,2004 at 7:00 a.m.. The Fruitvale Station accident occurred on December 25, 2006 at 9:20 a.m. and was reported by December 27, 2005 at 7:05 a.m.

2. Investigation for each of the selected incidents was in compliance with the BART Accident Investigation Procedure and the Investigation Hazardous Conditions Procedure.

3. Investigation report for each of the selected incidents identified each item covered by the investigation including the most probable cause and any underlying contributing causes where applicable.

4. No Corrective Action Plan was needed for any of the five selected accidents.

Comments:
BART Chief Safety Officer addressed the above findings immediately by sending a memorandum, dated September 27, 2006, to BART staff. The memorandum emphasized that BART must notify CPUC of all immediately reportable events in compliance with CPUC GO 164-C.

Recommendations:
None.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	7	Element	Review Operating Rules and Procedures Manual and Operating Bulletins
Date of Audit	8/14/2006	Department	System Safety
Auditors / Inspectors	Gary Rosenthal	Persons Contacted	Ken Cook

REFERENCE CRITERIA

Management Procedure 34, November 1, 1998

Operating Rules and Procedures Manual and Operating Bulletins

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The auditor will review the Operating Rules and Procedures Manual and Operating Bulletins to determine if:

1. The Operating Rules and Procedures Manual and Operating Bulletins are updated on a regular basis.

2. Samples of bulletins and operating rules have been distributed to staff during the past 12 months and the process has been tracked.

ACTIVITIES/RESULTS/COMMENTS

Findings:

1. Management Procedure No. 34 addresses the development and control of BART operating rules, procedures, and bulletins.

2. Management Procedure No. 34 was in the process of being revised at the time of the audit.

3. The most recent revision of the Operator Rules and Procedures (OR&P) is dated January 2006.

4. BART records for 2003, 2004, 2005, and 2006 disclosed memoranda indicating the OR&P had been reviewed each of those years.

5. Management Procedure No. 34 requires an annual review of the BART Operating Rules and Procedures (OR&P) without establishing the criteria in which the document is required to be revised.

6. Management Procedure No. 34 requires an annual review of the Supplementary Operations Manuals without establishing the criteria in which the manuals are required to be revised.

7. Management Procedure No. 34 referred to three BART Supplementary Operations Manuals but failed to identify them.

8. BART has adopted the practice of reviewing, revising, and reissuing the Train Operator Manual biennially.

9. Management Procedure No. 34 requires an annual review of the Operating Bulletins without establishing the criteria in which the bulletins are required to be revised.

10. BART has adopted the practice of reviewing and reissuing the Operating Bulletins at the beginning of each calendar year.

11. Twenty Operating Bulletins from 2005 were cancelled on February 13, 2006 in conjunction with the adoption of the revised OR&P and four Operating Bulletins were renumbered and reissued.

12. In March 2007, BART submitted a report describing the annual OR&P review that took place in January 2007. Findings/recommendations are divided into Priority 1 and Priority 2. There is no information that describes the qualification for Priority 1 or 2. However, the report implied that there is a structure to the review and analysis process.

Comments:
Staff supports BART's practice of reviewing the OR&P annually and completing revisions in a timely manner. Staff also supports BART's practice of reviewing, revising, and reissuing Operating Bulletins annually.

Recommendations:
1. BART should revise the appropriate control document to describe annual review process of the OR&P and Operating Bulletins, including activities involved in the process, and how the process (such as making findings, reaching conclusions, and recommending actions… etc.) is documented.

2. BART should list or provide a reference to all of the Supplementary Operations Manuals that apply to Management Procedure No. 34.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	8	Element	Review Employee Safety Program
Date of Audit	8/16/2006	Department	System Safety
Auditors / Inspectors	Georgetta Gregory William Dockery	Persons Contacted	David L. Sanborn, Manager, Employee/Patron Safety

REFERENCE CRITERIA

System Safety Program Plan (SSPP), Chapter 19

Injury and Illness Prevention Program (IIPP)

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The auditors will interview operations management and at least two safety committee employee representatives and review the employee safety program records to determine if:

1. An appropriate procedure and reporting form have been developed and periodically distributed to all employees to ensure safety hazards in the work place are reported effectively.

2. All employee-identified safety hazards during the past 18 months have been addressed by a Safety Committee by developing and implementing corrective action plans.

3. The corrective actions are being tracked or have been implemented.

4. Safety Committee meetings have been held periodically during the past 18 months to facilitate the implementation of this corrective action.

ACTIVITIES/RESULTS/COMMENTS

Findings:

1. Programs and policies contained in the IIPP have been utilized to implement Employee/Patron Safety Programs. The IIPP supersedes Management Procedure No. 61.

2. A procedure and method of reporting have been developed and distributed to primarily supervisory employees through the BART intranet, memorandums, and handouts. Supervisors are responsible to disseminate the information as appropriate.

3. The required documentation to verify all employee-identified safety hazards during the past 18 months and addressed by the Safety Committee was insufficient and difficult to cross reference.

4. Safety Committee meetings have been held monthly over the past 18 months. A summary showing meeting dates and number of attendees was reviewed, dating back to meeting number one on January 1, 2001. Meeting minutes dating from December 7, 2005 through July 5, 2006 were reviewed.

5. An Ergonomics Lab has been established to perform ergonomic assessments of work processes and work areas.

Comments:
The program is well administered and organized given the limitations of staffing and automation with high level of individual accountability.

BART could benefit by implementing a fully automated and integrated process for data collecting and tracking to ascertain that all reported hazards are captured and evaluated, corrective actions are planned and completed, and that each item is closed by a single documentation package

Recommendations:
None.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	9	Element	Internal Safety Audit Program
Date of Audit	8/17/2006	Department	System Safety
Auditors / Inspectors	Gary Rosenthal	Persons Contacted	Ken Cook

REFERENCE CRITERIA

Management Procedure 60, January 28, 1998

System Safety Program Plan

APTA Guidelines

CPUC GO 164-C, Section 4.

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The auditor will review BART documents/records to determine if:

1. The Internal Safety Audits have been scheduled and performed.
2. The scope of audit activities includes the required elements from the APTA Guidelines.
3. The APTA Guidelines Elements 10 - 24 have been covered during the three-year period from the last triennial audit.
4. The internal audit process has been performed with schedule submitted to the CPUC before the beginning of the audits.
5. Internal Safety Audits have been properly documented and submitted to the CPUC annually.
6. Corrective actions were scheduled and implemented.

ACTIVITIES/RESULTS/COMMENTS

Findings:

1. BART annual internal safety audit reports for 2003, 2004, and 2005 include the internal safety audits schedules and performance.

2. Internal safety audit reports indicate that each of the APTA Safety program elements, except element 17: Interdepartmental/Interagency Coordination, was specifically addressed at least once during the most recent three-year audit cycle.

3. Internal safety audits were performed according to the schedules submitted to CPUC or CPUC was notified of the schedule change.

4. Internal safety audit reports indicate that CPUC staff was frequently present to observe activities during the audits.

5. The Rules/Procedures Review element was audited 44 times and the Maintenance Audits/Inspections element was reviewed 29 times during the three-year cycle.

6. The Emergency Response Planning, Coordination, and Training, the System Modification Review/Approval Process, and the Drug and Alcohol Abuse Program elements were each audited only once during the three-year cycle. The Contractor Safety Coordination and the Procurement elements were each audited twice during the three-year audit cycle.

7. The internal safety audits of BART System Safety Department activities were performed by the BART System Safety Department employees.

8. The internal safety audits are documented on BART Standard Internal Safety Audit Program Form.

9. BART Annual Internal Safety Audit Reports were submitted to CPUC staff as required in 2003, 2004, and 2005.

10. Corrective action plans are recorded on a BART corrective action plan forms.

11. Internal Safety Audit Corrective Action Status Reports are prepared and issued quarterly. Even though corrective actions are often scheduled to take more than two or three years to complete, no information concerning interim project progress is recorded. Status information on the quarterly reports is limited to the terms “Open” or “Closed.”

12. In March 2007, BART submitted additional information demonstrating that, in at least one Instance, the auditor was not independent from the first line of supervision responsible for performing the activity being audited.

Comments:
Staff suggests that BART use the internal safety audit process to more actively and thoroughly monitor interdepartmental and interagency coordination programs, processes, and procedures.

Staff also suggests that BART quarterly status reports record the actual progress of the project from one quarterly report to the next.

Recommendations:

None.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	10	Element	Inter-departmental Safety Audit Program
Date of Audit	8/16/2006	Department	System Safety
Auditors / Inspectors	Gary Rosenthal	Persons Contacted	Len Hardy, Chief Safety Officer

REFERENCE CRITERIA

APTA Guidelines Element 17, Section 3

CPUC GO164 - C

System Safety Program Plan (SSPP), Chapter 17

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The auditor will interview the BART Internal Safety Auditors, review the internal safety audit requirements, and review audit reports/records to determine if:

1. BART internal safety audit program includes an element of interdepartmental and interagency communications.

2. The interdepartmental and interagency communications process and requirements are clearly defined in detail.

3. Any deviations from the approved procedure, identified during an internal safety audit or by any other means, are brought to the attention of management.

4. BART monitors, reports, and acts to correct any deviation from its communications policies with emergency responders and other affected agencies

ACTIVITIES/RESULTS/COMMENTS

Findings:

1. Interdepartmental and interagency coordination was not included as a specific element of the BART internal safety audit program.

2. Although the interdepartmental and interagency coordination process and requirements are discussed in the BART System Safety Program Plan, they are not defined in detail or specifically referenced. The System Safety Program Plan also failed to identify the BART Fire Life Safety Committee.

3. Deviations from approved procedures, identified during an internal safety audit or by any other means, are brought to the attention of the management in internal safety audit quarterly reports. Deviations from procedures identified by other means, such as accident or incident reports, are reported to management.

4. BART identified and reviewed communications deficiencies with emergency responders and other participating agencies following emergency exercises and actual events. In cases where communications deficiencies were found to be the responsibility of emergency responders or other participating agencies, there was no clear evidence that BART tracked the corrective actions and verified the satisfactory resolution of the deficiencies.

5. Interdepartmental and interagency coordination was partially addressed in other internal safety audits which focused on other elements.

Comments:

Staff suggests that BART use the internal safety audit process to more actively and thoroughly monitor interdepartmental and interagency coordination programs, processes, and procedures.

Recommendations:

1. BART System Safety Program should identify or reference all of the respective interdepartmental and interagency coordination programs, processes, and procedures, including the Fire Life Safety Committee (See Checklist No. 14).

2. BART should adopt and implement procedures to track and verify that all identified communications deficiencies affecting BART are tracked until the deficiencies are corrected (See Checklist No. 14).

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	11	Element	Safety and Security Certification Plan (Warm Springs Extension)
Date of Audit	8/16/2006	Department	System Safety
Auditors / Inspectors	Raed Dwairi	Persons Contacted	Len Hardy, Chief Safety Officer Mark T. Chan, Principal Engineer

REFERENCE CRITERIA

Safety and Security Certification Plan (SSCP) - Warm Springs Extension

CPUC GO164-C, Sections 7 and 8

System Safety Program Plan

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The auditor will interview management and review documentation to determine if the SSCP of the Warm Springs Extension:

1. Addresses safety certification management, including organizational authority and responsibilities.

2. Addresses the controls used to maintain effective communications and liaison with staff throughout the life of the project.

3. Identifies the process used to verify and document conformance with safety and security requirements during design, construction, testing, and operational readiness.

ACTIVITIES/RESULTS/COMMENTS

Findings:

1. BART has a Safety and Security Certification Plan for the Warm Springs Extension Project ,dated September 14, 2005. This plan was approved by the Commission resolution ST-80, dated October 27, 2005.

2. The SSCP addresses safety certification management including organizational authority and responsibilities in Sections 1.1, 1.5, and Chapter 3.0.

3. The SSCP addresses the controls used to maintain effective communications and liaison With staff throughout the life of the project by requiring the Safety Department to coordinate CPUC Safety Oversight in all phases of the project and provide quarterly status reports to the CPUC.

4. The SSCP identifies the process used to verify and document conformance with safety and security requirements during design, construction, testing, and operational readiness. Chapter 4: Hazard & Vulnerability Management was followed when BART conducted Preliminary Hazard Analysis (PHA) on the Warm Springs Extension Project by breaking up the extension into six systems (departments), each with appropriate committees to address the identified recommendations. Certificates of Conformance are utilized for the verification of safety and security requirements. Safety Criteria Variances are reviewed and approved/disapproved by the Safety Department. Operational readiness is verified and a Notice of Intent to Operate is endorsed by the General Manager and issued to the CPUC.

Comments:
None.

Recommendations:
None.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	12	Element	Hazardous Materials Management Program
Date of Audit	8/15/2006	Department	System Safety
Auditors / Inspectors	Anton Garabetian William Dockery	Persons Contacted	David L. Sanborn, Manager, Environmental, Health, and Safety Gary G. Jenson, Principal Engineer Jonathan Rossen, Industrial Hygienist

REFERENCE CRITERIA

System Safety Program Plan (SSPP), Chapter 20

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The auditors will interview BART department managers to determine if hazardous materials are being handled properly. The auditors will also review procedures and records to determine if:

1. The procurement process for insecticides, herbicides, chemicals, and solvents used by BART are explained clearly.

2. The Material Safety Data Sheet (MSDS) for each hazardous material is on file with the System Safety Department.

3. The approved MSDS have been entered into the Material Safety Data Sheet System.

4. BART employees who handle hazardous materials have received specific training regarding reporting requirements, inventory control and storage, product release or spill, and the response and cleanup of spill incidents.

5. Hazardous materials discharge/spill reports for incidents that occurred during the past three years have been prepared and filed..

6. All MSDS are available to all personnel who work with hazardous materials.

ACTIVITIES/RESULTS/COMMENTS

Findings:
Staff interviewed BART Safety Department management in charge of the Hazardous Materials Management Program and the Hazard Communication Program. Staff also reviewed material safety data sheets (MSDS) and a list of employees that have been trained on the Hazardous Material Management Program. Staff inquired about the CIMAGE computer program used by the Safety Department.

1. BART does not procure insecticides or herbicides, but hire contractors to perform the necessary service. The procurement process for chemicals and solvent is very clear and all procurement requests are evaluated and approved by the Safety Department.

2. When the Safety Department approves a chemical for purchase, the chemical is entered into the MSDS System.

3. The MSDS for each hazardous material is on file with the System Safety Department. The MSDS is also posted on the BART Intranet so that all departments have access to MSDS and the accompanying safety instructions for each chemical.

4. BART employees who handle hazardous materials have received specific training regarding reporting requirements, inventory control and storage, product release or spill, and the response and cleanup of spill incidents.

5. According to the Safety Department, there has not been any hazardous materials discharge/spill at BART and the chemicals stored in the departments are in small quantities.

6. The Safety Department did not have the information regarding the type of chemicals stored in each BART location.

Comments:
Staff suggests that the Safety Department keeps a list of every chemical available in each department and be made available for emergency responders in case of a disaster.

Recommendations:
None.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	13	Element	Data Acquisition Analysis
Date of Audit	8/16/2006	Department	System Safety
Auditors / Inspectors	Claudia Lam William Dockery	Persons Contacted	Ken Cook Dave Sanborn

REFERENCE CRITERIA

APTA Guidelines Element 16

CPUC GO164-C, Section 3

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The auditors will interview BART representative in charge of safety data acquisition and analysis. The auditors will also review the safety data acquisition and analysis program requirements, records, and reports to determine if:

1. The data collected includes, at minimum, information concerning BART rail transit accidents and incidents, employee performance failures, equipment failures, software failures, procedural deficiencies, external factors contributing to failures, environmental factors contributing to failures, accidents/incidents involving fatalities, accidents/incidents involving injuries, accidents/incidents resulting in property damage, and accident/incidents resulting in environmental damage.

2. The safety data is supplied by and collected from all departments including Risk Management.

3. The data collected is then analyzed and incorporated into BART's hazard identification and resolution process.

4. The data collected and the resulting analyses are made available to all BART departments for use in planning their safety-related activities.

ACTIVITIES/RESULTS/COMMENTS

Findings:

1. The System Safety Department produces three primary reports covering the following areas:

   • Train operations
   • California Occupational Safety and Health Administration (Cal OSHA)
   • Patron incidents

2. Source of inputs:

- Unusual Occurrence Reports
- Police Reports
- Accident-Injury Reports
- Customer Complaint Cards
- Phone Calls/E-mail
- Supervisors Illness/Injury Reports
- Operations Control Center Managers Log

3. Staff reviewed the following documents:

- Quarterly Safety Statistics Reports
- FTA Quarterly Report on BART Safety Statistics
- Quarterly Operations Safety Statistics Worksheets
- Listing of BART Injury and Illness Prevention Programs and Policies
- Listing of "Mike's Weekly Safety Reminders"
- Listing of patron incidents
- Safety Notice Running Log

Comments:
The program is well administered and organized given the limitations of staffing and automation with high level of individual accountability.

Recommendations:
None.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT

Checklist No.	14	Element	Emergency Response Planning and Training
Date of Audit	8/15/2006	Department	System Safety
Auditors / Inspectors	Gary Rosenthal	Persons Contacted	John McPartland, Operations Safety

REFERENCE CRITERIA

BART Emergency Plan, November 2002

System Safety Program Plan (SSPP)

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The auditor will interview the Safety Manager/Chief and review records and documentation for the past 18 months to determine if:

1. BART has held periodic Fire Life Safety meetings with police and fire departments in the applicable BART jurisdictions.

2. Emergency drills and tabletop exercises were scheduled and performed with all external agencies in the last three years.

3. Drills were evaluated and recommendations incorporated into the Emergency Response Agency Familiarization Program.

4. Corrective actions have been implemented.

ACTIVITIES/RESULTS/COMMENTS

Findings:

1. BART conducts quarterly Fire Life Safety Committee meetings with fire departments in the applicable BART jurisdictions. Meeting minutes from 2003, 2004, 2005, and 2006 were available for review.

2. BART Police frequently attend Fire Life Safety Committee meetings. There was no evidence verifying the attendance of other police departments.

3. The Fire Life Safety Committee or its function was not described, specified, or referenced in BART's System Safety Program Plan.

4. Records indicate that there were numerous tabletop exercises, emergency drills, familiarization tours, and training sessions performed by BART over the last three years throughout the BART system. The target of the drills and training are fire departments in the various districts where BART operates. Other emergency responders also participate in the emergency drills.

5. BART departments and other participants are invited to critique emergency drills and actual emergency events after the exercises or events are completed. Although deficiencies effecting BART are identified and reviewed by the participants, there is no record that corrective actions are established and tracked and the deficiencies corrected.

Comments:
None.

Recommendations:
1. BART System Safety Program Plan should identify or reference all of the respective interdepartmental and interagency coordination programs, processes, and procedures, including the Fire Life Safety Committee (See Checklist No. 10).

2. BART should adopt and implement procedures to track and verify that all identified communications deficiencies affecting BART are tracked until the deficiencies are corrected (See Checklist No. 10).

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	15	Element	Drug and Alcohol Testing Program
Date of Audit	8/15/2006	Department	Administration Human Resources / Employee Services
Auditors / Inspectors	Georgetta Gregory William Dockery	Persons Contacted	Margaret Saget

REFERENCE CRITERIA

BART Substance Abuse Program 2000

FTA Guidelines

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The auditors will review records and documents to determine if:

1. The BART Substance Abuse Program meets current FTA guidelines.

2. The number of employees in safety sensitive positions were tested positive (or refused to take a test) during the past 3 years:

   a. For pre-employment
   b. With a reasonable Cause
   c. Post-Accident
   d. At random
   e. To return to Work
   f. As a follow-up

3. The outcome of the tests is in compliance with BART policy and other regulatory requirements.

ACTIVITIES/RESULTS/COMMENTS

Findings:
Staff interviewed BART personnel regarding the BART Substance Abuse Program, dated May 2006 and reviewed records of employee testing and statistics for the last three years. Staff also reviewed training documentation and the 2006 contractor substance abuse testing records to determine their compliance with current FTA guidelines.

1. The current BART Substance Abuse Program is in compliance with FTA guidelines and all employees are being trained to these guidelines.

2. The BART Substance Abuse Program is focused primarily on safety sensitive personnel.

3. There are approximately 1,500 safety sensitive BART employees and approximately 70 substance abuse tests performed each month.

4. The results of the 3,679 substance tests during the past three years include 28 positive tests, which is less than one percent of employees tested. The positive results occurred in the following tests:

    a. Pre-Employment (5)
    b. Reasonable Cause (2)
    c. Post-Accident (3)
    d. Random (12)
    e. Follow-up (5)
    f. Return to Work (1)

5. Records indicate that all BART supervisory personnel have received two hour minimum training on recognition of substance abuse.

6. Records reveal that written notice was provided to covered employees and collective bargaining units.

7. Random substance abuse testing is performed on safety sensitive personnel only in accordance with the guidelines.

8. Training rosters are maintained for all personnel who receive training. However, not all training rosters include the starting and end times of the training.

9. Test results are made available to those employees tested.

10. BART uses a database to maintain substance abuse testing records on safety sensitive personnel.

11. Staff reviewed the Post-Accident Incident Log and determined that it provides adequate documentation.

12. Staff reviewed the Drug and Alcohol Program Incident Log and other supporting documentation and found it to be adequate in documenting non-compliances.

13. The five contractor testing records in the first quarter of 2006 indicate that BART Safety Department is vigilant in enforcing its Substance Abuse Program with its contractors. Deficiencies were quickly identified and corrective actions were taken. The noted deficiencies are related to compliance with the Federal Transit Administration (FTA) spacing of testing throughout the month. One contractor was identified with insufficient staff to oversee the process, which was rectified by training additional personnel in drug program administration duties. Non-compliant contractors are terminated by BART.

14. BART records were generally well maintained and organized.

15, The BART rehabilitation program has shown good results over the past five years with 61 employees successfully completing the program and 17 employees being unsuccessful in completing the program.

Comments:
None.

Recommendations:
None.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	16	Element	Security Program - BART Police and Security Audits
Date of Audit	8/16/2006	Department	BART Police Department
Auditors / Inspectors	Georgetta Gregory	Persons Contacted	Captain Gary Gee Lieutenant Daniel Hartwig John McPartland

REFERENCE CRITERIA

System Security Program Plan, January 1, 1998

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The auditor will Interview BART personnel and review record checks for the past three years to determine if:

1. Annual inspections of all BART stations have been conducted and areas of concern have been documented and addressed.

2. The BART Police Crime Analyst has produced monthly crime reports and these reports have been distributed to all department command staff.

3. Security audits have been conducted in the last three years to identify potential terrorist targets and areas of improvements.

ACTIVITIES/RESULTS/COMMENTS

Findings:
Staff interviewed BART personnel and reviewed the following documentations:

- System Security Plan, dated October 1998
- System Security Plan, dated July 2006
- Service Performance Review for the first three quarters of year 2006
- Terrorist Threat Analysis of one critical infrastructure location conducted by Lawrence Livermore National Laboratory in November 2005
- Station inspection records for 2005

1. Facility station inspections are completed biennially using APTA guidelines.

2. Findings of facility station inspections have corrective actions that are monitored to completion.

3. BART Police Crime Analysis:

   a. BART began converting to a new Computer Aided Dispatch/Records Management System (CAD/RMS) in October 2004. Since then, monthly reports of crime analysis are yet to be available. In April 2006, BART began inputting monthly data into the system. During this interim period, quarterly reports have been prepared and were reviewed by staff for Fiscal Year (FY) 2006. Reports are distributed via e-mail to

supervisors.

b. BART Police Presence is below goal due to a shortage of staff and is anticipating a full staff by the end of FY 2007. Rating is based on uniformed police seen by random surveyors in stations, trains, parking lots, and garages.

c. BART Police had 12,250 calls in the third quarter of FY 2006 with a 4.34 minutes response time. During the fourth quarter there were 11,961 calls with a 3.75 minutes response time. BART police goal is to respond within four minutes.

d. BART reported 23,260,337 passenger trips in the third quarter of FY 2006 and 24,901,731 passenger trips in the fourth quarter.

e. Crimes per million trips, referred to as quality of life violations, have decreased since the first quarter of FY 2006. The third quarter report indicates 1,521 violations or 65.4 per million trips and 936 violations or 37.6 per million trips in the fourth quarter.

f. Crimes against persons (homicide, rape, robbery, and aggravated assault) per million trips have increased since first quarter of FY 2006 with the third quarter indicating a slight decrease. A total of 41 crimes against persons were reported in third quarter of FY 2006 and 55 in the fourth quarter. These crimes equate to 1.76 crimes per million trips in the third quarter and 2.21 per million trips in the fourth quarter. BART goal is 2 crimes per million trips.

g. Auto theft and burglary crimes per 1,000 parking spaces during the first three quarters of FY 2006 exceeded the goal of eight, with ten being reported in the third quarter and fourth quarters consecutively. A total of 476 auto theft and burglary crimes were reported in the third quarter of FY 2006 and 523 were reported in the fourth quarter.

h. Reports are distributed to General Manager and all police department supervisory staff.

4. Security audits to identify potential terrorist targets have found to be comprehensive. The audits identified potential terrorist targets and recommended corrective actions.

Comments:
The Transportation Safety Administration (TSA) conducted a review of BART System Security Plan and threat and vulnerability assessment process simultaneously with staff during the completion of this checklist. Those findings are documented in a classified document and are not part of this report. Refer to TSA Executive Summary in Appendix A.

Recommendations:
None.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT

Checklist No.	17	Element	Train Operator, Line Supervisor, and Central Control Supervisor Training and Recertification
Date of Audit	8/18/2006	Department	Operations Training and Support Transportation
Auditors / Inspectors	Gary Rosenthal	Persons Contacted	Ken Cook Rudy Crespo Lee Kirk

REFERENCE CRITERIA

BART Employee Certification Plan, 1986

System Safety Program Plan (SSPP), Chapter 13

CPUC GO 143-B, Section 13.03

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The auditor will randomly select at least six BART employees in each of the following classifications:

1. Train operator
2. Operation Control Center (OCC) Supervisor
3. Line Supervisor
4. Yard Supervisor

The auditor will also review training and recertification records for the above employees for the past three years to determine if:

1. BART has completed the initial training program.

2. The course content was appropriate and adequate to meet training and recertification requirements.

3. The person has been recertified at the correct frequency and currently meets the criteria to operate a vehicle.

ACTIVITIES/RESULTS/COMMENTS

Findings:

1. The records of seven arbitrarily selected OCC Supervisors, including one OCC Manager, disclosed that they all had completed the initial training and certification program and the required recertification programs.

2. The OCC Supervisor training program is comprehensive and requires certification as a Train Operator and as a Power Controller.

3. The OCC Supervisor training program is administered separately from the other operations training programs. BART personnel stated that there are informal efforts to ensure that the training programs are compatible.

4. The records of six randomly selected Train Operators disclosed that they all had completed the initial training and certification program and the required recertification programs.

5. Records demonstrated that Train Operator training is comprehensive and regularly updated to address system changes. Recent changes have focused on improving BART's security program.

6. The records of six randomly selected Fore Workers disclosed that they all had completed the initial training and certification program and the required recertification programs.

7. Records indicate that Fore Worker training is comprehensive and includes training at all locations where they may be assigned.

Comments:
Staff suggests that BART consider establishing a formal integration procedure to ensure the OCC Supervisor training program and other operations training programs are compatible.

Recommendations:
None.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	18	Element	Hours of Service of Train Operators, Train Controllers, and Tower Fore Workers
Date of Audit	8/14/2006	Department	Transportation
Auditors / Inspectors	Anton Garabetian	Persons Contacted	Kathy Gilbert, Group Manager, Operations Support and Review Transportation Brenda Piper, Operations Supervisor, Transportation Department Carmen Bond, Transportation Department

REFERENCE CRITERIA

Operations Control Center (OCC) Manual, Rev 14

Amalgamated Transit Union (ATU) Labor Agreement

American Federation of State, County, and Municipal Employees (AFSCME) Labor Agreement, 2005 - 2009

CPUC GO 143-B, Section 12.04

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The auditor will randomly select six employees from the following safety sensitive job classifications:

1. Train Operators

2. Fore Workers

3. Train Controllers

4. Power and Support Controllers

5. Communications Specialists

6. Other OCC Employees, including Supervisors

The auditor will also review the selected employees' "time on duty" records prepared during a three-month period in the past 18 months to determine if they complied with the minimum rest requirements in the reference criteria.

ACTIVITIES/RESULTS/COMMENTS

Findings:
Staff reviewed working hour records prepared during a three-month period in the past 18 months

for six Train Operators and six Fore Workers. Staff also reviewed working hour records prepared during a one-month period in the past 18 months of one Operations Control Center (OCC) Manager, two Train Controllers, one Communications Specialist, and one Power and Support Controller as follows:

1. Working hour records of six Train Operators from July 18 to November 6, 2005 did not show any discrepancy.

2. Working hour records of six Fore Workers from July 18 to November 6, 2005 did not show any discrepancy.

3. Working hour records of one OCC Manager from January 16 to February 15, 2006 did not show any discrepancy.

4. Working hour records of two Train controllers from February 1 to February 28, 2006 did not show any discrepancy.

5. Working hour records of one Communications Specialist from January 1 to January 29, 2006 did not show any discrepancy.

6. Working hour records of one Power Supply Controller from January 1 to January 29, 2006 did not show any discrepancy.

Comments:
None.

Recommendations
None.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	19	Element	Calibration of Measuring and Testing Equipment
Date of Audit	8/10/2006	Department	Rolling Stock and Shops
Auditors / Inspectors	Joey Bigornia	Persons Contacted	Charles Sewchok, Manager, Quality Assurance Rufus P. Farinha, Assistant Shop Superintendent Paul K. Yan, Assistant Superintendent Secondary Repair

REFERENCE CRITERIA

Book 15: Quality Assurance Manual, Chapter 17, Section 1, February 29, 1998

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The auditor will select five different items on the list of equipments that require calibration and review their documentation and inspect the equipment to determine if:

1. The selected items have a calibration label firmly affixed stating the date the item was last calibrated and the date the item is due for calibration.

2. The selected items are properly inventoried, stored, distributed for use, and calibrated with certified standards at the prescribed intervals.

ACTIVITIES/RESULTS/COMMENTS

Findings:

1. Staff interviewed the BART manager in charge of the calibration program for shop measuring devices.

2. Staff reviewed the following equipment, identified by model and serial number, from BART's Recall List:

   a. Torque Wrenches

      1. Proto (90-600 ft/lbs) – s/n 2004030
      2. Proto (50-250 ft/lbs) – s/n 1251251
      3. Proto (10-80 ft/lbs) – s/n 1251252

   b. Pressure Gages

      1. WIKA (3000 psi) – s/n 1251220
      2. WIKA (3000 psi) – s/n 1251219
      3. WIKA (3000 psi) – s/n 2004056

c. Dial Calipers

1. Mitutoy (0-12”) – s/n 4032262
2. Starret (0-12”) – s/n 1251373

d. Digital Multi-meters

1. Fluke – s/n 1492071
2. Fluke – s/n 1492053
3. Fluke – s/n 1492061

e. Power Supply

1. Sorenson – BTR 1305
2. Sorenson – BTR 1306
3. Sorenson – BTR 1308
4. Sorenson – BTR 1309

3. Staff reviewed copies of the Calibration Data Sheets and Certificates to confirm equipments selected for review were calibrated within the required annual frequency.

4. BART’s electronic equipment is calibrated by SE Laboratories annually..

5. BART’s mechanical equipment is calibrated by Mobile Laboratories annually. All equipment listed above had a calibration sticker affixed showing the last date and the next scheduled date of calibration. No exceptions were noted.

6. Copies of the Calibration Data Sheets and Certificates for all equipment listed above were reviewed to confirm that the independent laboratories calibrated the equipment. No exceptions were noted.

7. All equipments were calibrated within the required frequency interval with no exceptions noted.

Comments:
None.

Recommendations:
None.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	20	Element	Track Inspection and Turnout Inspection Records
Date of Audit	8/8/2006	Department	Maintenance and Engineering Way and Facilities Maintenance
Auditors / Inspectors	Joey Bigornia	Persons Contacted	Tom Delaney, Section Manager

REFERENCE CRITERIA

Track Standards Manual, June 1, 1995

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Track Inspection:

The auditor will:

1. Review BART track inspection reports for at least two separate periods during the last three years to determine if:

   a. All mainline tracks, yard leads, and transfer tracks were inspected weekly by hi-rail vehicle.
   b. The required inspections were properly documented and noted defects were corrected in a timely manner.

2. Review BART geometry car inspection reports for at least two separate periods during the last three years to determine if:

   a. All mainline tracks were inspected quarterly and all yard leads and transfer tracks were inspected annually by a geometry car.
   b. The required inspections were properly documented and noted defects were corrected in a timely manner.

3. Review BART rail defect reports during the last three years to determine if:

   a. All mainline tracks were inspected biennially by a device capable of detecting internal flaws in the running rails.
   b. The required inspections were properly documented and noted defects were corrected in a timely manner.

Turnout Inspection:

The auditor will also review BART track inspection reports for at least two separate periods during the last three years to determine if:

1. All mainline and yard turnouts were inspected monthly by on-foot inspection.

2. The required inspections were properly documented and noted defects were corrected in a timely manner.

ACTIVITIES/RESULTS/COMMENTS

Findings:

1. Staff interviewed the Section Manager in charge of the under-car deluge system inspection program.

2. Staff reviewed the following documents to determine if the tracks were inspected by hi-rail vehicle:

   a. Mainline track and switch inspection reports for the C-line (Milepost 2.72 – 25.20) dated February 2006 and April 2006.
   b. Mainline track and switch inspection reports for the M-line (Milepost 0 – 2.60) dated February 2006 and April 2006.

3. Staff reviewed the following documents to determine if the A-line (A1, A2), C-line (C1, C2, C3), L-line (L1, L2), and R-line (R1, R2) were inspected by a geometry car:

   a. Year 2005 Third Quarter Reports dated September 4, 2005.
   b. Year 2005 Fourth Quarter Reports dated November 27, 2005.
   c. Year 2006 First Quarter Reports – not performed.
   d. Year 2006 Second Quarter Reports – not performed.
   e. Year 2006 Third Quarter Reports – dated May 6, 2006 (R-line).

4. Staff reviewed the following documents to determine if the tracks were inspected by ultrasonic testing:

   a. Year 2005 Reports dated December 2005.
   b. Year 2006 Reports dated May 2006.

5. Staff reviewed the following document to determine if the turnouts were inspected:

   Year 2006 Reports for M55 and A05 dated January 2006 and May 2006.

6. The inspections by hi-rail vehicle were performed at the required frequency interval. Noted defects were closed out in a timely manner.

7. The inspections by a geometry car were performed for the third and fourth quarter of 2005. Noted defects were closed out in a timely manner.

8. No inspection by geometry car was performed for the first and second quarter of 2006. BART explained that the geometry car was not available for performing the inspection since it was undergoing an engine rebuild.

9. The inspection by geometry car was performed for the third quarter of 2006 on the R-line. BART has scheduled the remaining lines to be inspected by geometry car for August 2006 as required by the inspection frequency interval.

10. The inspections by ultrasonic testing were performed in 2005 and 2006.

11. The turnout inspections are being performed at the required frequency interval.

Comments:
None.

Recommendations:
None.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR

BAY AREA RAPID TRANSIT

Checklist No.	21	Element	Exclusive Right-Of-Way Fence Inspection Records
Date of Audit	8/14/2006	Department	Maintenance and Engineering Way and Facilities Maintenance
Auditors / Inspectors	Brian Yu William Dockery	Persons Contacted	Mark Chan

REFERENCE CRITERIA

Fencing Inspection Procedure

CPUC GO 95, Section 79

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The auditors will review the fence inspection reports prepared during the past 18 months to determine if:

1. All mainline fencing have been inspected at least once a month by end-of-train or drive by observation.

2. The required inspections were properly documented.

3. Noted defects were corrected in a timely manner.

4. Reports of defects are submitted to staff regularly.

ACTIVITIES/RESULTS/COMMENTS

Findings:

1. Staff reviewed BART Right-of-Way Barrier Inspection Report Forms from January 2005 to August 2006.

2. Staff interviewed BART Way and Facilities Division, Track Section Manager and Grounds Fore Worker during and after the records review.

3. The scheduled maintenance inspections were conducted and properly documented.

4. Certain inspection records did not have the status of corrective actions taken.

5. Certain inspection records were incomplete and corrective action completion could not be confirmed.

6. Although the inspection form has supervisor's signature requirement for reviewing the inspection report, the supervisor's signature only recognizes the inspection, not the repair work being done.

7. The use of inspection forms varies among Fore Workers. Some Fore Workers would sign the forms only after the repair work has been completed, some would list repair works needed without signatures, and some would list inspection findings and repair works without signatures.

Comments:
BART Maintenance and Engineering Department does not have a computerized system to track the status of repair works. BART could benefit from having a computerized work tracking system to follow up on the status of open work orders.

Recommendations:
BART should ensure that their fore workers and supervisors properly document the inspection, corrective actions, and completion status of the corrective actions to allow efficient and effective follow-up.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	22	Element	Transit Vehicle Maintenance
Date of Audit	8/15/2006	Department	Rolling Stock and Shops
Auditors / Inspectors	Anton Garabetian	Persons Contacted	Mike Turner, Assistant Shop Superintendent

REFERENCE CRITERIA

Book 50: C Car Maintenance Procedures, Volume 14

Book 86: A2/B2 Car Maintenance Procedures, Volume 14

Book 16: Rolling Stock & Shops Department Procedures, Section I, Procedures 24 and 27

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The auditor will select three A cars, three B cars and three C cars from the Richmond shop to review the completed Preventive Maintenance (PM) records associated with each car selected to determine if:

a. The PM required by the referenced procedure were performed within the required time frame during the past three years.

b. The records were properly documented with stamps on the required items.

c. Noted discrepancies were corrected in a timely manner.

d. The car was turned annually for the purpose of equalizing wheel flange wear.

ACTIVITIES/RESULTS/COMMENTS

Findings:

1. Staff reviewed the preventive maintenance inspection records at the Richmond Yard shop for:

a) C Car No. 365, 421 and 2506
b) A Car No. 1210, 1220, 1230
c) B Car No. 1525

2. Staff reviewed maintenance mileage record of the following cars between 2003 and 2006:

   a) C Car No. 365 and 421
   b) B Car No. 1525, 1550 and 156
   c) C2 Car No. 2506

3. Preventive maintenance were performed within the required time frame in the past three years.

4. Records were properly documented with stamps on the required items.

5. Noted discrepancies were corrected in a timely manner.

6. BART does not require cars to be turned, as per Book No. 16, Section 27 since September 15, 2003, for the purpose of equalizing wheel flange wear.

Comments:
None.

Recommendations:
None.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	23	Element	Quality Assurance of Transit Vehicles
Date of Audit	8/14/2006	Department	Rolling Stock and Shops
Auditors / Inspectors	Raed Dwairi William Dockery	Persons Contacted	Charles Sewchok, Quality Assurance Manager Richard Burr, Superintendent Rolling Stock & Shops (Richmond Yard) Sandy Miniz, Senior Quality Assurance Engineer

REFERENCE CRITERIA

Book 15: Quality Assurance Manual

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The auditors will randomly select three B cars and four C car from the Richmond Yard shop and review their quality assurance records for six months in the past year to determine if:

1. The records include the results of:

   a. Examinations
   b. Inspections
   c. Tests
   d. Process controls
   e. Disposition of discrepancies

2. The Quality Assurance process of the five selected 600-hour inspection reports in the past year has been tracked to completion.

ACTIVITIES/RESULTS/COMMENTS

Findings:

1. For the cars selected at the Richmond Yard Shop (B cars: 1551, 1562, and 1567, C1 cars: 2557 and 2537, and C2 cars: 365 and 429,) each had at least one missing Quality Assurance (QA) stamp on a Maintenance Discrepancy/Correction Sheet (D/C Form) in the Car History Book corresponding to the requirement of “To Be Released by QA Only.”

2. For selected cars 365, 413, 429, 2529, 2544 and 2558, the 600-hr inspection records obtained through the Maintenance and Reliability Information System (MARIS) for the past three years (August 1, 2003 to August 13, 2006,) indicated that the Quality Assurance process was followed as required. None of the selected cars exceeded the 50-hour window beyond the 600-hour mark.

3. The above records include the inspection results, both regular and unscheduled, for all 219 transit vehicles assigned to the Richmond Yard and "out-of-town cars". Out-of-town cars make up about 1% of the transit vehicles maintained by the Richmond Yard.

Comments:
None.

Recommendations:
BART should review its applicable Quality Assurance (QA) procedures which pertain to the use of QA stamps to achieve consistency between Car History Books and archived files.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	24	Element	Train Control Equipment Inspection and Tests
Date of Audit	8/15/2006	Department	Maintenance and Engineering: 1) Systems Maintenance 2) Way and Facilities
Auditors / Inspectors	Raed Dwairi	Persons Contacted	Edward Pomposo, Section Manager, Systems Maintenance

REFERENCE CRITERIA

BART computer program – DataStream

Joint Switch and Turnout and Inspection Checklist

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

1. The auditor will randomly select three stations and review their inspection records of the station Multiplexer (MUX) to determine if:

   a. The semi-annual inspections required by the referenced procedure were performed in the past three years.
   b. The required documents were properly prepared and noted discrepancies were corrected in a timely manner.

2. The auditor will also select six interlocking plants and review the corresponding "Annual Track and Train Control Departments Joint – Switch, Turnout, and Interlocking Inspection Form" to determine if:

   a. The monthly and semi-annual inspections required by the referenced procedure were performed in the past three years.
   b. The required documents were properly prepared and signed by the Track Representative and the Train Control Representative.
   c. Noted discrepancies were corrected in a timely manner.

ACTIVITIES/RESULTS/COMMENTS

Findings:

For the randomly selected Coliseum (A30), Montgomery (M20), and El Cerrito Del Norte (R50) Stations, records indicated that the required station MUX inspections for the years 2004, 2005, and 2006 were performed as required. Annual inspection dates obtained from DataStream were as follows:

- A30: April 16, 2004, October 16, 2005, and April 16, 2006
- M20: May 8, 2004, May 8, 2005, and May 8, 2006
- R50: October 9, 2004, October 9, 2005, and April 9, 2006

2. Two Trouble Tickets associated with Multiplexer (MUX) inspections were not closed out in a timely manner. Trouble Ticket TC-C76-BATT remained open since October 2004 and TC-W45-SM151 remained open since May 2004.

3. For the interlocking plants selected, the required Annual Track & Train Control Departments Joint Switch, Turnout, and Interlocking Inspection Forms were performed during the years 2004, 2005, and 2006. Documentation was properly prepared and signed by the Track and Train Control representatives.

Comments:
None.

Recommendations:
BART should follow up on open Train Control Equipment Trouble Tickets by generating a report listing the tickets, reasons behind the open status of those tickets, and a plan to resolve the issues and close the open tickets in a timely manner.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	25	Element	Emergency Ventilation Fans and Associated Dampers
Date of Audit	8/16/2006	Department	Maintenance and Engineering Power/Mechanical Maintenance
Auditors / Inspectors	Raed Dwairi	Persons Contacted	Dean Giebelhausen, Section Manager, Power Mechanical Jerry Lockett, Section Manager, Power Mechanical Maintenance Vitaly Lusherovich, P.E., Section Manager, Power Mechanical

REFERENCE CRITERIA

Book 4: Mechanical Maintenance Procedures, Volume 1, Chapters 1,2,3, and 4

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The auditor will randomly select four ventilation fans and associated dampers and review the corresponding maintenance inspection records to determine if:

1. The required monthly and annual inspections were performed in the past three years as required by the referenced procedure.

2. The inspections were properly documented and noted discrepancies were corrected in a timely manner.

ACTIVITIES/RESULTS/COMMENTS

Findings:

1. The selected 2004, 2005, and 2006 preventive maintenance records for the Emergency Ventilation Fans (WV38, WV12, KV18, RV21, and MV51) indicated that the electrical and mechanical inspections were performed as required and noted defects were corrected in a timely manner.

   The Mechanical portion of the inspections were as follows:

   - WV38: Annual inspections in October 2003, October 2004, and October 2005
   - WV12: Annual inspections in February 2004, February 2005, and February 2006
   - KV18: Annual inspections in March 2004, March 2005, and March 2006
   - RV21: Annual inspections in September 2003, September 2004, and September 2005
   - MV21: Annual inspections in July 2004, July 2005, and July 2006

The electrical portion of the inspections were as follows:

- WV38: Annual inspections in September 2004, September 2005, and is scheduled for September 2006. Quarterly inspections in December 2004, March 2005, June 2005, December 2005, March 2006, and June 2006.

- WV12: Annual inspections in December 2004, and February 2006. Quarterly inspections in April 2004, July 2004, September 2004, April 2005, July 2005, October 2005, April 2006, and July 2006.

- KV18: Annual inspections in May 2004, May 2005, and June 2006. Quarterly inspections in September 2004, November 2004, January 2005, March 2005, July 2005, September 2005, November 2005, January 2006, and April 2006.

- RV21: Annual inspections in July 2004, May 2005, and May 2006. Quarterly inspections in September 2004, November 2004, January 2005, March 2005, July 2005, September 2005, November 2005, January 2006, and March 2006.

- MV51: Annual inspections in July 2004, July 2005, and July 2006. Quarterly inspections in January 2004, April 2004, September 2004, January 2005, April 2005, October 2005, January 2006, and March 2006.

2. The majority of the Inspections were properly documented with some documents that were incomplete.

Comments:
While no exceptions were noted and the program has continue to show improvements since previous CPUC Audits, the program could be further improved by implementing a Quality Assurance component similar to the one utilized by transit vehicle maintenance.

Recommendations:
None.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	26	Element	Vital Relays
Date of Audit	8/15/2006	Department	Maintenance and Engineering Power/Mechanical Maintenance
Auditors / Inspectors	Raed Dwairi	Persons Contacted	Dan Stevenson, Section Manager, Systems Maintenance

REFERENCE CRITERIA

BART computer program – DataStream

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The auditor will review the records of vital relay inspections in the last three years to determine if:

1. The inspections were performed at the required frequencies as specified in the reference criteria.

2. The inspections were properly documented and noted defects were corrected in a timely manner.

The auditor will also conduct a field inspection of two relays to determine if the measured pick-up and drop-away voltages are within acceptable limits specified in the reference criteria.

ACTIVITIES/RESULTS/COMMENTS

Findings:

1. Vital relays were inspected as required for 2003, 2004, 2005, and 2006. Inspections have been properly documented in DataStream. Relay PM schedules and assignments for 2005 and 2006 indicated that all inspections were on schedule.

2. Staff did not conduct field inspection of vital relays to determine the measured voltages because this cannot be done without interrupting revenue service.

3. No exceptions were noted.

Comments:

None.

Recommendations:

None.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT

Checklist No.	27	Element	Fire Alarms and Sprinkler Systems
Date of Audit	8/15/2006	Department	Maintenance and Engineering Power/Mechanical Maintenance
Auditors / Inspectors	Brian Yu	Persons Contacted	John McPartland

REFERENCE CRITERIA

Book 31, Volume 5, Chapter 8, CCR Title 19

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The auditor will randomly select one aerial station, one at-grade station, and one subway station. The auditor will also review the corresponding fire alarm and fire sprinkler system inspection, testing, and maintenance records to determine if:

1. The required annual fire alarm inspections and fire sprinkler system inspections were performed during the past three years as specified in the referenced procedure. The inspections were properly documented and noted discrepancies were corrected in a timely manner.

2. Other inspections, testing, and maintenance were performed in the past three years as specified in the referenced procedure. The inspections, testing, or maintenance were properly documented and noted discrepancies were corrected in a timely manner.

ACTIVITIES/RESULTS/COMMENTS

Findings:

1. Staff selected the following locations to conduct the records review:

   - Powell Station (M30) – Subway
   - Walnut Creek (C40) – At-grade
   - Fruitvale (A20) – Aerial

2. Staff reviewed Annual and Semi-annual Fire Alarm Preventive Maintenance inspection records for the selected locations.

3. Staff reviewed Quarterly Fire Sprinkler Inspection records for the selected locations.

4. Staff interviewed the Superintendent and Section Manager during and after the inspection records review.

5. Required inspections were conducted and properly documented.

6. The repair work status was difficult to track due to an inefficient filing system.

7. All of BART Inspectors are Title 19 Certified inspectors who can self-certify their inspections and repairs with no supervisory verification needed.

8. BART Power and Mechanical Maintenance Department does not have a computerized system to track the status of open work orders.

Comments:
BART could benefit by implementing a computerized work tracking system to efficiently track the status of open work orders

Recommendations:
None.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	28	Element	1) Wet Stand Pipe, 2) Sprinkler Systems, and 3) Line Pumps
Date of Audit	8/15/2006	Department	Maintenance and Engineering Power/Mechanical Maintenance
Auditors / Inspectors	Brian Yu	Persons Contacted	Mark Chan

REFERENCE CRITERIA

Book 4: Mechanical Maintenance Procedures, Volume 3, Chapter 1, CCR Title 19

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The auditor will review the wet pipe sprinkler systems testing records and the line pumps maintenance inspection records to determine if:

1. The service tests for wet pipe sprinkler systems were performed once every five years as specified in the referenced procedure. The tests were properly documented and noted discrepancies were corrected in a timely manner.

2. The required monthly, quarterly, semi-annual, and annual inspections of line pumps were performed during the past three years as required by the referenced procedure. The tests were properly documented and noted discrepancies were corrected in a timely manner.

ACTIVITIES/RESULTS/COMMENTS

Findings:

1. Staff reviewed Stand Pipe Inspection records for the following locations:

- K10/K20 – from 12th Street Station to 19th Street Station
- Oakland Wye – Downtown Oakland, A10 to Portal
- R30/Portal - North of North Berkeley

2. Staff reviewed Sump Pump Inspection records for the following locations:

- CSS – Near North Concord Station
- MAR Army – Between 16th Street and 20th Street in San Francisco
- NSS –Near 19th Street Station

3. Staff interviewed the BART Section Manager during and after the inspection records review.

4. BART Stand Pipes are inspected on a semi-annual basis.

5. BART Stand Pipes inspections for the selected locations were conducted and properly documented.

6. Corrective actions were completed in a timely manner and were easily traceable.

7. BART Sump Pumps are inspected bi-monthly and annually.

8. BART Sump Pumps scheduled inspections for the selected locations were conducted and properly documented.

9. Corrective actions were completed in timely manner and were easily traceable.

Comments:
None.

Recommendations:
None.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	29	Element	Under-Car Deluge System
Date of Audit	8/9/2006	Department	Maintenance and Engineering Power/Mechanical Maintenance
Auditors / Inspectors	Joey Bigornia	Persons Contacted	Randy Clark, Superintendent Dan Giebelhausen, Section Manager Mike Caesare, Senior Safety Engineer

REFERENCE CRITERIA

Book 31, Chapter 2, Section 5

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The auditor will randomly select four underground stations and review the corresponding under-car deluge system maintenance inspection records to determine if:

1. The required monthly and annual inspections were performed during the past twelve months as specified in the referenced procedure.

2. The inspections were properly documented and noted discrepancies were corrected in a timely manner.

3. The required Title 19 testing every five years was performed as required by the referenced procedure. The testing was properly documented and noted discrepancies were corrected in a timely manner

ACTIVITIES/RESULTS/COMMENTS

Findings:

1. Staff interviewed the Section Manager in charge of the under-car deluge system inspection program

2. Staff also reviewed the dated documents of the following stations to determine if the corresponding under-car deluge systems were inspected on a quarterly basis:

   - M20 (Montgomery Street Station) from the M-line dated August 13, 2003 to August 4, 2006.
   - M30 (Powell Street Station) from the M-line dated August 13, 2003 to August 4, 2006.
   - W20 (South San Francisco Station) from the W-line dated October 22, 2003 to July 20, 2006.
   - W30 (San Bruno Station) from the W-line dated October 22, 2003 to July 20, 2006.
   - Y10 (SFO Airport Station) dated October 23, 2003 to July 19, 2006.
   - R30 (North Berkeley Station) from the R-line dated September 13, 2003 to June 29, 2006.
   - C70 (North Concord Station) from the C-line dated July 28, 2003 to July 21, 2006.
   - A10 (Lake Merritt Station) from the A-line dated August 22, 2003 to May 9, 2006.

3. Staff reviewed the dated documents of the following stations to determine if the corresponding under-car deluge systems were inspected every five years as required by Title 19:

   - M20 (Montgomery Street Station) from the M-line dated May 9, 2002. Next inspection is due May 2007.
   - M30 (Powell Street Station) from the M-line dated May 14, 2002. Next inspection is due May 2007.
   - W20 (South San Francisco Station) from the W-line first inspection is due in 2008.
   - W30 (San Bruno Station) from the W-line first inspection is due in 2008.
   - Y10 (SFO Airport Station) from the Y-line first inspection is due in 2008.
   - R30 (North Berkeley Station) from the R-line dated May 28, 2002. Next inspection is due May 2007.
   - C70 (North Concord Station) from the C-line dated January 29, 2002. Next inspection is due January 2007.
   - A10 (Lake Merritt Station) from the A-line dated May 25, 2002. Next inspection is due May 2007.

4. Staff reviewed the quarterly and five-year inspection records for the M20, M30, W20, W30, Y10, R30, C70, and A10 under-car deluge which indicated that the inspections were performed at the required frequency intervals.

5. Defects found during the inspections were properly documented on the Notice of Needed Repair (NNR) forms.

6. The NNR forms indicated that the discrepancies were corrected, signed off by Section Manager, and closed out from the inspection records in a timely manner.

7. No exceptions were noted.

Comments:
None.

Recommendations:
None.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	30	Element	Gap Breakers and Wayside Equipment
Date of Audit	8/9/2006	Department	Maintenance and Engineering Power/Mechanical Maintenance
Auditors / Inspectors	Joey Bigornia	Persons Contacted	Randy Clark, Superintendent Jerry Lockett, Section Manager Clifton E. Black, Section Manager Eduardo Cheves, Section Manager Vitaly Lusherovich, Section Manager Jeffrey T. Lau, Senior Operations Safety Specialist

REFERENCE CRITERIA

Book 31, Chapter 1, Section 1

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The auditor will randomly select four Gap Breaker Stations and review the corresponding maintenance inspection records to determine if:

1. The required weekly or biweekly inspections were performed in the past three years as specified in the referenced procedure.

2. The inspections were properly documented and noted discrepancies were corrected in a timely manner.

ACTIVITIES/RESULTS/COMMENTS

Findings:

1. Staff reviewed the following documents of the following gap breakers to determine if they have been inspected monthly:

   • AYE from the A-line dated July 6, 2005 to August 2, 2006.
   • LAA from the L-line dated August 1, 2005 to August 1, 2006.
   • KTS from the K-line dated July 2, 2005 to July 3, 2006.
   • CXH from the C-line dated August 1, 2005 to July 21, 2006.

2. Staff also reviewed the documents of the following gap breakers to determine if they have been inspected semi-annually:

   • AYE from the A-line dated September 9, 2005.
   • LAA from the L-line dated May 3, 2006.
   • KTS from the K-line dated October 25, 2005.
   • CXH from the C-line dated March 17, 2006.

3. Staff reviewed the following documents of the following gap breakers to determine if they have been inspected annually:

   • AYE from the A-line dated February 1, 2006.
   • LAA from the L-line dated January 10, 2006.
   • KTS from the K-line dated April 16, 2006.
   • CXH from the C-line dated October 26, 2005.

4. The monthly, semi-annual, and annual inspection records for the AYE, LAA, KTS, and CXH gap breakers indicated that all inspections were performed at the required frequency intervals.

5. Noted defects on the inspection forms were properly documented and corrected in a timely manner. No exceptions were noted.

Comments:
None.

Recommendations:
None.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	31	Element	Signal Maintenance Training and Certification
Date of Audit	8/17/2006	Department	Operations Training and Development Maintenance
Auditors / Inspectors	Raed Dwairi	Persons Contacted	Deslar (Des) Patten, Employee Development Specialist Irene Beebe, Employee Development Specialist

REFERENCE CRITERIA

BART Employee Certification, January 2005

Train Control Technician Training Program

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The auditor will interview the signal maintenance training representatives and review the training and certification record of two randomly selected employees, from each Train Control Technician Training Maintenance classification, to determine if:

1. The selected employee has successfully completed the training and certification program.

2. Training, certification, and refresher training records are complete and in compliance with BART requirements.

3. The training course corresponds to the signal maintenance activities that the employees are certified to perform.

ACTIVITIES/RESULTS/COMMENTS

Findings:

1. The record of a selected Train Control Maintenance Technician indicated that the employee failed the Vital Processor Interlocking (VPI) Hardware Recertification test on September 29, 2005 and did not attend the April 17, 2006 General Railway Signal (GRS) VPI Hardware Certification training course.

2. No documentation was found to explain the employee's failure to attend the class or to indicate if a Restricted Status was placed on this employee to prevent him from performing maintenance work on any equipment requiring VPI Certification as required by BART Employee Certification Plan, dated January 2005.

3. Training, certification, and refresher training records are complete and in compliance with BART requirements. A up-to-date matrix showing Train Control Certification Status indicates employees who are past due, never certified, failed certification test, due for certification in three months, six months, and in more than six months. Another matrix shows certification classes needed as of August 10, 2006 to easily identify training needs and schedule classes accordingly.

4. The class roster of the April 17, 2006 GRS VPI Hardware Certification Class obtained from the Pathlore Learning Management System listed those who attended the class, their test scores, and those who cancelled their registration. However, the roster did not provide an explanation of their cancellation.

Comments:
None.

Recommendations:
BART should ensure that Train Control Technicians who failed their recertification test are not working on equipment requiring their success in being recertified. BART should have proper documentation explaining the technician's failure to be recertified.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	32	Element	Contractor Safety Coordination
Date of Audit	8/14/2006	Department	System Safety Operations Liaisons Transit System
Auditors / Inspectors	Anton Garabetian	Persons Contacted	Len Hardy, Chief Safety Officer Mark Chan, Safety Manager

REFERENCE CRITERIA

Operating Bulletins

Operations Rules and Procedures Manual, January 2006

Management Procedure 31, September 14, 1999

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The auditor will interview the BART representative responsible for the Contractors Safety Program and review applicable documentation to determine if:

1. The contractor safety procedures have been revised since the 2003 audit.

2. The contractor safety procedures and policies clearly demonstrate that the contractors are responsible to comply with BART's safety rules and procedures.

ACTIVITIES/RESULTS/COMMENTS

Findings:
Staff interviewed BART Chief Safety Officer and Safety Manager to confirm BART's implementation of Contractor Safety Program (CSP). The staff also reviewed two contract documents for the following projects to confirm the inclusion of CSP in new construction or capital projects:

-- Installation of Guardrails and Platform at Aerial Crossover Structure.

-- Berkley Hills Tunnel Portal Door Replacement.
Staff reviewed the SSPP, Operations Rules and Procedures Manual, and Management Procedure that applies to CSP.

1. The Operations Rules and Procedures Manual, which includes sections on contractor accessibility to BART restricted areas, job safety briefings, contractor work in yards and local control areas, and safety monitor responsibilities, has been revised by BART on January 2006.

2. BART Facilities Standards, Standard Specifications, and Operating System Interface, which includes specifications for the contractor's interface with BART Operating System and construction safety requirements, have been revised by BART on May 2004.

3. The reviewed construction contract documents included all the provisions for contractor safety. The contracts included site specific work plan, interim operating plan, safety notices for contractor safety discrepancy, and contractor safety training requirements

Comments:
None.

Recommendations:
None.

2006 CPUC SYSTEM SAFETY AUDIT CHECKLIST FOR BAY AREA RAPID TRANSIT			
Checklist No.	33	Element	Review Operations Safety Compliance Program
Date of Audit	8/21/2006	Department	System Safety
Auditors / Inspectors	Gary Rosenthal William Dockery	Persons Contacted	Ken Cook, Len Hardy, Tamar Allen, Richard Leonard, Ron Cook, Richard Rounke, and Rudy Crespo

REFERENCE CRITERIA

Management Procedure 84

Operations Safety Compliance Program

BART Accident Investigation Final Reports, April 22, 2005 and May 26, 2005

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

The auditors will review Operations Safety Compliance Program to determine if:

1. The Operations Safety Compliance Program is adequately covered in the SSPP.

2. Periodic exercises or drills are conducted or scheduled for safety compliance on a regular basis.

3. Employees are evaluated based on their performance on unannounced safety compliance exercises to determine their compliance with the standard of safety rules, procedures, and/or practices.

ACTIVITIES/RESULTS/COMMENTS

Findings:

1. The requirements of the Operations Safety Compliance Program Procedure 84.0, effective as of September 1, 2003, are included in the Transportation and System Service Department Operations Safety Compliance Plan, the Maintenance and Engineering Department Operations Safety Compliance Plan, the Operations Safety Compliance Program RS&S Plan, and the Operations Safety Compliance Program Operations Liaisons.
2. Each of the above procedures has a "Safety Aspects Covered" section, a "Safety Aspects to be covered" section, or a "Safety Aspects to be covered by the Plan" section. There was no clear evidence that every bulleted item in these sections have been addressed by the checklists. There also appear to be lacking a plan to address all of the procedural requirements.
3. The Operations Safety Compliance Program established by BART Management Procedure Number 84, effective as of September 1, 2003, is not addressed or referenced in the SSPP.
4. BART Rolling Stock and Shops has developed, adopted, and implemented its operations safety compliance program.

5. BART Transportation Department, BART Maintenance and Engineering Department, and BART Operations Liaisons have developed and adopted safety compliance programs, but have not implemented these programs.

6. Al four of the program plans base evaluations of employee performance on unannounced safety compliance observations to confirm their compliance with safety rules, procedures, and practices. BART requires controllers to periodically listen to taped BART operations radio communication to verify compliance with operating and communications rules and procedures.

Comments:

1. Automation of the checklists would allow for collection of metric data and to better ensure full coverage of the safety aspects required by each Operations Safety Compliance Program plan.

2. Formal records of the taped BART operations radio communications reviews by BART controllers would verify that the procedure is being performed and could also be used to identify deficiencies in operating and communication rules compliance.

Recommendations:

BART should implement the Operations Safety Compliance Program plans for the Transportation Department, BART Maintenance and Engineering Department, and BART Operations Liaisons.