2004 ON-SITE SAFETY AUDIT OF

AirTrain

RAIL TRANSIT SAFETY PROGRAM

ACKNOWLEDGEMENT

The California Public Utilities Commission's Rail Transit Safety Section staff conducted this system safety program audit. Staff members directly responsible for conducting audit activities include:

Dennis Reed, Lead Auditor	Gary Rosenthal
Mahendra Patel	Robert Strauss

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1. EXECUTIVE SUMMARY

The California Public Utilities Commission's (Commission) Consumer Protection and Safety Division, Rail Transit Safety Section Staff (staff) performed an on-site audit of the AirTrain System Safety Program in May 2004 to determine if this program is in compliance with State Safety Oversight rules, General Order 164-C and if AirTrain is following its System Safety Program Plan (SSPP).

The audit confirmed that AirTrain's SSPP is effective in most instances but requires further adjustments to be in full compliance with State Oversight rules. Staff made 10 recommendations on 12 checklists. The most significant of these recommendations is the need to develop and implement an Internal Safety Audit Program (ISA). This program ensures that planned and scheduled internal safety audits are performed on an ongoing basis. The purpose of the ISAs are to regularly review all of the safety and security elements outlined in the American Public Transportation Association's (APTA) guidelines.

Another area of concern of this audit is the lack of a random drug testing program for safety sensitive employees. AirTrain has stated that since the audit a random drug testing program has been implemented, it needs to be reviewed and evaluated through the ISA process within the next 12 months to determine its effectiveness. Additionally, there is a need to improve AirTrain's documentation practices to ensure the safety program is implemented consistently over time.

2. INTRODUCTION

The Commission's General Order 164-C requires staff to perform an on-site review of each rail fixed guideway's implementation of its SSPP at least once every three years. The purpose of these reviews or audits is to evaluate the effectiveness of rail transit agencies' system safety programs and to assess the level of compliance with GO 164-C and other Commission safety requirements.

Staff performed an on-site safety audit of AirTrain beginning in May 2004. As a precursor to the audit, staff sent a letter to AirTrain's Manager in early April setting the dates of the audit for May 2004. Enclosed with the letter were 12 checklists that served as the basis for the audit.

On May 17, 2004, staff conducted a pre-audit meeting with AirTrain and Bombardier's management team. Staff began the on-site safety audit the following day. At the conclusion of each audit activity, staff provided the AirTrain representative with a summary of the preliminary findings and discussed any recommendations for corrective actions.

On June 2, 2004, staff conducted a post-audit exit meeting with AirTrain's management staff. Attendees were given a verbal synopsis of the findings from the 12 checklists and discussed

the need for corrective actions. Staff also answered questions about the findings and explained that a preliminary draft audit report would be prepared for AirTrain's review and comments.

3. BACKGROUND

System Description

The AirTrain is an automated electric-powered, rubber-tired passenger shuttle service, known as an Automated People Mover that operates without a train operator. It began passenger service at San Francisco International Airport (SFIA) in March 2003, and is a free service to passengers at SFIA. The system operates twenty-four hours per day and is powered on a guideway-mounted power rail. The AirTrain fleet consists of 38 cars that operate in two or three car trains. This system is an automated train control system that allows a high degree of flexibility to accommodate various passenger loads at different times of the day. At peak performance the AirTrain can accommodate 3400 passengers per hour or 40-60 passengers per car. This system operates along six miles of elevated guideway and connects nine stations that include all the airport's terminals, parking garages, the Bay Area Rapid Transit (BART) Station, and the Rental Car Center.

SFIA has a small staff that oversees the administration and safety of the AirTrain system. SFIA contracts with Bombardier Transportation (Bombardier) who designed, built, and operates AirTrain. Bombardier, in turn, contracts with Primus Industries, Inc. (Primus) for operating and maintenance personnel.

4. AUDIT PROCEDURE

The audit was conducted in accordance with the Commission's procedure RTSS-4, Procedure for Performing Triennial Safety Audits of Rail Transit Systems. A set of 12 audit checklists covering various departments with system safety responsibilities was prepared in advance of the on-site audit. Each checklist identified the elements and characteristics that were audited, the results of the audit, and recommendations for improvement, where applicable. The methods used during the audit included:

- Discussions with AirTrain management
- Reviews of procedures and records
- Observations of operations and maintenance activities
- Inspections and measurements of equipment and infrastructure

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

5. FINDINGS AND RECOMMENDATIONS

The 2004 audit confirmed through the activities observed, the documents reviewed, the management discussions, and the items inspected that AirTrain is generally in compliance with its System Safety Program. This audit identified corrective actions in the areas of Administration, Operations, and Maintenance. These deficiencies were identified on checklists: 3, 4, 6, 7, 9, and 10.

System Safety and Administration/Management

Findings – Conforming Conditions:

1. AirTrain and Bombardier hold regular meetings to facilitate communication and address safety issues.
2. The hours of service worked by employees are in compliance with Commission requirements.
3. There are three entities involved in the AirTrain oversight function with only one mandated for Drug and Alcohol Testing. These are:
   a) AirTrain Administration provides oversight for the AirTrain operations and is a Department/unit within the San Francisco International Airport (SFIA). These positions are not safety sensitive.
   b) Bombardier employees provide on-site management of the trains, but do not directly operate them. These positions are not safety sensitive.
   c) Primus employees are responsible for the train operations and work in the safety sensitive positions.

All Bombardier and Primus employees with the exception of managers are Drug and Alcohol tested when they begin their employment and any employee who is in a safety sensitive position and involved in an incident is tested.

5. Emergency response training was included as part of the initial employee training.
6. AirTrain holds annual emergency drills involving first responders (i.e. fire, police and emergency medical).

Findings – Non-Conforming Conditions:

1. An internal safety audit (ISA) program does not exist and therefore, no ISAs have been scheduled and performed and no annual report has been submitted to the -Commission as required by GO 164-C.
2. The Hours of Service program is not described and documented in any controlled document, such as, an SSPP or Rulebook.
3. At the beginning of the audit, Primus had not implemented a random testing program and therefore was not in compliance with AirTrain's System Safety Program or Federal

Transit Administration requirements. However, a random drug testing component was agreed to by the Union during the audit process and implemented in June, 2004.

4. AirTrain no longer uses the Emergency Evacuation Procedures (CDRL 57) referred to in the SSPP, but uses emergency procedures contained in Rulebook (CDRL 31) and these procedures are not as complete as those in CDRL 57.
5. There is no scheduled refresher course for emergency preparedness and response.
6. The Safety and Security Committee meets every two months, but the minutes from these meetings do not clearly show if incidents are discussed during these meetings.

Comments:

Review of ISA programs of other transit agencies could be useful.

Recommendations:

1. AirTrain should develop and implement an ISA program to ensure that planned and scheduled ISAs are performed annually to evaluate compliance and measure the effectiveness of SSPP in accordance with the requirements of Section 4 of GO 164-C. Checklist 3.
2. AirTrain should ensure the Hours of Service program is described and documented in controlled documentation, such as, the SSPP or Rulebook. Checklist 4.
3. AirTrain should develop and implement a random drug testing program for all safety sensitive employees. Checklist 9.
4. AirTrain Administration should evaluate the random drug and alcohol testing program within 12 months from its implementation date (June 2004) and report the findings to the Commission. Checklist 9.
5. AirTrain should clarify in its SSPP which document should be followed for emergency situations (CDRL 57 or CDRL 31). There should be clear and unambiguous direction, supported by training, on the appropriate course of action employees should take in an emergency and that direction should emphasize protecting all persons from injury or death. Checklist 7.
6. AirTrain should develop a refresher training course for emergency preparedness and response. All employees should be required to take refresher training periodically. Checklist 7.
7. AirTrain should ensure that emergency incidents are presented to the Safety and Security Committee. Issues arising from emergency incidents should be tracked to resolution and a record maintained. Checklist 7.

System Safety and Operations Training and Procedures

Findings – Conforming Conditions:

1. Comprehensive training and certification programs are in place for AirTrain.
2. The training, certification and refresher training records for each employee checked are complete, including tests, and in compliance with AirTrain's requirements.
3. When operating rules, procedures and other operating directives are issued; each employee is required to sign a form acknowledging receipt. That information is recorded and the signed form is then placed in the employee's personnel file.
4. Between March 2003 and May 2004, there were 15 operating revisions made to procedures. Revisions to procedures are incorporated annually into the rulebook.

Findings – Non-Conforming Conditions:

1. The AirTrain Interim System Safety Program Plan, Revision 0 does not establish specific requirements for regular reviews and updates of operating rules, procedures and bulletins.
2. Since there is no formal process for updates, the procedures being modified or deleted are not always clearly stated.

Comments:

1. Bombardier's operations and maintenance (OM) procedure OM-27 and OM-28 is a good process for making modifications to procedures.
2. AirTrain should consider formalizing the information gathering process for the annual operating rulebook revision to help ensure that no submitted information is inadvertently lost.

Recommendations:

8. AirTrain should revise its system safety program plan to reflect its practice of annually reviewing and revising its operating rulebook. Checklist 6.
9. AirTrain should follow Bombardier's Operations & Maintenance Procedures OM-027 and/or OM-028 format requirements or develop and implement a similar process for consistency when revising operating procedures. Checklist 6.

System Safety and Maintenance

Findings – Conforming Conditions:

1. Weekly Toolbox Safety Program meetings are held on an on-going basis and are mandatory for Maintenance staff and at each safety meeting a rulebook issue is discussed.
2. Site Information Management System (SIMS) database preventative maintenance (PM) history documents pertinent information, such as, service name, task, name; performed

by, date performed, work status, etc. for each car. It also documents defects and rectifications.

3. SIMS database PM Forecast Table provides key information that includes car ID, major PM ID; scheduled start and end dates; last PM done; current, and scheduled mileage readings, etc.
4. Bombardier OM Policy and Procedure Number OM-039, Revision5, provides instructions for the calibration of tools and test equipment.
5. All worksheets from inspections are filed with the pertinent data electronically entered into the SIMS system. These worksheets are generally completed in a professional manner.

Bombardier's Operations & Maintenance Procedures OM-027 and/or OM-028 provide appropriate formats for revising operating procedures.

AirTrain regularly conducts listed inspections as specified in a variety of Preventive Maintenance Worksheets.

Findings – Non-Conforming Conditions:

1. Preventative Maintenance Worksheets are not presented in a format that shows the tolerances and measurements when appropriate.
2. Review of Temporary Change Authorizations (TCAs), Engineering Change Notices (ECNs), and Field Change Notices (FCNs) binder indicated that some of the signatures and dates were missing on some forms.

Comments:

AirTrain should ensure that all required forms, such as TCA, ECN, FCN etc. are completely filled out including required signatures and dates.

Recommendations:

10. AirTrain should revise its worksheets to include tolerances or other criteria necessary to determine if an inspected element does or does not pass inspection. Checklist 10.

APPENDIX A

AIRTRAIN 2004 AUDIT
INDEX OF CHECKLISTS

Checklist #	Element/Characteristic
1	Authority and Responsibility for System Safety Program
2	Employee Safety Program
3	Internal Safety Audit Program
4	Hours of Service
5	Training and Certification
6	Review Operating Rules and Procedures Manual & operating Bulletins
7	Emergency Response Planning and Training
8	Security Program and Security Audits
9	Drugs and Alcohol Testing Program
10	Inspections
11	Calibration Measuring and Testing Equipment
12	APM Vehicle

APPENDIX B

AIRTRAIN 2004 AUDIT RECOMMENDATIONS LIST

No.	Recommendations	Checklists No.
1	AirTrain should develop and implement an ISA program to ensure that planned and scheduled ISAs are performed annually to evaluate compliance and measure the effectiveness of SSPP in accordance with the requirements of Section 4 of GO 164-C.	3
2	AirTrain should ensure that hours-of-service program is described and documented in controlled document, such as, SSPP or Rulebook.	4
3	AirTrain should develop and implement a random drug and alcohol testing program for all safety sensitive employees	9
4	AirTrain Administration should evaluate the program within 12 months from its implementation date and report the findings to the Commission.	9
5	AirTrain should clarify in its SSPP which document should be followed for emergency situations (CDRL 57 or CDRL 31). There should be clear and unambiguous direction, supported by training, on the appropriate course of action employees should take in an emergency and that direction should emphasize protecting all persons from injury or death.	7
6	AirTrain should develop a refresher training course for emergency preparedness and response. All employees should be required to take refresher training periodically.	7
7	AirTrain should ensure that emergency incidents are presented to the Safety and Security Committee. Issues arising from emergency incidents should be tracked to resolution and a record maintained.	7
8	AirTrain should revise its system safety program plan to reflect its practice of annually reviewing and revising its operating rulebook.	6
9	AirTrain should follow Bombardier's Operations & Maintenance Procedures OM-027 and/or OM-028 format requirements or develop and implement a similar process for consistency when revising operating procedures.	6

No.	Recommendations	Checklists No.
10	AirTrain should revise its worksheets to include tolerances or other criteria necessary to determine if an inspected element does or does not pass inspection.	10

APPENDIX C

AIRTRAIN 2004 CHECKLISTS

2004 CPUC SYSTEM SAFETY & SECURITY AUDIT CHECKLIST FOR *AIRTRAIN—SFIA*			
Checklist No.	**1**	Element	**1 – 6 Authority and Responsibility for System Safety Program**
Date of Audit	**06/2/04**	Department	System Safety/Top Management
Auditors/ Inspectors	Robert Strauss Dennis Reed	Persons Contacted	Victor Howe, Michael Robert, Lee Layport, Jim Castaneda

REFERENCE CRITERIA

1. System Safety Program Plan (SSPP)
2. Minutes to AirTrain Safety and Security Committee (ASSC)
3. Safety and Security Reports to AirTrain and Airport Management.
4. All Corrective Action Plans (CAP) from March 1, 2003 to the present.
5. Organizational Chart showing lines of authority and responsible management personnel from Bombardier/AirTrain/SFIA.

CHARACTERISTICS AND METHOD OF VERIFICATION

Review the current System Safety Program Plan (SSPP) and discuss with management. Specific commitments of review should include the following tasks:

1. Determine the source, frequency, and depth of safety and security information communicated between:
   a) SFIA
   b) Bombardier/
   c) AirTrain
2. Determine the methods and incentives included in the management performance system to facilitate a system safety culture within the organization.
3. Determine the level where key safety and security decisions are made and the involvement of the management team in these decisions.
4. Determine the involvement of management in accident /hazardous condition investigations and corrective actions.
5. Determine the level and depth of Management review and follow-up on corrective actions, including those initiated by accidents, hazardous conditions, internal audits.

ACTIVITIES

We performed the following:

1. Interviewed AirTrain and Bombardier management staff.

2. Reviewed SFIA's AirTrain Administration monthly reports for March and April 2004 and AirTrain's Safety Coordination Committee Meeting (ASSC) minutes from March 2003 through April 2004.

FINDINGS

1. Safety information is communicated using the following methods:
   a) AirTrain Safety and Security Committee meetings. These bi-monthly meetings include representatives from SFIA's fire, police, health and Safety departments, Bombardier's on-site manager, and AirTrain's Safety Administrator.
   b) Weekly meetings and inspections of maintenance facilities by AirTrain's Safety Administrator and Bombardier's Safety Officer.
   c) AirTrain's administrative staff meets weekly for planning of AirTrain activities and solving safety related problems.
   d) Ad hoc and planned training activities have included activities with the Police Department and emergency exercises with the Fire Department and other agencies that may need to respond in an emergency.
   e) AirTrain's Safety Administrator meets with SFIA's Chief Operations Officer on a daily basis for a briefing. In addition the Chief Operation Officer receives all of the monthly reports that identify major downtime events. If a major downtime event occurs all major players including the Chief Operation Officer will immediately meet to resolve issues.
   f) AirTrain provides a monthly report to SFIA on AirTrain operations.
2. Performance criteria for AirTrain's management evaluation review includes:
   a) The AirTrain Manager's performance criteria includes planning an emergency exercise, but otherwise does not focus on safety.
   b) The AirTrain Safety Administrator's performance criteria are weighted heavily to safety, security, and CPUC safety compliance (60%).
3. Most safety related decision making is performed by AirTrain's Safety Administrator and Bombardier's Safety Officer in their weekly meetings. Major issues are brought up the chain of command to secure funding and additional analytical resources.
4. Accidents are investigated by the three AirTrain administrators and the Bombardier Safety Officer. The Bombardier Safety Officer is lead investigator. Bombardier takes the lead in developing corrective action plans for technical issues. Budget decisions related to corrective action plans are made by the AirTrain Administrator.

RECOMMENDATIONS

None

2004 CPUC SYSTEM SAFETY & SECURITY AUDIT CHECKLIST FOR *AIRTRAIN—SFIA*			
Checklist No.	**2**	Element	**19 -- Employee Safety Program**
Date of Audit	**05/17/04**	Department	System Safety
Auditors/ Inspectors	Dennis Reed	Persons Contacted	Michael Robert, Derek Phipps, Jim Castaneda

REFERENCE CRITERIA

1. Attendance Records of toolbox meetings.
2. Health and Safety Manual Illness and Injury Prevention Program.
3. AirTrain Safety and Security Committee meeting notes (ASSC).
4. SSPP

CHARACTERISTICS AND METHOD OF VERIFICATION

Interview operations management and also review the employee safety program records to determine if:

1. An appropriate procedure and reporting form has been developed and periodically distributed to all employees to effectively report safety hazards in the work place.
2. All employee identified safety hazards during the past 12 months have been addressed by a Safety Committee that developed and implemented corrective action plans.
3. The corrective actions are being tracked/or have been implemented.
4. Periodic Safety Committee meetings have been held during the past 12 months to facilitate the implementation of corrective action.

ACTIVITIES

I performed the following:

1. Reviewed documentation and discussed procedures with AirTrain staff to determine how safety hazards are identified and communicated to staff. The documents included:
   a) AirTrain Weekly Toolbox Safety Meeting (Maintenance)
   b) Employee Report of Dangerous Situation
   c) O&M SDC Monthly Safety Meeting Notification
   d) AirTrain Weekly Toolbox Safety Meeting for Cleaners
   e) Health and Safety Manual Illness and Injury Prevention Program.
   f) System Safety Program Plan

2. Followed process for an employee reporting a hazardous situation from initial reporting to conclusion.
3. Identified corrective actions taken from employees reporting hazardous situation and the implementation procedure.
4. Reviewed Safety Committee meeting notes for the past 12 months.

FINDINGS

1. Weekly Toolbox Safety Meetings are held on an on-going basis. These meetings are mandatory for all staff. Each week the Safety officer for Bombardier discusses safety topics like:
   a) Lifting and Carrying Safely (Preventing Back Injuries), April 19, 2004.
   b) Housekeeping, April 12, 2004.
   c) Ladder Safety, May 3, 2004
   d) Labeling of Chemical Containers, March 29, 2004
   e) Working Above and Below the Light Maintenance Bays, April 26, 2004.
2. Additionally, at each of the weekly Safety meetings a rulebook topic is discussed. Topics during the past year included:
   a) Running a Train Through a Station (rule: 3.8.1).
   b) Maintenance Radio System (rule: 2.5.3).
   c) Station Door Inoperative (rule: 3.8.3).
   d) Punctured or Flat Tires (3.1.17).
3. All Employee Reports of Dangerous Situations since March 2003 were reviewed (8). In five of these cases, action was taken by either Bombardier or AirTrain administration to resolve the identified issue. Two reports were considered not to be safety related issues and one requesting additional signage for escalators was determined by the Airport to having adequate signage in place.
4. Employees can take safety related issues to the site manager, AirTrain Administration or the AirTrain Safety and Security Committee (ASSC) if they are not satisfied that a safety situation is resolved.
5. The Safety Engineer can take a safety related issue directly to the Vice President, Health Safety and Environment, at Bombardier's Corporate Offices, if an issue is not being resolved at the local level. Additionally, the Vice President is the Chair of the Health, Safety and Environment Council, to keep abreast of the emerging management risks.
6. The San Francisco International Airport Illness and Injury Prevention Program is documented in Health and Safety Manual (2003), for the SFO – AirTrain Operating System.
7. The notes from the Safety Committee meetings confirm that Safety Committee meetings have been held on an on-going monthly then bi-monthly basis during the past year.

RECOMMENDATIONS

None

2004 CPUC SYSTEM SAFETY & SECURITY AUDIT CHECKLIST FOR *AIRTRAIN—SFIA*			
Checklist No.	**3**	Element	**9 – Internal Safety Audit Program**
Date of Audit	**05/18/04**	Department	System Safety
Auditors/ Inspectors	Mahendra Patel Dennis Reed	Persons Contacted	Michael Robert Jim Castaneda

REFERENCE CRITERIA

1. System Safety Program Plan
2. G.O. 164 - C

CHARACTERISTICS AND METHOD OF VERIFICATION

Determine if:
1. Planned and Internal Safety Audits have been scheduled and performed.
2. An internal safety audit plan has been submitted to and approved by the CPUC.
3. The internal audit process includes the 24 APTA elements.
4. Internal Safety audits have been properly documented and submitted to the CPUC on an annual basis prior to February 15 each year.

ACTIVITIES

We performed the following:
1. Interviewed AirTrain representatives to determine if an Internal Safety Audit Plan is developed and how it is implemented.
2. Discussed the Internal Audit program requirements as outlined in Section 4 of the General Order 164-C.
3. Discussed the findings, comments and recommendations with AirTrain representatives and obtained their concurrence.

FINDINGS

1. AirTrain representatives stated that they conduct a weekly safety coordination committee meeting to discuss day-to-day operational safety issues and a bi-weekly AirTrain system coordination meeting to predominantly discuss system modification issues.

2. Currently there is no Internal Safety Audit (ISA) plan. Hence, ISA has not been scheduled and performed for any of the APTA elements and no annual report has been submitted (prior to February 15 of each year) to CPUC.
3. AirTrain representatives stated that they were working on developing an ISA plan that would be completed by the end of August 2004 and would cover all applicable APTA elements to be audited in two years for this first three-year cycle.

COMMENTS

A review of other transit agencies ISA programs could be useful.

RECOMMENDATIONS

AirTrain should develop and implement an ISA program to ensure that planned and scheduled ISAs are performed annually to evaluate compliance and measure the effectiveness of SSPP in accordance with the requirements of Section 4 of GO 164-C.

2004 CPUC SYSTEM SAFETY & SECURITY AUDIT CHECKLIST FOR *AIRTRAIN—SFIA*			
Checklist No.	**4**	Element	**9 – Hours of Service**
Date of Audit	**05/18/04**	Department	System Safety/Transportation
Auditors/ Inspectors	Mahendra Patel Dennis Reed	Persons Contacted	Michael Robert Jim Castaneda

REFERENCE CRITERIA

1. SSPP
2. Rule Book

CHARACTERISTICS AND METHOD OF VERIFICATION

Determine the following:

1. Is there a fatigue or hours-of-service program for safety sensitivity job classifications in place? Discuss the program/s.
2. Select a sample from a list of names for the safety sensitive job classifications. These are: Central Control Operators, Maintainers and Recovery Technicians (SSPP, Section 5.3.1). Review the "time on duty" records prepared during the past twelve months for the selected employees to determine whether or not they complied with the minimum rest requirements in the reference criteria:

ACTIVITIES

We performed the following:

1. Interviewed AirTrain representatives to determine if there is a fatigue or hours-of-service program for safety sensitivity job classifications in place and how it is implemented.
2. Reviewed the documentation pertaining to hours-of-service from March 2003 to March 2004.
3. Discussed the findings, comments and recommendations with AirTrain representatives and obtained their concurrence.

FINDINGS

1. Memo dated May 20, 2003 (Reference No. 041503) from Jim Castaneda to Joe Cofran stipulates twelve-hour work limit in a twenty-four hour period and a complete eight consecutive hours off duty requirements.
2. Review of records indicated that safety sensitive employees (as defined in section 5.3.1 of SSPP) complied with these requirements from October 2003 onward.
3. Majority of Central Control Operators worked in excess of 12 hours per day during the months from March 2003 to September 2003.
4. Some of the transit technicians (maintainers and recovery technicians) also worked in excess of 12 hours per day during the months from March 2003 to September 2003.
5. Hours-of-service program is not described and documented in any controlled document, such as, SSPP and Rulebook.

RECOMMENDATIONS

Air train should ensure that hours-of-service program is described and documented in a controlled document, such as, a SSPP or Rulebook.

2004 CPUC SYSTEM SAFETY & SECURITY AUDIT CHECKLIST FOR *AIRTRAIN—SFIA*			
Checklist No.	**5**	Element	**13, 14 – Training & Certification**
Date of Audit	**05/21/04**	Department	System Safety/Operations
Auditors/ Inspectors	Gary Rosenthal	Persons Contacted	Jim Castaneda

REFERENCE CRITERIA

1. SSPP
2. Training attendance records and course outline
3. List of all employees from start to present in each category.
4. Test records for certification.

CHARACTERISTICS AND METHOD OF VERIFICATION

Interview the training representatives and review the training and certification programs. Select two or more job categories and determine if:

1. Approved training & certification programs and procedures are in place for each category.
2. Each employee working in those categories has successfully completed the training and certification program.
3. Training, certification and refresher training records are complete and in compliance with AirTrain requirements.
4. The training received by employees corresponds to the maintenance activities they are certified to perform.

ACTIVITIES

I performed the following:

1. Interviewed the Safety/Training Engineer and reviewed training and certification programs for four of the six classifications.
2. Reviewed training and certification records for twelve of the fifty-one employees.

FINDINGS

1. Comprehensive training & certification programs and procedures are in place and formally approved for:

a. Lead Transit Tech

b. Transit Technician

c. Lead Central Control and;

d. Central Control Operator

2. The records for each employee checked established that they had successfully completed the appropriate training and certification programs.
3. The training, certification and refresher training records for each employee checked were complete, including tests, and were in compliance with AirTrain's requirements.
4. Each employee checked was successfully trained and certified in at least the job classification they occupied at the time of the audit. There were instances where employees were qualified to work in more than one category.

RECOMMENDATIONS

None

2004 CPUC SYSTEM SAFETY & SECURITY AUDIT CHECKLIST FOR *AIRTRAIN—SFIA*			
Checklist No.	**6**	Element	**12 – Review Operating Rues & Procedures Manual & Operating bulletins**
Date of Audit	**05/20/04**	Department	System Safety/Operations
Auditors/ Inspectors	Gary Rosenthal	Persons Contacted	Michael Robert, Lee Mitchell, Jim Castaneda, Alfredo Hinojosa, Jake Chan, Simon Mostagh

REFERENCE CRITERIA

1. SSPP
2. Operating Rulebook
3. All Standard Operating Procedures (SOP).
4. All Operating Bulletins and other written modifications to the Rulebook.

CHARACTERISTICS AND METHOD OF VERIFICATION

By interview and records reviews, determine the following:

1. Are Operating Rules, Procedures, and Bulletins reviewed and updated on a regular basis?
2. Are Operating Rules, Procedures, and Bulletins effectively distributed to employees?
3. Were system modification procedures followed in the adoption of Operating Rules, Procedures, and Bulletins that were distributed during the past 12 months?

ACTIVITIES

I interviewed AirTrain representatives and reviewed AirTrain documents to determine if:

1. Operating Rules, Procedures, and Bulletins are reviewed and updated on a regular basis?
2. Operating Rules, Procedures, and Bulletins are effectively distributed to employees?
3. System modification procedures are followed in the adoption of Operating Rules, Procedures, and Bulletins that were distributed during the past 12 months?

FINDINGS

I found that:

1. There were 15 Operating Revisions to Procedures Manual forms issued from start-up through May 4, 2004. Generally, these appear to be revisions or additions to AirTrain's operating rulebook. However, the specific rule or procedure being addressed or if it is being modified, added to, or deleted is not always clearly stated. The AirTrain Interim System Safety Program Plan, Revision 0 does not establish specific requirements for regular reviews and updates of Operating Rules, Procedures, and Bulletins. I was told during the interview that it is AirTrain's policy to review and update the operating rulebook annually. Part of that process is to gather recommendations and other information prior to the actual revision. At the time of the audit, this information was already being gathered, albeit in an informal manner.
2. To ensure effective distribution to employees, when operating rules, procedures and, other operating directives are issued; each employee is required to sign a form acknowledging receipt. That information is recorded and the signed form is then placed in the employee's personnel file.
3. Each of the 15 Operating Revisions to Procedures Manual forms listed the names of the persons responsible for preparation, verification, and approval of the document. Bombardier's Operations & Maintenance Procedures OM-027 and OM-028 would seem to establish the appropriate procedures for making these modifications. There was no indication that AirTrain failed to follow system modification procedures in the preparation, review, approval, and control aspects of procedures revisions. However, the 15 Operating Revisions to Procedures Manual forms do not adequately follow the format established in Operations & Maintenance Procedures OM-027 and OM-028. Those documents establish a standard format that provides adequate information and an effective guide to develop clear and concise, step-by-step written instructions necessary for performing required tasks.

COMMENTS

AirTrain should consider formalizing the information gathering process for the annual operating rulebook revision to help ensure that no submitted information is inadvertently lost.

RECOMMENDATIONS

1. AirTrain should revise its system safety program plan to reflect its practice of annually reviewing and revising its operating rulebook.
2. AirTrain should follow Bombardier's Operations & Maintenance Procedures OM-027 and/or OM-028 format requirements or develop and implement a similar process for consistency when revising operating procedures

2004 CPUC SYSTEM SAFETY & SECURITY AUDIT CHECKLIST FOR *AIRTRAIN—SFIA*			
Checklist No.	**7**	Element	**14, 17 – Emergency Response Planning and Training**
Date of Audit	**05/19/04**	Department	System Safety
Auditors/ Inspectors	Robert Strauss	Persons Contacted	Michael Robert – AirTrain Derek Philips – AirTrain Jim Castaneda - Bombardier

REFERENCE CRITERIA

1. System Safety Program Plan
2. Minutes of Fire Life Safety Meetings.
3. SSPP

CHARACTERISTICS AND METHOD OF VERIFICATION

Interview the Safety Manager/Chief and review available records and documentation for the past year to determine if:

1. AirTrain has held periodic Fire Life Safety meetings with police and fire departments.
2. Emergency drills that included tabletop and practical exercises were planned and performed with the appropriate external agencies.
3. Drills were evaluated and any recommendations found were incorporated into the Emergency Response agency Familiarization Program.
4. All employees have had emergency response training appropriate to their position.

ACTIVITIES

I performed the following:

1. Interviewed AirTrain and Bombardier personnel and reviewed training records.

FINDINGS

1. AirTrain holds a Safety and Security Committee meeting every two months.
2. A System Coordination Committee meets monthly
3. The Safety Coordination Committee meets weekly.

4. The Safety and Security Committee includes representatives of police and fire departments the other meetings do not. From the minutes of the Safety and Security Committee meeting it was not clear if emergency incidents were discussed. For example:
   a) The minutes of the System Coordination Committee and the Safety Coordination Committee reported a fire on the guideway on November 1, 2003. This incident was not included in the Safety and Security Committee meeting minutes.
   b) The minutes described procedural errors in addressing the incident but no follow-up appears in the minutes.
   c) The interviewees explained AirTrain's response to the incident, but did not have a reason why it was not tracked and closed.
5. AirTrain holds annual emergency drills involving first responders (i.e. fire, police and emergency medical).
   a) The last drill was May 12, 2004.
   b) A planning meeting and a tabletop meeting preceded the drill.
   c) The drill was followed by a debriefing lead by the Airport's Emergency Planning unit.
   d) The Emergency Planning Unit analyzed the drill and made recommendations. It is too soon to determine if the recommendations are implemented.
   e) Police and Fire personnel also receive yearly familiarization training.
6. Emergency Response Training was included as part of the initial employee training. New employees receive Emergency Response Training as part of rulebook training.
7. Bombardier holds weekly meetings to discuss current issues. Some of these weekly issues involved emergency preparedness and response.
8. AirTrain also uses other training tools, such as a video on proper response to fire, and training by the police bomb squad.
9. There is no certification and no scheduled refresher course for emergency preparedness and response.
10. The interviewees stated AirTrain no longer uses the Emergency Evacuation Procedures (CDRL 57) referred to in the SSPP, but uses emergency procedures contained in the Rulebook (CDRL 31).
11. CDRL 57 was last amended 8/20/03. The Rulebook is dated July 2003. AirTrain stated that the Rulebook, CDRL 31, replaced CDRL 57
12. The procedures in CDRL 57 are more specific and complete and place a higher priority on protecting lives.
13. There was disagreement between Bombardier and AirTrain on the amount of discretion Central Control Operators have in an emergency situation. Both parties agreed that in an emergency situation Central Control Operators should take whatever action is necessary to preserve life.

COMMENTS

AirTrain should identify critical emergency training issues and create a plan that ensures those topics are covered in the weekly meeting.

RECOMMENDATIONS

1. AirTrain should ensure that emergency incidents are presented to the Safety and Security Committee. Issues arising from emergency incidents should be tracked to resolution and a record maintained.
2. AirTrain should develop a refresher training course for emergency preparedness and response. All employees should be required to take refresher training periodically.
3. AirTrain should clarify its SSPP on which document should be followed for emergency situations (CDRL 57 or CDRL 31). There should be clear and unambiguous direction, supported by training, on the appropriate course of action employees should take in an emergency and that direction should emphasize protecting all persons from injury or death.

2004 CPUC SYSTEM SAFETY & SECURITY AUDIT CHECKLIST FOR *AIRTRAIN—SFIA*			
Checklist No.	**8**	Element	**24 – Security Program & Security Audits**
Date of Audit	**05/20/04**	Department	Security
Auditors/ Inspectors	Dennis Reed	Persons Contacted	Michael Robert Jim Castaneda

REFERENCE CRITERIA

1. Security Plan
2. SSPP

CHARACTERISTICS AND METHOD OF VERIFICATION

Determine if:

1. Inspections of AirTrain stations/platforms and facilities have been conducted on a regular basis to identify security and safety issues.
2. Identified issues have been appropriately addressed.
3. Security audits have been conducted during the past year to identify potential terrorist targets and improvements have been implemented.
4. AirTrain's security issues have been incorporated into the General SFIA Security Plan.
5. Crime reports are generated on a regular basis and used to revise Security Program.

ACTIVITIES

I performed the following:

1. Reviewed inspection criteria for platforms and discussed with AirTrain Administration and Bombardier Safety.
2. Reviewed General SFIA Security Plan.
3. Discussed security issues with Bombardier's Safety Officer and AirTrain's Administrative staff.
4. Reviewed the SSPP for safety and security compliance and discussed it with AirTrain/Bombardier

FINDINGS

1. Each Recovery Technician inspects the platforms on a daily basis. Since there is a Recovery Technician for each shift, each platform is inspected 3 times per day. In addition each train is inspected and cleaned at the Rental car area for 16 of the 24 hours per day. These trains are inspected for cleanliness, phones are checked and the trains are inspected for lost items.
2. There are closed circuit televisions on each platform that view all of the alarmed exit doors. In addition to the cameras on the platform, the Airport has a plethora of cameras all over. These cameras can be used as additional back-up if necessary. If the doors are opened and the alarm goes off, the AirTrain Control Center will drop the power to that area and send either law enforcement or a recovery technician to the area depending on the situation.
3. Since the whole airport staff is sensitive to security, they have become additional eyes to watch the trains and they will call the AirTrain Control Center if they observe anything that is suspicious.
4. There is a daily police presence on the trains and it can be augmented depending upon the need.
5. SFIA security is different from other transit agencies in that the Airport Bureau has multiple jurisdictions and disciplines represented. These include: SFPD, TSA, Customs and Fire Department. In an emergency situation the Airport can request mutual aid. The AirTrain security is under the umbrella of the Airport and as such is a segment of the overall SFIA security plan. As a result, the Airport conducts investigations with other agencies and there are not specific reports generated that relate to criminal activity on the AirTrain.
6. As part of the Airport, AirTrain has provided both adhoc and planned training exercises for the Airport Police and Fire Department. On May 5th a formal Training exercise was conducted between police, fire and Bombardier.

RECOMMENDATIONS

None

2004 CPUC SYSTEM SAFETY & SECURITY AUDIT CHECKLIST FOR *AIRTRAIN—SFIA*			
Checklist No.	**9**	Element	**21—Drugs & Alcohol Testing Program**
Date of Audit	**05/20/04**	Department	Human Resources
Auditors/ Inspectors	Dennis Reed	Persons Contacted	Michael Robert, Lee Mitchell, Jim Castaneda, Joe Cofran

REFERENCE CRITERIA

1. Primus Transportation: Alcohol & Drug Program and Reasonable Suspicion
2. SSPP

CHARACTERISTICS AND METHOD OF VERIFICATION

Determine:

1. Who is responsible for Drug and alcohol program for AirTrain?
2. Does this meet FTA standards?
3. How many employees tested positive or refused to take a test for drugs or alcohol during the past year.
4. The outcome for employees who tested positive in the categories such as those listed below:
   a) Pre-employment/Pre-Duty
   b) Reasonable Cause
   c) Post-Accident
   d) Random
   e) Return to Work
   f) Follow-up.
5. If the outcome followed proper procedure and regulatory requirements.

ACTIVITIES

1. Discussed the Drug and Alcohol program regarding:
   a) AirTrain Administration
   b) Bombardier
   c) Primus
2. Reviewed Drug and alcohol program to determine if it meets FTA Standards.
3. Reviewed SSPP and discussed with Safety management the employee testing program regarding employees who may have tested positive or refused to take a test for drugs or alcohol during the past year and the results of this testing.

4. Reviewed procedures and regulatory requirements and discussed with AirTrain Administration and Bombardier's Safety Officer.

FINDINGS

1. There are three entities involved in the AirTrain oversight function. These are:
   a) AirTrain Administration provides oversight for the AirTrain operations and is a Department/unit within the SFIA. The three administrators from AirTrain Administration are not considered to be case sensitive positions and therefore are not required to participate in the Drug and Alcohol testing program.
   b) Bombardier employees provide on-site management of the trains, but do not directly operate them. As a result, they are not considered to be safety sensitive positions. However, the seven Bombardier employees have opted to be drug tested and a program has recently been started. At this time, only one of the seven employees has been randomly tested and they tested negative. The drug and alcohol testing program is being administered by US Healthworks and their Medical Review Officer. These Random Selection Services comply with Federal and Department of Transportation procedures for transportation workplace drug and alcohol testing programs, 49 CFR 40, et.al. RSS uses the Microsoft Access Drug and Alcohol Program Management software to fulfill drug and alcohol testing requirements specified by the Department of Transportation (DOT).

   Primus employees are responsible for the train operations and have the safety sensitive positions. During the course of the audit an agreement was reached with the Union to implement a random testing component to the Drug and Alcohol Program.

   All Bombardier and Primus employees with the exception managers are Drug and Alcohol tested when they begin their employment and any employee who is in a safety sensitive position and involved in an incident is tested. There have been no incidents during the past year. The safety sensitive positions are as follows:
   a) Shift Supervisors
   b) Central Control Operators
   c) Maintainers
   d) Recovery Technicians
3. Although Bombardier implemented a drug and alcohol testing program, Primus had not implemented the random testing component and therefore was not in compliance with AirTrain's System Safety Program Plan or FTA requirements. However, a random drug testing program was being developed before the audit and implemented by Primus immediately after the audit in June, 2004.

RECOMMENDATIONS

1. AirTrain should develop and implement a random drug and alcohol testing program for all safety sensitive employees.
2. AirTrain Administration should evaluate the random drug testing program within 12 months from its implementation date (June 2004) and report the findings to CPUC.

2004 CPUC SYSTEM SAFETY & SECURITY AUDIT CHECKLIST FOR *AIRTRAIN—SFIA*			
Checklist No.	**10**	Element	**16 – Inspections**
Date of Audit	**05/20/04**	Department	System Safety/Maintenance
Auditors/ Inspectors	Gary Rosenthal	Persons Contacted	Michael Robert Jim Castaneda

REFERENCE CRITERIA

1. SIMS Data base
2. Inspection reports
3. Rules and Procedure Manuals

CHARACTERISTICS AND METHOD OF VERIFICATION

By interview of appropriate representatives and reviews of records:

1. Determine if there are procedures for each of the inspection tasks listed below.
2. Review a sample of inspection reports for at least two separate inspection periods during the last year to determine whether or not maintenance inspections were conducted, documented and noted defects corrected in a timely manner.
3. Maintenance Inspection Tasks:
   a) Track maintenance inspections:
      i. Power rail
      ii. Power feeds
      iii. Rail heating equipment
      iv. Guide beams
      v. Seismic joints
      vi. Guideway switches
      vii. Other trackside equipment
   b) Traction Power Inspection reports including testing and replacement of:
      i. Voltage breakers UPS back-up systems, switchgear indications and all wiring
      ii. Switchgear indications
      iii. All wiring
   c) Train control equipment inspections
      i. Testing and adjusting of signal levels
      ii. Track circuits
      iii. Vital relays
      iv. Wiring
      v. Switch equipment

ACTIVITIES

I interviewed AirTrain representatives and reviewed rules, procedures, inspection records, and other documents concerning inspection task procedures. I also arbitrarily selected and then reviewed inspection reports as follows:

1. Five monthly inspections from September 2003 through January 2004 for Switch 101;
2. Five monthly inspections from September 2003 through January 2004for Switch 102;
3. Five monthly inspections from September 2003 through January 2004for PDS, and;
4. Daily inspections for cars 2, 7, 10, 11, 16, 17, 19, 27, and 36 in January 2004.

FINDINGS

1. There were Preventive Maintenance Worksheets for each of the inspection tasks listed under the Characteristics and Method of Verification section of this checklist. These worksheets contain a comprehensive list of inspection tasks to be performed in connection with scheduled component or system inspections. They do not describe the step-by-step procedures necessary to properly perform the inspections. In many instances, the worksheets do not include tolerances or other criteria necessary to determine if an inspected element does or does not pass the inspection.
2. Bombardier Transportation has two formal, comprehensive procedures for the uniform preparation of standard operating procedures (SOPs). They are SOPs, "OM-027: Preparation of Standard Operating Procedures" and "OM-028: Preparation of Site-Specific Procedures". Both SOPs describe process and sequence of developing, approving, adopting, and controlling those documents. Both SOPs also indicate that SOPs should be developed for the performance of necessary operations and maintenance tasks such as inspections.
3. While there were no SOPs presented during the audit that would describe how to perform the inspection tasks, I found that AirTrain does regularly conduct these listed inspections as specified in a variety of Preventive Maintenance Worksheets.
4. All of the inspection worksheets reviewed had each of the listed inspections initialed by the inspector. All other information listed on the worksheets, such as dates, times, and locations, was also entered by the inspectors. Hard copies of the worksheets are filed with the pertinent data electronically entered into the SIMS system.

RECOMMENDATIONS

1. AirTrain should revise its worksheets to include tolerances or other criteria necessary to determine if an inspected element does or does not pass inspection.

2004 CPUC SYSTEM SAFETY & SECURITY AUDIT CHECKLIST FOR *AIRTRAIN—SFIA*			
Checklist No.	**11**	Element	**11 – Calibration Measuring & Testing Equipment**
Date of Audit	**05/18/04**	Department	System Safety/Rolling Stock
Auditors/ Inspectors	Mahendra Patel Dennis Reed	Persons Contacted	Michael Robert Jim Castaneda Peggy Kiriaze Alfredo Hinojosa

REFERENCE CRITERIA

1. Calibration data base
2. SSPP

CHARACTERISTICS AND METHOD OF VERIFICATION

Obtain a copy of the Calibration Database and Recall List of items subject to calibration control. Select from this list at least three different items that require calibration. From a combination of records review and visual inspection of the equipment items, determine whether or not:

1. Is there a calibration procedure in place and is it being followed?
2. The selected items are properly inventoried, stored, distributed for use, and calibrated against certified standards at the prescribed intervals
3. The selected items have a calibration label firmly affixed stating the date the item was last calibrated and the date the item is next due for calibration.

ACTIVITIES

We performed the following:

1. Reviewed the following documentation:
   a) Bombardier O & M Policy and Procedure Number OM-039, Revision 5.
   b) Test Equipment List
   c) Calibration Certificates binder.
2. Randomly selected the following devices for review:
   a) Three multimeters – BOMB30097 (S/N 708600090x), BOMB30098 (S/N 72500337), and BOMB30108 (S/N AA00105735).
   b) Three torque wrenches – BOMB30045 (S/N 0998503607), BOMB30019 (S/N 02022602404), and BOMB30020 (S/N 0901502210).

c) Four micrometers – BOMB30009 (S/N 4946368) (4” – 5”), BOMB30009 (S/N 4946368) (0” – 1”), BOMB30009 (S/N 4946368) (2” – 3”), and BOMB30009 (S/N 4946368) (1” – 2”).
d) One pressure gage – BOMB30155 (S/N #2).
e) One power meter – BOMB30124 (S/N 1Q46DE001).
f) One caliper – BOMB30104 (S/N 2Q107).

3. Discussed the findings with AirTrain representatives and obtained their concurrence.

FINDINGS

1. Bombardier O & M Policy and Procedure Number OM-039, Revision 5, provides instructions for the calibration of tools and test equipment.
2. Test equipment list provides pertinent information, such as, description, model number, serial number, calibration due date, calibration cycle, etc. for each tool and equipment.
3. Review of records indicated that calibration certificates are kept up to date and filed in a binder that is easy to navigate. Calibration Certificates provide pertinent information, such as, instrument identification (type, manufacturer, serial number, etc.), certification information (calibration date, calibration cycle, next due date, procedure used, as found & as left conditions, etc.), and National Institute of Standards and Technology (NIST) traceable standards used for calibration.
4. Selected different items (torque wrench, multimeter, micrometer, pressure gage, power meter) had a calibration label firmly affixed stating the date the item was last calibrated and the date the item is next due for calibration.
5. Brown & Sharp Caliper (BOMB30104) (S/N 2Q107) due for calibration on 05/14/04 was missing, however, an email was distributed to all affected employees to check toolboxes for this caliper. Bombardier personnel stated that, if not found, this would be documented as lost.

RECOMMENDATIONS

None

2004 CPUC SYSTEM SAFETY & SECURITY AUDIT CHECKLIST FOR *AIRTRAIN—SFIA*			
Checklist No.	**12**	Element	**10, 11 – APM Vehicle**
Date of Audit	**05/19/04**	Department	System Safety/Maintenance
Auditors/ Inspectors	Mahendra Patel	Persons Contacted	Michael Robert Jim Castaneda Derek Phipps Alfredo Hinojosa

REFERENCE CRITERIA

1. Project Maintenance Plan for an Automated People Mover.
2. SSPP

CHARACTERISTICS AND METHOD OF VERIFICATION

1. Select 3 cars and review the PM records associated with each car selected to determine whether or not:
   a) The PM required by the referenced procedure were performed within the required limits.
   b) The required documentation was properly prepared
   c) Noted discrepancies were corrected in a timely manner

ACTIVITIES

I performed the following:

1. Reviewed the following documentation:
   a) Bombardier Vehicle Equipment Manual (CDRL 29/30.01B, February 2002).
   b) Maintenance Task Template.
   c) SIMS Preventive Maintenance (PM) tasks
   d) SIMS PM Forecast table.
   e) TCAs, ECNs and FCNs binder.
2. Randomly selected three cars (car # 9, 18,and 32) out of 37 APM vehicles on sight (out of which 9 are in long-term storage) and reviewed their SIMS PM history.
3. Discussed the findings and comments with AirTrain representatives and obtained their concurrence.

FINDINGS

1. Section 4 of Bombardier Vehicle Equipment Manual (CDRL 29/30.01B, February 2002) provides preventive maintenance information including schedules and procedures. These requirements are transferred into Maintenance Task Template and SIMS PM tasks as follows: Task 50 (Two Day Inspection), Task 200 (vehicle 6500 mile inspection), Task 300 (vehicle 19500 mile inspection), Task 400 (vehicle 39000 mile inspection), Task 500 (vehicle 78000 mile inspection), and vehicle 250000 mile inspection.
2. SIMS PM Forecast table provides pertinent information, such as, car ID; major PM ID; scheduled start and end dates; last PM done date; last done, current, and scheduled mileage readings, etc.
3. A process is in place that follows problem identification, Field Action Request (FAR), TCA, ECN FCN's approval and implementation.
4. SIMS PM History documents pertinent information, such as, service name, task name, performed by, date performed, work status, etc. for each car. It also documents defects and recertifications.
5. Review of records for three selected cars (9, 18, and 32) indicated that required PMs were performed within the required limits, overall documentation was properly prepared and noted discrepancies were corrected in a timely manner.
6. Review of TCAs, ECNs, and FCNs binder indicated that some of the signatures and dates were missing on some forms.

COMMENTS

I suggested that all the required forms, such as, TCAs, ECNs, FCNs etc. should be completely filled out including all the required signatures and dates.

RECOMMENDATIONS

None