2016
TRIENNIAL SAFETY REVIEW
OF
SAN FRANCISCO INTERNATIONAL AIRPORT
AIRTRAIN AUTOMATED PEOPLE MOVER

RAIL TRANSIT SAFETY BRANCH
SAFETY AND ENFORCEMENT DIVISION
CALIFORNIA PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
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Final Report

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Safety and Enforcement Division

2016 TRIENNIAL SAFETY REVIEW OF SAN FRANCISCO INTERNATIONAL AIRPORT – AIRTRAIN

ACKNOWLEDGEMENT

The California Public Utilities Commission's Rail Transit Safety Branch (RTSB) conducted this System Safety Program Review. Staff members directly responsible for conducting the review and inspection activities are:

Stephen Artus – Program and Project Supervisor
Mike Borer – Supervisor of RTOSS
Steve Espinal – Senior Utilities Engineer Supervisor
Colleen Sullivan – Utilities Engineer, Representative to AirTrain
Adam Freeman – Equipment Inspector
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TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

The California Public Utilities Commission's Safety and Enforcement Division (SED), Rail Transit Safety Branch (RTSB) conducted an on-site system safety program review of the AirTrain Automated People Mover (APM) system at San Francisco International Airport (SFO) in August, 2016.

The on-site review was preceded by an opening meeting between AirTrain personnel and Staff, on Monday, August 1, 2016. The review took place between August 1 and 4, 2016. The review focused on verifying the effective implementation of AirTrain's System Safety Program Plan (SSPP).

A post-review conference meeting followed the review on September 12, 2016, during which Staff provided AirTrain personnel with a synopsis of the review findings. The review results indicate that AirTrain maintains a comprehensive system safety program, and has been effectively implementing its SSPP. However, Staff made note of several findings of non-compliance and include recommendations as appropriate.

Section 2 of this report, titled Introduction, provides a summary of the authority under which CPUC performs the triennial reviews, and presents a brief chronology of the review. Section 3, Background, includes a description of the SFO AirTrain APM system. Section 4, explains the procedures used by Staff during the System Safety Review. The findings and recommendations are presented in Section 5, organized by source checklist numbers. Finally, the Appendices include tabulated findings and recommendations, and the complete set of review checklists with summaries of all review activities and the original comments, findings, and recommendations.

2. INTRODUCTION

The Commission's General Order (GO) 164-D *Rules and Regulations Governing State Safety Oversight of Rail Fixed Guideway Systems*, and the Federal Transit Administration's (FTA's) 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 reviews of each rail transit agency's system safety program at a minimum once every three years. The purpose of the triennial review is to verify compliance 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-D as well as other Commission safety requirements. Staff conducted the previous On-Site System Safety Review of AirTrain in September, 2013.

Staff notified AirTrain's Manager by letter, dated July 1, 2016, of the scheduling of the Commission's Safety and Security Reviews to begin on August 1, 2016. The notification letter included 27 checklists which served as the basis for the Safety Review. The checklists, included in Appendix E, focus primarily on verifying the effective implementation of AirTrain's SSPP.

The Review began with an opening conference meeting on August 1, 2016, attended by Staff, AirTrain's Manager, and Safety and Security Manager, and Bombardier's Site Director, managers, and supervisors.

Staff conducted the on-site system safety inspections and records review from August 1 through 4, 2016. Staff provided AirTrain personnel a verbal summary of any preliminary findings, and discussed potential recommendations for corrective actions at the conclusion of each review activity.

On September 12, 2016, Staff conducted a post-review exit meeting with AirTrain's managers to verbally convey all the findings from the Review.

3. BACKGROUND

SFO AIRTRAIN SYSTEM DESCRIPTION

AirTrain at San Francisco International Airport began operation on February 24, 2003 as a six mile system. It provides fully automated revenue service 24 hours day, seven days a week with free transportation to passengers to designated locations at the San Francisco International Airport (SFO). The SFO AirTrain Automated People Mover (APM) was originally contracted to Bombardier as a design-build-operate-maintain project. The system presently is owned by the San Francisco Airport Commission and is operated and maintained by Bombardier.

The APM fleet is composed of 38 Bombardier CX-100 vehicles. The system includes six miles of guideways with nine passenger stations, including each of SFO's terminals, parking garages, a BART transfer station, and the airport's Rental Car Center.

AirTrain operates on two lines:

- Blue Line – all terminals, garages A and G, the BART station, and the Rental Car Center.
- Red Line – all terminals, garages A and G, and the BART station.

The Red Line is a closed-loop, with trains consisting of 2 or 3 vehicles traveling counter-clockwise continuously throughout the day. The Blue Line is a pinched-loop, running parallel and opposite the Red line around the terminals, and then extending to AirTrain's yard and maintenance facilities, and the Rental Car Center. A switch, immediately south of the last stop on the Blue Line, the Rental Car Center, allows trains to perform turn-around maneuvers on the Blue Line. The Red and Blue lines are interconnected at several points to allow vehicles to go into and come out of revenue service on the Red Line and return to the yard and maintenance facility. A test track runs parallel to the mainline near the maintenance facility to allow testing of various vehicles and wayside system components.

All revenue vehicles are electrically powered and fully automated, though in-cab manual controls are present for non-revenue operations. The system is operated from the Operations Control Center, located in the maintenance facility, along with AirTrain and Bombardier management offices. A fully manual, self-powered maintenance vehicle allows personnel to perform guideway inspections and emergency operations, including towing revenue vehicles.

FOLLOW-UP STATUS OF THE 2013 AIRTRAIN TRIENNIAL REVIEW

The previous triennial review of AirTrain's System Safety produced six recommendations. The 2013 Review demonstrated that AirTrain was largely in compliance with its SSPP.

CPUC Commission Resolution ST-160 adopted the Staff's final report which required corrective actions and reporting on AirTrain's part. The final report noted these same items open. Airtrain recognized and are taking measures to address these still open corrective actions.

4. SYSTEM SAFETY REVIEW PROCEDURE

Staff conducted the 2016 System Safety Review of San Francisco International Airport AirTrain in accordance with Rail Transit Safety Section Procedure RTSS-4, *Procedure for Performing Triennial Safety Audits of Rail Transit Systems*. Staff developed 27 checklists to cover various aspects of system safety responsibilities, based on Commission and FTA requirements, AirTrain's SSPP and other safety-related documents, and Staff's knowledge of AirTrain operations. The 27 checklists are included as Appendix E of this report.

Each checklist identified safety-related elements and characteristics that were either inspected or reviewed by Staff. The completed checklists include 12 findings of non-compliance and 9 recommendations pertaining to AirTrain's SSPP and its procedures, and/or Commission regulations. The methods used to perform the review included:

- Discussions and interviews with AirTrain and Bombardier management
- Review of rules, procedures, policies, and records
- Observations of operations and maintenance activities
- Interviews with rank and file employees
- Inspections and measurements of equipment and infrastructure

The review checklists concentrated on requirements that affect the safety of transit operations, and are known or believed to be important in reducing safety hazards and preventing safety incidents.

5. FINDINGS AND RECOMMENDATIONS

The reviewers and inspectors who participated in the On-Site System Safety Review concluded that AirTrain has a comprehensive SSPP, and is effectively implementing it. However, Staff observed 11 findings of non-compliance and provided 8 recommendations to improve the system safety program. These findings and recommendations are listed below, and grouped by checklist number.

1. Policy Statement and Authority for System Safety Program Plan (Leadership Involvement and Commitment to Safety

No findings of non-compliance; no recommendations.

2. System Safety Program Plan Goals and Objectives

No findings of non-compliance; no recommendations.

3. Overview of Leadership Structure

No findings of non-compliance; no recommendations.

4. System Safety Program Plan Control and Update Procedures

No findings of non-compliance; no recommendations.

5. System Safety Program Plan Implementation, Activities, and Responsibilities

No findings of non-compliance; no recommendations.

6. Hazard Management Process

No findings of non-compliance; no recommendations.

7. System Modifications

No findings of non-compliance; no recommendations.

8. Safety and Security Certification

No findings of non-compliance; no recommendations.

9. Safety Data Collection and Analysis

No findings of non-compliance; no recommendations.

10. Accident/Incident Investigations

No findings of non-compliance; no recommendations.

11. Emergency Management Program

No findings of non-compliance; no recommendations.

12. Internal Safety Audits

No findings of non-compliance; no recommendations.

13-A. Rules Compliance

No findings of non-compliance; no recommendations.

13-B. Rules Compliance: Operation Safety Compliance Program Inspection

No findings of non-compliance; no recommendations.

14. Facilities Equipment Inspections and Maintenance

No findings of non-compliance; no recommendations.

15-A. Maintenance Audits and Inspections: Signals Inspections

Findings of Non-Compliance:

1. Staff found that Maximo was not designed to fit the particular needs of Air Train and P/M's were randomly being missed. At the time of inspection, Staff noted that 15 P/M's were past due. Air Train previously noted Maximo was not calculating the last date in which an inspection was completed but it was calculating the next date due based on the original date it was due when entered into the system. Staff noted that Air Train had recognized the defect and was making changes to Maximo to fit the needs of Air Trains system.

2. Staff noted that all relay blocks were not properly labeled in any of the cabinets. Staff also noted that Air Train had installed labels made of masking tape on several relays.

Recommendations:

1. Air Train should continue to monitor Maximo to ensure all changes made to the system are working as designed and PM's are completed on time
2. Air Train should generate a procedure to ensure all cabinets are properly labeled. Staff also recommends that Air Train refrain from the use of masking tape as a label material and use a proper label. .

15-B. <u>Maintenance Audits and Inspections: Train Inspections</u>

Findings of Non-Compliance:

The APM preventive maintenance schedule is not being completed on time according to the Bombardier vehicle equipment manual specifications. PM records reviewed going back three years indicates that PM inspections are frequently being completed well over the PM miles interval.

Recommendations:

Bombardier management must ensure preventive maintenance inspections are being completed on time according to the scheduled intervals. Staff did note that Bombardier management has recently made improvements. In an effort to properly manage the preventative maintenance schedule Bombardier has increased staff by hiring additional employees as well as offering overtime hours to employees to complete preventive maintenance inspections on time. Staff reviewed with Bombardier management the recent improvement related to the

scheduling and completion of PM Inspections, significant improvement has been made only recently as of April-August 2016.

15-C. Equipment Maintenance Program: Signal Systems Including Maintenance and Vital Relays Maintenance

Findings of Non-Compliance:

Staff noted that **ALL** Vital Relay inspection are due in the year of 2016 and that Air Train has not been able to keep up with the overload of work created in having **ALL** P/M's due in one year. As of the date of inspections, Staff noted Air Train has approximately 60% left to do and all were past due as long as 153 days. Staff noted that as of the date of inspection Air Train had 39 defective relay's (with high resistance) which have yet to be addressed due to the backlog of Relay inspections past due.

Recommendations:

1. Vital Relay inspections must take place in a timely manner. Air Train should create a P/M program that would split up the list of required Vital Relay P/M's over the next four years. Within each one of the 4 years, Air Train should spread said ¼ load of the inspection over the entire year.

16. Training and Certification Program for Employees and Contractors

Findings of Non-Compliance:

Airtrain does not have a RWP training program per GO 175 section 3.1

Recommendations:

Airtrain should develop a RWP training program per GO 175 section 3.1

17. Configuration Management and Control

No findings of non-compliance; no recommendations.

18. Local, State, and Federal Requirements for Employee Safety Program

No findings of non-compliance; no recommendations.

19. Hazardous Materials Programs

No findings of non-compliance; no recommendations.

20. Drug and Alcohol Program

No findings of non-compliance; no recommendations.

21. Procurement Process

No findings of non-compliance; no recommendations.

22. GO 172 Compliance

No findings of non-compliance; no recommendations.

23 GO 175 Roadway Worker Protection

Findings of Non-Compliance:

1. AirTrain does not fully comply with all applicable sections of GO 175-A (see checklist 23 for details on the applicable sections).

Recommendations:

1. AirTrain should comply fully comply with GO 175-A (see checklist for details).

24. Hours of Service

No findings of non-compliance; no recommendations.

25. Contractor Safety Program

Findings of Non-Compliance:

1. AirTrain is not monitoring or recording contractor compliance with Airtrain safety rules and procedures, which does not meet the requirements of Elements Two and Three. Airtrain stated that they intend to have policies and procedures in place soon to monitor contractor activities using compliance checks, audits and inspections that would then be properly recorded.

Recommendations:

1. Airtrain should develop policies and procedures to monitor contractor activities using compliance checks, audits and inspections that would then be properly recorded, per SYS-40-10-35-010632, section 6.5, section 20 of the System Safety Program Plan, Revision 3, February 24, 2015 and General Order 164-D.

26. Guideway Maintenance

Findings of Non-Compliance:

1. Maintenance and inspections for Wayside Amps, Power Rails and Switches were not conducted at the required frequencies per their SFIA-PRG 002.
2. Only region 2ATC was inspected in 2015 on 6-30-2015. Also, only region 1ATC was inspected in 2016 on 2-2-2016. One Wayside Amps inspection was missing for both 2015 and 2016.
3. There was no January 2016 inspection for Power Rail ITG2-T2-2 and no inspection for Power Rail SB-12 for January or February of 2016.
4. Records for Switch # 101 and determined that records for May, September and November of 2015 were missing. Staff also determined that switch # 101 records for February, March and July of 2016 were missing.

Recommendation:

1. Airtrain should ensure that guideway maintenance PM's and inspections are conducted at the required frequencies, per their SFIA-PRG 002 "Wayside Maintenance Program" and per section 8.3 of the System Safety Program Plan, Revision 3, February 24, 2015.

27. Traction Power System

Findings of Non-Compliance:

1. Proper ranges are not provided for numerical values including voltage, breaker trip time, megger tests or contact resistance. Acceptable ranges should be included in the test sheets for all numerical results to determine if the numerical values are in acceptable ranges. Airtrain informed staff the

proper ranges could not located.

Recommendations:

1. Approach the manufacturer and request proper ranges for the breaker trip time, contact resistance and meggar tests.

APPENDICES

APPENDIX A. ABBREVIATION AND ACRONYM LIST

Abbreviation or Acronym	Definition
AEM	All Employee Meeting
APM	Automatic People Mover
ATC	Automatic Train Control
ATO	Automatic Train Operation
ATP	Automatic Train Protection
BTH	Bombardier Transportation (Holdings) USA Inc.
CAP	Corrective Action Plan
CAPL	Controlled Assembly Part List
CFR	Code of Federal Regulations
Commission	California Public Utilities Commission
CPUC	California Public Utilities Commission
EPROM	Erasable Programmable Read Only Memory
ECN	Engineering Change Notice
FMI	Field Modification Instruction
GO	General Order
GRACIS	Governance, Risk, and Compliance Information System
HSE	Health, Safety, and Environment
ISSA	Internal Safety and Security Audit
LOTO	Lock-Out/Tag-Out
ORS	Operations Radio System
PLC	Programmable Logic Controller
PM	Preventative Maintenance
SCHNM	Safety Concern Hazard Near Miss
SCM	Safety Committee

SFO	San Francisco International Airport
SFIA	San Francisco International Airport
SIMS	Site Information Management System
SSPP	System Safety Program Plan
Staff	Rail Transit Safety Branch Personnel
TCA	Temporary Change Authorization
UPS	Uninterruptible Power Source

APPENDIX B. LIST OF FINDINGS

No.	Finding	Checklist No.
1	Staff found that Maximo was not designed to fit the particular needs of Air Train and P/M's were randomly being missed. At the time of inspection, Staff noted that 15 P/M's were past due. Air Train previously noted Maximo was not calculating the last date in which an inspection was completed but it was calculating the next date due based on the original date it was due when entered into the system. Staff noted that Air Train had recognized the defect and was making changes to Maximo to fit the needs of Air Trains system.	**15-A**
2	Staff noted that all relay blocks were not properly labeled in any of the cabinets. Staff also noted that Air Train had installed labels made of masking tape on several relays.	**15-A**
3	The APM preventive maintenance schedule is not being completed on time according to the Bombardier vehicle equipment manual specifications. PM records reviewed going back three years indicates that PM inspections are frequently being completed well over the PM miles interval.	**15-B**
4	Staff noted that **ALL** Vital Relay inspection are due in the year of 2016 and that Air Train has not been able to keep up with the overload of work created in having **ALL** P/M's due in one year. As of the date of inspections, Staff noted Air Train has approximately 60% left to do and all were past due. Some as much as 153 days. Staff noted that as of the date of inspection Air Train had 39 defective relay's (with high resistance) which have yet to be addressed due to the overload of Relay inspection past due.	**15-C**
5	Airtrain does not have a RWP training program per GO 175 section 3.1	**16**
6	AirTrain does not fully comply with all applicable sections of GO 175-A (see checklist 23 for details on the applicable sections).	**23**

No.	Finding	Checklist No.
7	AirTrain is not monitoring or recording contractor compliance with Airtrain safety rules and procedures, which does not meet the requirements of Elements Two and Three. Airtrain stated that they intend to have policies and procedures in place soon to monitor contractor activities using compliance checks, audits and inspections that would then be properly recorded.	**25**
8	Maintenance and inspections for Wayside Amps, Power Rails and Switches were not conducted at the required frequencies per their SFIA-PRG 002.	**26**
9	Only region 2ATC was inspected in 2015 on 6-30-2015. Also, only region 1ATC was inspected in 2016 on 2-2-2016. One Wayside Amps inspection was missing for both 2015 and 2016.	**26**
10	There was no January 2016 inspection for Power Rail ITG2-T2-2 and no inspection for Power Rail SB-12 for January or February of 2016.	**26**
11	Records for Switch # 101 and determined that records for May, September and November of 2015 were missing. Staff also determined that switch # 101 records for February, March and July of 2016 were missing.	**26**
12	Proper ranges are not provided for numerical values including voltage, breaker trip time, megger tests or contact resistance. Acceptable ranges should be in included in the test sheets for all numerical results to determine if the numerical values are in an acceptable range.	**27**

APPENDIX C. LIST OF RECOMMENDATIONS

No.	Recommendation	Checklist No.
1	Air Train should continue to monitor Maximo to ensure all changes made to the system are working as designed and PM's are conducted in a timely manner	**15-A**
2	Air Train should generate a procedure to ensure all cabinets are properly labeled. Staff also recommends that Air Train refrain from the use of masking tape as a label material and use a proper label.	**15-A**
3	Bombardier management must ensure preventive maintenance inspections are being completed on time according to the scheduled intervals. Staff did note that Bombardier management has most recently made improvements. In an effort to properly manage the preventative maintenance schedule Bombardier has increased staff by hiring additional employees as well as offering overtime hours to employees to complete preventive maintenance inspections on time. Staff reviewed with Bombardier management the recent improvement related to the scheduling and completion of PM Inspections, significant improvement has been made only recently as of April-August 2016.	**15-B**
4	Vital Relay inspections must take place in a timely manner. Air Train should create a P/M program that would split up the list of required Vital Relay P/M's over the next four years. Within each one of the 4 years, Air Train should spread said ¼ load of the inspection over the entire year.	**15-C**
5	Airtrain should develop a RWP training program per GO 175 section 3.1	**16**
6	AirTrain should comply fully comply with all applicable sections of GO 175-A (see checklist 23 for details on the applicable sections).	**23**
7	Airtrain should develop policies and procedures to monitor contractor activities using compliance checks, audits and inspections that would then be properly recorded, per SYS-40-10-35-010632, section 6.5, section 20 of the System Safety Program Plan, Revision 3, February 24, 2015 and General Order 164-D.	**25**

No.	Recommendation	Checklist No.
8	Airtrain should ensure that guideway maintenance PM's and inspections are conducted at the required frequencies, per their SFIA-PRG 002 "Wayside Maintenance Program" and per section 8.3 of the System Safety Program Plan, Revision 3, February 24, 2015.	**26**
9	Approach the manufacturer and request proper ranges for the breaker trip time, contact resistance and meggar test resistance.	**27**

APPENDIX C. CHECKLIST INDEX

Checklist No.	Element/Characteristic	Checklist No.	Element/Characteristic
1	Policy Statement and Authority for System Safety Program Plan (Leadership Involvement and Commitment to Safety)	**14**	Facilities Equipment Inspections and Maintenance
2	System Safety Program Plan Goals and Objectives	**15-A**	Maintenance Audits and Inspections: Signal Inspections
3	Overview of Leadership Structure	**15-B**	Maintenance Audits and Inspections: Train Inspections
4	System Safety Program Plan Control and Update Procedure	**15-C**	Equipment Maintenance Program: Signal Systems Including Maintenance and Vital Relays Maintenance
5	System Safety Program Plan Implementation, Activities, and Responsibilities	**16**	Training and Certification Program for Employees and Contractors
6	Hazard Management Process	**17**	Configuration Management and Control
7	System Modification	**18**	Local, State, and Federal Requirements for Employee Safety Program
8	Safety and Security Certification	**19**	Hazardous Materials Programs
9	Safety Data Collection and Analysis	**20**	Drug and Alcohol Program
10	Accident/Incident Investigations	**21**	Procurement Process
11	Emergency Management Program	**22**	GO 172 Compliance
12	Internal Safety Audits	**23**	GO 175 Roadway Worker Protection
13-A	Rules Compliance	**24**	Hours of Service: Controllers Maintainers
13-B	Rules Compliance: Operation Safety Compliance Program Inspection	**25**	Contractor Safety Program
26	Guideway Maintenance	**27**	Traction Power System

APPENDIX D. CHECKLISTS

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR

SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**1**	**SUBJECT**	**POLICY STATEMENT AND AUTHORITY FOR SYSTEM SAFETY PROGRAM PLAN (LEADERSHIP INVOLVEMENT AND COMMITMENT TO SAFETY)**
Date of Review	AUG 01, 2016	Department(s)	AirTrain Administration Bombardier Transportation Holdings (BTH)
CPUC Reviewers/ Inspectors	STEVE ARTUS	Person(s) Contacted	Lee Mitchell, Airtrain Manager Michael Robert, AirTrain Assistant Manager Chris Hendrickson, HSE Professional Bombardier Transportation

REFERENCE CRITERIA

1. General Order 164-D
2. AirTrain System Safety Program Plan (SSPP)

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Policy Statement and Authority for SSPP (AirTrain Leadership Involvement and Commitment to Safety)

Interview AirTrain Chief Operating Officer and Deputy Director of Operations & Maintenance to determine and discuss:

1. Source, frequency, and depth of safety information provided to the Chief Operating Officer, whether safety is included as a regular topic at AirTrain Action Item meetings, and whether AirTrain Safety gives reports at AirTrain Action Item Meetings.
2. Methods and incentives included in the management performance system to facilitate a system safety culture within the organization.

3. Formal meetings held and attended by AirTrain Leadership to discuss safety performance (such as ongoing evaluation of goals and targets).
4. AirTrain Chief Operating Officer and Deputy Director of Operations & Maintenance awareness of high priority safety issues related to operations and capital projects.
5. AirTrain COO awareness of the status of all corrective actions including those initiated by accidents, hazardous conditions, internal safety & security audits, CPUC triennial reviews, and CPUC inspections.
6. Safety issues regarding interagency coordination among various contractors

RESULTS/COMMENTS

Activities:

The Airtrain Manager or Assistant Manager meets with the COO once a week to discuss recent and older safety-related items. The COO receives safety reports each month.

AirTrain and Bombardier meet each morning to discuss any issues and safety concerns from the previous days operations

Every week, AirTrain participates in a meeting with the Deputy Director of Safety and Security of the San Francisco International Airport, SFPD, SFFD, San Mateo County Sheriff's Office, FBI, and TSA. AirTrain and Bombardier meet monthly to discuss documented action items.

Bombardier has Safety employee programs involving monthly, quarterly, and annual awards.

Bombardier conducts ISAs. These are reported to AirTrain management and Corrective Action Plans (caps) are tracked. There are bi-weekly meetings to review these CAPS.

A monthly report is given by Bombardier to AirTrain Management. This report contains: the AirTrain Operating Schedule, System Availability, Blue Line Availability, Red Line Availability, Averaged Annual Availability since start of operation, total AirTrain passengers Carried per Month, and Energy Usage.

AirTrain did not indicate any safety issues regarding interagency coordination among various contractors.

Findings:

None.

Recommendations:

None.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR

SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**2**	**SUBJECT**	**SYSTEM SAFETY PROGRAM PLAN GOALS & OBJECTIVES**
Date of Review	AUG 01, 2016	Department(s)	AirTrain Administration Bombardier Transportation Holdings
CPUC Reviewers/ Inspectors	STEVE ARTUS	Person(s) Contacted	Lee Mitchell, AirTrain Manager Michael Robert, AirTrain Assistant Manager Chris Hendrickson, HSE Professional Bombardier Transportation

REFERENCE CRITERIA

1. General Order 164-D
2. AirTrain System Safety Program Plan (SSPP)

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

SSPP Goals and Objectives

Conduct an interview with AirTrain and review appropriate records to:

1. Determine if the SSPP goals and objectives have been achieved.
2. Obtain examples of how goals are evaluated (metrics/measures) and review documentation used to measure and track AirTrain activity to meet the goals and objectives (for example, if AirTrain set a goal of reducing incidents by 10%, has this been achieved? Where is it tracked and reported?).
3. Determine how safety performance is reported to the Chief Operating Officer or

Leadership.

4. Make a determination regarding the adequacy of the safety information provided to the AirTrain Chief Operating Officer (is COO receiving sufficient information to ensure AirTrain is meeting its safety goals and objectives? Are rule(s) violations and other key safety measurements being tracked and reported to the COO?
5. Determine whether the stated goals and objectives should be revised.
6. Determine whether management responsibilities are adequately identified for the goals and objectives.

RESULTS/COMMENTS

Activities:

AirTrain and Bombardier had no CPUC reportable accidents as defined by GO 164 D during the Triennial Review period.

The site director is in charge of monitoring rules violations and safety concerns. Problems with rules compliance are discussed at morning briefings, bi-weekly meetings, and monthly meetings, CPUC Form V reviews and submittals.

Due to staffing problems meetings of the Bombardier Safety Committee were temporary suspended. These Safety Committee meetings will resume again in two months.

SSPP goals and objectives are part of the annual performance reviews of both Bombardier management and AirTrain management.

Accidents and reliability statistics (among others) are tracked and monthly updates are posted to all employees via main office bulletin boards.

Airtrain has recently implemented MAXIMO database to track safety issues and maintenance issues.

The SSPP is current and receives annual review as evidenced by the signature page by the AirTrain COO and Bombardier management.

Findings:

None.

Recommendations:

None.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR

SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**3**	**SUBJECT**	**OVERVIEW OF LEADERSHIP STRUCTURE**
Date of Review	AUG 01, 2016	Department(s)	AirTrain Administration Bombardier Transportation Holdings
CPUC Reviewers/ Inspectors	STEVE ARTUS	Person(s) Contacted	Lee Mitchell, AirTrain Manager Michael Robert, AirTrain Assistant Manager Chris Hendrickson, HSE Professional Bombardier Transportation

REFERENCE CRITERIA

1. General Order 164-D
2. AirTrain System Safety Program Plan (SSPP)
3. AirTrain Action Item Meeting Minutes

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Overview of Management Structure

Conduct an interview with AirTrain Safety and Security Manager and review appropriate records to:

1. Discuss AirTrain process to integrate safety into AirTrain operations and maintenance activities.
2. Solicit opinions regarding the effectiveness of the organization and request a few examples of how this organization has worked to resolve identified safety issues.
3. Determine if there are specific needs such as the ability to maintain schedules for SSPP updates and key activities, such as internal safety & security audits and accident

investigations AirTrain SSC cannot meet due to limitations in personnel or resources.

4. Review AirTrain Action Item meeting minutes from the past year to verify that the meetings followed the SSPP requirements.

RESULTS/COMMENTS

Activities:

AirTrain actions from Internal Safety Audits and general are included in their Punch List Actions and are now being tracked by MAXIMO. As previously discussed, AirTrain holds weekly, bi-weekly and monthly meetings to discuss these items.

AirTrain has a suggestion box for the passengers and a near-miss program. AirTrain also has a section on the all-employee bulletin board where employees can propose a problem and an elementary "Fish Bone" diagram to examine ways to solve the problem.

AirTrain is meeting SSPP updates and key activities such as the internal Safety and Security Audits.

Findings:

None.

Recommendations:

None.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR

SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**4**	**SUBJECT**	**SSPP CONTROL & UPDATE PROCEDURE**
Date of Review	AUG 01, 2016	Department(s)	AirTrain Administration
CPUC Reviewers/ Inspectors	STEVE ARTUS	Person(s) Contacted	Lee Mitchell, AirTrain Assistant Manager Michael Robert, AirTrain Assistant Manager Chris Hendrickson, HSE Professional Bombardier Transportation

REFERENCE CRITERIA

1. General Order 164-D
2. AirTrain System Safety Program Plan (SSPP)
3. Annual Review letter to CPUC

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

SSPP Control & Update Procedure

Conduct an interview with AirTrain Safety and Security Manager and review appropriate records to:

1. Ensure the Safety and Security Manager understands the SSPP requirements and is following through with implementation.
2. Verify the required annual SSPP review process is being implemented according to the approved process specified in the SSPP (review responsibility, internal timeframes, comprehensiveness, and sign-offs).

RESULTS/COMMENTS
Activities: AirTrain's Safety and Security Manager understands the requirements of the SSPP Procedures and is following through with implementation as required. Meeting minutes for the various meetings were sampled. Annual letters to the CPUC each February verifies that the SSPP was reviewed, as required. Findings: None. Recommendations: None.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR

SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**5**	**SUBJECT**	**SSPP IMPLEMENTATION ACTIVITIES & RESPONSIBILITIES**
Date of Review	AUG 01, 2016	Department(s)	AirTrain Administration Bombardier Transportation Holdings
CPUC Reviewers/ Inspectors	STEVE ARTUS	Person(s) Contacted	Lee Mitchell, AirTrain Manager Michael Robert, AirTrain Assistant Manager Chris Hendrickson, HSE Professional Bombardier Transportation

REFERENCE CRITERIA

1. General Order 164-D
2. AirTrain System Safety Program Plan (SSPP)
3. AirTrain Action Item meeting minutes

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

SSPP Implementation Activities and Responsibilities

Conduct an interview with AirTrain Safety and Security Manager and review appropriate records to:

1. Verify each manager, department and contractor charged with responsibility and accountability for the SSPP implementation, enforcement, and effectiveness.
2. Identify any challenges each manager, department and contractor has in performing the SSPP safety-related tasks.
3. Verify leadership accountability for the performance of the safety-related activities, and if serious or potentially serious deficiencies are found, expand the review to include

additional and/or related activities.

4. Is the SSPP current? Does the SSPP follow General Order 164-D?

RESULTS/COMMENTS

Activities:

AirTrain's Manager and Assistant Manager are in charge of reviewing, updating, and implementing the SSPP, and monitoring that prescribed activities are performed in accordance with the SSPP.

The only challenge is organizing the annual emergency drills, which must include all airport security including TSA, SFPD, SFFD, San Bruno County sheriff's Department, and others.

The SSPP is current and has been approved by the CPUC.

Findings:

None.

Recommendations:

None.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR

SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**6**	**SUBJECT**	**HAZARD MANAGEMENT PROCESS**
Date of Review	AUG 01, 2016	Department(s)	Safety
CPUC Reviewers/ Inspectors	STEVE ESPINAL	Person(s) Contacted	Michael Robert, AirTrain Assistant Manager David Dorman, BTH Safety Engineering Specialist

REFERENCE CRITERIA

1. General Order 164-D
2. AirTrain System Safety Program Plan (SSPP)
3. AirTrain Accident Investigation Procedure
4. Bombardier Corporate Policy/Local HSE Policy
5. Contract Defined Requirement List (CDRL) #18, #19, and #58
6. Tool Box meeting
7. Personal Protection Equipment (PPE) Initial Issue
8. Central Control Logs for Occurrences
9. OSHA 300A
10. Past Annual Internal Audits and Triennial Reviews
11. Daily and Monthly facility inspections
12. Rule Book System Operations, SFO Rule Book Version 2016

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Hazard Management Process

Interview AirTrain representative(s) / APM System Contractor and review appropriate records to determine whether or not:

1. AirTrain is identifying hazards through the sources described in the SSPP. Sources may include, but are not limited to:
   - Reports and complaints from passengers, field or management personnel;
   - APM system contractor's Central Control logs and maintenance systems;
   - Reports from APM system contractor's shift pass down;
   - Review of APM system contractor's Central Control logs for unusual occurrences;
   - AirTrain / APM system contractor's OSHA 300A;
   - Annual internal audits;
   - APM system contractor's weekly and monthly facility inspections;
   - APM system contractor's Rule book compliance;
   - Results from CPUC Triennial Reviews;
   - Results from accident investigations and trend analysis.
2. AirTrain Action Item meeting committee and Safety and Security Manager maintain a mechanism to capture and track identified hazards through analysis and resolution.
3. AirTrain has defined minimum thresholds for the notification and reporting of hazard(s) to the CPUC and has a specified process for reporting of hazard resolution activities to the CPUC (as required by items (e) and (f) in Section 6 of GO 164-D).
4. Identified hazards are being evaluated according to the methods established in the SSPP.
5. Corrective Action Plans (CAPs) are developed to address identified hazards and the CAPs identify the individual or department responsible for implementation and a schedule for completion.
6. AirTrain Safety and Security Manager follows up on outstanding CAPs developed to mitigate or resolve hazards.
7. Request examples of how the Safety and Security Manager followed the process, monitored other departments, and ensured identified hazards were reported to the AirTrain Action Item meeting committee. .

RESULTS/COMMENTS

Activities:

1) Safety concerns are documented on the Safety Concerns Hazards and Near Miss (SCHNM) form. There have been no serious injuries at AIRTRAIN since the inception of the rail line. Emergency braking is tracked and investigated. Emergency braking is a gradual braking of the car that usually doesn't involve falls.
2) A turnover report from is delivered from shift to shift and is generated daily regarding safety concerns or hazards.
3) The SCHNM forms track hazardous conditions to completion.

4) Airtrain has 300A form which is used to track hazards.
5) Airtrain conducts monthly inspections of the system identifying safety concerns.
6) Cell phones use is investigated and Airtrain enforces a zero tolerance policy.

7) The Engineering department provides a monthly overview of the system8) Airtrain safety personnel meet every two weeks to discuss SCHNM form findings.9) The hazardous analysis is included in the SSPP.

Findings:

None.

Recommendations:

None

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR

SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	7	**SUBJECT**	**SYSTEM MODIFICATION**
Date of Review	AUG 02, 2016	Department(s)	Bombardier Transportation Holdings
CPUC Reviewers/ Inspectors	RUPA SHITOLE	Person(s) Contacted	Tim Bollinger, Operations and Maintenance Manager Eric Riego, Field Service Engineer

REFERENCE CRITERIA

1. General Order 164-D
2. AirTrain System Safety Program Plan (SSPP)
3. SFO APM Modification / Change Request Form
4. Procedure: Field Modifications

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

System Modification

Conduct interviews and review appropriate records to:

1. Determine the SSPP and referenced or supporting procedures ensure a process exists for addressing safety issues and concerns in system modifications.
2. Determine the BTH role in ensuring that safety concerns are addressed in system modifications by identifying their specific activities in the process such as documented participation in testing and inspections and observations performed at work sites.
3. Determine through a sample of system modification projects if the modification meets the specifications or project requirements, and if any unauthorized modifications were performed.

RESULTS/COMMENTS

Activities: CPUC Staff interviewed the AirTrain representatives who are responsible for the System Modification Process. The following information was provided and the appropriate records were also reviewed:

1. AirTrain SSPP revision 3 dated February 24, 2015 was reviewed and section 13 explains the System Modification Process. Safety concerns and issues are addressed with every modification.
2. The BTH engineering group in Pittsburgh thoroughly reviews and approves all system modifications. The AirTrain creates the initial request for any modifications by initiating the APM Modification/Change Request Form and then submit it further to BTH for review and approval. Then, BTH follows up with sending a TCA or ECNs if associated with any modifications. BTH engineering visits AirTrain approximately 4 to 5 times annually to review modifications and inspect those further.
3. AirTrain did not have any major modifications throughout their system for the last three years. A list of projects was provided. Staff reviewed following random samples of minor system modification projects:

- TCA ID SF000242 Vehicle Graphics Fuse (April 19, 2012 – closed) (FMI #SFOB-0107)
- TCA ID 000264 Horton Paddle Door alarm sensors corrosion (April 25, 2013 - Open – Expiration date Dec 29, 2016)
- FMI SFOB -0108 RATP Software Release dated July 17, 2014 (closed – Oct 17, 2014)
- FMI SFOB -0113 was rejected
- FMI SFOB – 0114 Maintenance Area Segments Speed Change (Open and in progress)

Findings:

None.

Recommendations:

None.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR

SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**8**	**SUBJECT**	**SAFETY AND SECURITY CERTIFICATION**
Date of Review	AUG 02, 2016	Department(s)	AirTrain Administration
CPUC Reviewers/ Inspectors	RUPA SHITOLE	Person(s) Contacted	Lee Mitchell, AirTrain Manager Michael Robert, AirTrain Assistant Manager Chris Henderson, HSE Professional Bombardier Transportation

REFERENCE CRITERIA

1. General Order 164-D
2. AirTrain System Safety Program Plan (SSPP)
3. AirTrain Safety & Security Certification Plan for the Automated People Mover System

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Safety and Security Certification

Interview the AirTrain representative(s) in charge of the Safety Certification Program and review the records of any major projects to:

1. Determine if a formal safety and security certification plan (SC Plan) has been submitted by AirTrain and approved by the Commission.
2. Verify that each Safety Certification Plan was consistent with GO 164-D, AirTrain SSPP, and AirTrain reference documents.
3. Determine whether or not there are effective communications and liaison with CPUC staff throughout the life of the current and planned projects including Preliminary

Engineering Design Phase

4. Determine whether or not all design and construction changes were properly coordinated and addressed in the safety certification process
5. Determine whether or not all identified hazards have been eliminated or controlled as required under the Safety Certification Plans
6. Determine whether or not the Safety Certification Verification Report was submitted to the CPUC in a timely manner according to GO 164-D

RESULTS/COMMENTS

Activities: CPUC Staff interviewed the AirTrain representatives who are responsible for the Safety and Security Certification Program. The following information was provided during the audit:

1. AirTrain did not have any new projects for the last three years. Therefore, there has been no formal safety and security certification plan submitted to the Commission for approval.
2. Same as above.
3. AirTrain has an upcoming extension project which is in the Preliminary Engineering Design Phase and a project management team from AirTrain has been involved in discussions with the CPUC representative on the Commission requirements. AirTrain has effective communications and liaison with CPUC representative via phone and emails for current and planned projects.
4. Does not apply since AirTrain did not have any new projects for the last three years.
5. Does not apply since AirTrain did not have any new projects for the last three years.
6. Does not apply since AirTrain did not have any new projects for the last three years.

Findings:

None.

Recommendations:

None.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**9**	**SUBJECT**	**SAFETY DATA COLLECTION AND ANALYSIS**
Date of Review	AUG 02, 2016	Department(s)	Bombardier Transportation Holdings AirTrain Administration
CPUC Reviewers/ Inspectors	RUPA SHITOLE	Person(s) Contacted	Michael Robert, AirTrain Assistant Manager Chris Hendrickson, HSE Professional Bombardier Transportation Marla McPherson SPC Site Director-Systems Division, Bombardier Lee Mitchell Airtrain Manager

REFERENCE CRITERIA

1. General Order 164-D
2. AirTrain System Safety Program Plan (SSPP)
3. Accident/Incident Investigation Procedures (AIIP)
4. Site Computer–Management System to collect and track Preventive Maintenance
5. Accident Injury Management and Reporting Policy and Procedure
6. Incident Management and Reporting Policy & Procedure (Near Miss)

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION
Safety Data Collection and Analysis Interview the AirTrain representative(s) responsible for safety data acquisition and analysis and review the safety data acquisition and analysis program requirements to determine if: 1. The data collected includes, at minimum, information concerning AirTrain accidents and incidents, employee performance failures, equipment failures, and procedural deficiencies. 2. The safety data is supplied by and collected from all departments including Operations, Claims Management, and Maintenance as appropriate. 3. The safety data collected is then analyzed and, if necessary, incorporated into AirTrain's Hazard Identification and Resolution Process. 4. The safety data collected and the resulting analyses are made available to AirTrain departments for use in planning their safety-related activities. 5. Periodic reporting regarding the results of the safety data analysis is provided to the AirTrain Executive Management as appropriate. 6. Verify that the safety data sources identified in the SSPP are being used and data analysis and distribution are implemented.
RESULTS/COMMENTS
Activities: CPUC Staff interviewed the BTH and AirTrain representatives responsible for Safety Data Collection and Analysis. The following information was provided and the appropriate records were also reviewed: 1. The data is collected from various sources like incidents, accidents, near misses, passenger comment card, SYS HSE (System, Health, Safety and Environmental) Alerts, Safety Concern Hazard Near Miss (SCHNM) process (used until 2015), and MAXIMO (New database came into effect later 2015). Starting last year, MAXIMO database is used to track all maintenance data like equipment failures and procedural deficiencies. The primary tool for reporting HSE events is Governance, Risk and Compliance Information System (GRACIS). GRACIS reporting system maintains all events investigated using root cause analyses process for overall systems. 2. Operations and Maintenance Departments conduct monthly safety hazards meetings with every shift. Every day each shift pass down information on injury is documented and then shared with AirTrain management. The safety data is discussed and collected at the monthly meetings such as all employees meeting, staff meeting, and tool box (tailgate) meeting. 3. The safety data collected is then analyzed and using the SCHNM process if necessary is incorporated into the Hazard Identification and Resolution Process. The root cause analysis and appropriate corrective action is followed up. GRACIS system is also used

simultaneously. AirTrain stated to CPUC staff during the audit that it has updated/revised its SSPP recently (July end) to reflect its current MAXIMO process as mentioned.

4. The safety data collected is shared and discussed with all departments during monthly safety meetings; monthly shifts meeting; all safety alerts sent through BTH to all the APMs; biweekly meetings; Bulletins;
5. AirTrain Monthly Summary Report is provided to Executive Management for periodic review. The report contains data related to Operations; Maintenance; Health, Safety and Environmental; Injury/Illness explanation; Training Hours; Training year to date; New Operational Bulletins or Rule Book changes, Month RMR report; Engineering report; Certification summary; Organizational chart. Reviewed AirTrain Monthly Summary Report dated June 2016.
6. The above verifies that AirTrain is utilizing its safety data sources as stated in the SSPP and collecting, analysis and implementing changes as required.
7. Reviewed the following:
    - Safety Information documented by 3rd shift pass down dated July 2016 and August 2016
    - SYS HSE Alert 113
    - PC365 Work Related Injury or Illness Report dated 9/25/1/3
    - GRACIS Health and Safety summary data for January 2016 and March 2016
    - Action plans – Remove faulty chairs dated 13/03/14
    - Action plans – LTA action plan (SFIA 2013 #9072) dated 24/10/13

Findings:

None

Recommendations:

None

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**10**	**SUBJECT**	**ACCIDENT/INCIDENT INVESTIGATIONS**
Date of Review	AUG 02, 2016	Department(s)	AirTrain Administration
CPUC Reviewers/ Inspectors	STEVE ESPINAL	Person(s) Contacted	Michael Robert, AirTrain Assistant Manager

REFERENCE CRITERIA

1. General Order 164-D
2. AirTrain System Safety Program Plan (SSPP)
3. AirTrain Accident Investigation Procedures
    a. Reports if any
    b. Corrective Action Plans
4. Guidelines For Product Related Incident / Accident / Near Miss Investigations

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Accident/Incident Investigations

Interview AirTrain's responsible representatives and randomly select at least four accidents involving an injury or fatality reportable to the CPUC during the past 36 months and determine if:

1. Each accident was reported to the CPUC as required and that the final report was submitted as required.
2. AirTrain reported the accidents to the CPUC within two hours as required by GO 164-D, Sections 7.1 & 7.2.
3. The immediately reportable incident notifications to CPUC staff contained all of the information required by GO 164-D, Section 7.3.

4. The accident was investigated in compliance with the requirements of GO 164-D, Section 8, and CPUC-approved accident investigation procedures.
5. Ensure that the final report identified:
    - Each item covered in the investigation.
    - The investigation findings of the most probable cause.
    - Underlying contributing causes.
    - A CAP to address the identified causes and that it minimized the incident from recurring.
    - A schedule for implementing the CAP, which has been completed or is being monitored on an on-going basis.

RESULTS/COMMENTS

Activities:

Airtrain has not experienced a reportable incident in its 13 year history. The accident reporting standards and accident procedure is detailed in the SSPP.

Findings:

None.

Recommendations:

None.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR

SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**11**	**SUBJECT**	**EMERGENCY MANAGEMENT PROGRAM**
Date of Review	AUG 02, 2016	Department(s)	AirTrain Administration Bombardier Transportation Holdings
CPUC Reviewers/ Inspectors	RUPA SHITOLE	Person(s) Contacted	Lee Mitchell, AirTrain Manager Michael Robert, AirTrain Assistant Manager Chris Hendrickson, HSE Professional Bombardier Transportation Tim Bollinger Operations & Maintenance Manager

REFERENCE CRITERIA

1. General Order 164-D
2. AirTrain System Safety Program Plan (SSPP)
3. AirTrain System Security Plan (SSP)
4. SFO – APM Joint Exercise
5. Rule Book Systems Operations, SFO Rulebook version 2016

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Emergency Management Program

Conduct the necessary interviews regarding AirTrain's emergency planning, training, and drill/exercise program and review appropriate records prepared during the last year to:

1. Solicit an overview of the process for AirTrain's emergency planning, training, and drill/exercise program and specific examples of coordination with emergency response

agencies on emergency planning and drill/exercises

2. Verify a drill/exercise schedule has been created and followed and verify emergency responders and other outside agencies participation in AirTrain's emergency planning.
3. Determine when was the last drill/exercise performed and if post-drill action report developed? Was the post-drill action report used to make revisions to AirTrain's Emergency Familiarization Response Plan and/or procedures? If so, have these corrective actions been implemented with AirTrain staff and emergency responders?
4. Determine if AirTrain conducts periodic Security Operations Group meetings with sheriff, FBI, TSA, and fire departments in AirTrain jurisdictions, emergency response agency familiarization activities have occurred as scheduled and corrective actions have been implemented.
5. Check to see if the station facility monitoring system, fire protection (fire extinguishers, fire alarms, and fire suppression) security systems, emergency phones, closed circuit television system, and standards telephone systems are working properly.

RESULTS/COMMENTS

Activities: CPUC Staff interviewed the AirTrain representatives responsible for Emergency Management Program. The following information was provided and the appropriate records were also reviewed:

1. AirTrain is a part of the Emergency Planning Section/Unit at the SFO airport that includes various other agencies like San Francisco Fire Department, San Francisco Police Department, Airport Communications, Airport Duty Managers, etc. The SFO airport occupied tenants participates in other ongoing exercises like earthquakes, air crash exercises, security exercises, etc. AirTrain conducted Emergency Exercises as required annually for years 2014, 2015, and 2016. CPUC Staff reviewed the following reports:
    - 2014 AirTrain Emergency Exercise dated June 12th
    - 2015 AirTrain Emergency Exercise dated May 28th
    - 2016 AirTrain Emergency Exercise dated July 22nd

The overall after action recommendations for 2014 and 2015 exercises were documented in the report. However, not all recommendations pertain to AirTrain and therefore AirTrain stated that they only track the ones to completion that deal with their agency.

2. AirTrain has no fixed schedule but Michael Robert initiates the exercises with San Francisco Fire Department at the beginning of each year. Also, AirTrain is a part of the Emergency Planning Section/Unit.
3. AirTrain performed its last emergency exercise drill on July 22, 2016. CPUC Staff reviewed the initial report that stated comments regarding the results including improvements to be considered. The After Action Report is under development and therefore at this time there is no update to the AirTrain's Emergency Familiarization Response Plan and or Procedures. Based on the Emergency Exercise in 2014, AirTrain

had to make procedural changes as a corrective action plan and this was completed in 2015.

4. AirTrain conducts weekly Security Operations Group meetings and the Airtrain Assistant Manager attends. There is an agenda that discusses any open issues.
5. CPUC Staff reviewed the AirTrain Staff Monthly Safety Inspection documents dated 04/15/2016 and 11/24/2014 that verifies AirTrain inspections for Fire protection and others have been conducted. Also, CCO Checklist dated 11/30/2014 and 9/9/2015 was reviewed that revealed CCTV and others were inspected.

Findings:

None.

Recommendations:

None.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	12	SUBJECT	INTERNAL SAFETY AUDITS
Date of Review	AUG 02, 2016	Department(s)	AirTrain Administration
CPUC Reviewers/ Inspectors	STEVE ESPINAL	Person(s) Contacted	Lee Mitchell, AirTrain Manager Michael Robert, AirTrain Assistant Manager

REFERENCE CRITERIA

1. General Order 164-D
2. AirTrain System Safety Program Plan (SSPP)
3. AirTrain Audit Schedule 2012 - 2014
4. AirTrain Internal Audit Team files
5. AirTrain's APM System Contractors Monthly / Weekly Facility Inspections

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Internal Safety Audits

Conduct the necessary interviews and review appropriate records prepared during the last year to:

1. Determine if a three-year internal audit schedule was developed and submitted to the CPUC.
2. All of the required system safety program elements were evaluated within the past three years.
3. The audit included the use of field verification methods to verify the condition of infrastructure and rules compliance activities.
4. The audit adequately addresses interdepartmental and interagency communication issues and whether or not AirTrain has a process in place for addressing and

overcoming non-responsiveness of other department's non-implementation of audit recommendations.

5. Determine how expertise for auditing specific functions, such as signal inspection, is evaluated to ensure the quality of the internal audit.
6. Audits have been properly documented and include references for documents and activities reviewed criteria for evaluation, and notes to support findings and recommendations.
7. The Annual Report is accompanied by a letter from the Director stating AirTrain's compliance status with its SSPP and/or corrective actions for elements determined not to be in compliance.
8. Corrective actions to address findings from the audit were scheduled, implemented, and tracked.

RESULTS/COMMENTS

Activities:

Airtrain provides the CPUC with yearly Internal Safety Audit (ISA) reports with recommendations and completed Corrective Actions. Airtrain ISA is patterned after the CPUC audit checklists including: Reference Criteria, Method of Verification, Activities & Findings and Recommendations. Airtrain Administration conducts the audit of the operations and maintenance contractor. Airtrain ISA includes 22 safety topics and 12 security topics fulfilling the 49 CFR 659 requirements. Airtrain provides the CPUC with a three year plan for auditing their safety and security elements over a 3 year time frame.

The ISA include field verification. The auditors are experienced maintenance personnel who have conducted maintenance of the equipment for over 20 years. The audit includes reference material related to elements being audited. ISA recommendations are track to completion in the bi-weekly meeting and the Preventative Maintenance procedures are audited for timely completion.

Findings:

None

Recommendations:

None.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**13-A**	**SUBJECT**	**RULES COMPLIANCE**
Date of Review	AUG 03, 2016	Department(s)	Bombardier Transportation Holdings
CPUC Reviewers/ Inspectors	Mike Borer	Person(s) Contacted	Tim Bollinger Operations & Maintenance Manager Chris Hendrickson, HSE Professional Bombardier Transportation Marla McPherson SPC Site Director – Systems Division, Bombardier

REFERENCE CRITERIA

1. General Order 164-D
2. AirTrain System Safety Program Plan (SSPP)
3. AirTrain's APM System Contractors Operations Rule Book
4. AirTrain's APM System Contractors Personal Electronic Device Usage Restrictions Policy
5. General Order 172

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Rules Compliance

Conduct the necessary interviews and review appropriate records prepared during the last year to:

1. Verify AirTrain's APM contractor performs formal observations of controllers as specified in the SSPP.
2. Verify AirTrain's APM contractor performs observations of maintenance employees as specified in the SSPP and/or referenced or supporting procedures.

3. Verify that both operations and maintenance employees are evaluated based on their performance during unannounced observations to determine their compliance with safety rules, procedures, and/or practices.
4. Determine if any accidents were caused by failure of operations and procedures and verify corrective actions implemented.
5. Determine how AirTrain's APM contractor performs efficiency tests of operating and maintenance personnel and verify corrective actions for rule violations.
6. Verify if AirTrain Safety and Security Manager receives reports from the APM contractor Operations and Maintenance Department regarding the performance of rules checks, assessments, and testing. Are hazards identified from the rules compliance process and reported to AirTrain Safety and Security Manager, managed through the hazard management process?
7. At random, select several operating procedures and verify that these rules are being followed. Also, conduct a random sample of controllers to determine if they are carrying their operating rules, if they have the proper safety equipment, and if their radios are functioning and maintained as well as verify that they do not possess any personal electronic equipment visible in the Central Control operator's desk such as cellular phones, MP3 players, pagers, etc. as per AirTrain rules.

RESULTS/COMMENTS

Activities:

Staff conducted interviews and reviewed records of Airtrains APM operations and maintenance employees rules compliance. Staff reviewed records of formal observations with supervisors performing at least two per month. All the performance observations are unannounced. In the last year there has been no accidents caused by operation failure. Staff reviewed efficiency tests of personal and corrective action, each supervisor turns in there test sheets if there is a CAP it is documented on a different form. Airtrain management meets monthly to update everyone on testing, hazards and rules checks. Airtrain is storing all maintenance information in the Maximo database which is scheduled to be completed by years end.

Findings:

None.

Recommendations:

None.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR

SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**13-B**	**SUBJECT**	**RULES COMPLIANCE** **OPERATION SAFETY COMPLIANCE PROGRAM INSPECTION – CPUC OPERATING INSPECTOR**
Date of Review	AUG 03, 2016	Department(s)	Bombardier Transportation Holdings
CPUC Reviewers/ Inspectors	Mike Borer	Person(s) Contacted	Tim Bollinger Operations & Maintenance Manager Chris Hendrickson, HSE Professional Bombardier Transportation Marla McPherson SPC Site Director – Systems Division, Bombardier

REFERENCE CRITERIA

1. General Order 164-D
2. AirTrain System Safety Program Plan (SSPP)
3. AirTrain's APM System Contractors Operations Rule Book, version 2016
4. AirTrain's APM System Contractors Access Control Plan
5. AirTrain's APM System Contractors Personal Electronic Device Usage Restrictions Policy

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Rules Compliance: Operation Safety Compliance Program Review – CPUC Operating

Inspector

Interview AirTrain's APM contractor responsible for Operations Safety, observe/inspect operations, and review documentation as necessary to determine whether or not:

1. Maintenance Workers
    a. Observe access authority provisions and procedures for workers to determine whether or not they are following the Rule Book.
    b. Interview at least two workers to evaluate their knowledge and understanding of AirTrain's APM contractor Rules and Procedures for mainline operations.
2. Controllers
    a. Applicable reports, logs or records are properly prepared, maintained, and available upon request for review.
    b. Duties are performed in accordance with the Standard Operating Procedures, Bombardier Rule Book and Bulletins.
    c. Bombardier controllers are knowledgeable in dealing and coordinating with others during incidents, accidents, and emergency response situations.

RESULTS/COMMENTS

Activities:

Staff interviewed one supervisor and two controllers on how they log and report daily operations. Their knowledge of rules and bulletins was evaluated. How they coordinate incidents, accident and emergency response situations. Staff was reviewed all records and logs upon request. Airtrain staff are very knowledgeable for any emergency or mechanical problem that may arise.

Findings:

None.

Recommendations:

None.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**14**	**SUBJECT**	**FACILITIES AND EQUIPMENT INSPECTIONS**
Date of Review	**AUG 03, 2016**	Department(s)	Bombardier Transportation Holdings
CPUC Reviewers/ Inspectors	**JIMMY XIA** Yan Solopov	Person(s) Contacted	Tim Bollinger Operations & Maintenance Manager Chris Hendrickson, HSE Professional Bombardier Transportation Marla McPherson SPC Site Director – Systems Division, Bomdadier

REFERENCE CRITERIA

1. General Order 164-D
2. AirTrain System Safety Program Plan (SSPP)
3. APM System Contractors Monthly / Weekly Facility Inspections
4. APM System Contractors Site Safety Walk Inspection records
5. Safety and Security Committee Tracker

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Facilities Equipment Inspections and Maintenance

Conduct the necessary interviews and review appropriate records prepared during the last year to:

1. Determine if the required facilities inspections were performed.
2. Determine if inspections were properly documented and noted discrepancies were corrected in a timely manner.
3. Determine if potential hazards found during inspections are tracked from recommendation, corrective action(s), and implementation.

RESULTS/COMMENTS

Activities:

CPUC Staff interviewed AirTrain/BTH representatives responsible for AirTrain's facilities and

equipment inspections and reviewed the following relevant records prepared during the last year:

1. Staff Monthly Safety Inspection Forms completed by supervisors, dated 3/21/16, 4/15/16, 5/22/16, 6/30/16, and 7/9/16.

2. Safety Concern/Hazard and Near Miss (SCHNM) Reports
    a. Health, Safety, and Environmental Dangerous Situation/Near Miss Report Forms
        - Report #145, Date reported: 8/12/15, Closed date: 6/2/16
        - Report #148, Date reported: 10/8/15, Closed date: 4/26/16
        - Report #158 Date reported: 6/20/16, Closed date: 7/14/16
    b. Total Transit Systems Safety Concern/Hazard and Near Miss Report Forms
        - Report #146, Date reported: 8/21/15, Closed date: 9/11/15
        - Report #147, Date reported: 8/31/15, Closed date: 9/25/15
        - Report #149, Date reported: 2/3/16, Closed date: 7/7/16
        - Report #150, Date reported: 5/13/16, Not closed as of the date of this audit
        - Report #157, Date reported: 6/30/16, Closed date: 7/14/16

3. Shift Passdown forms dated 7/29/16 and 8/2/16

Staff took note of the following during the interviews and records review:

1. BTH supervisors perform the Staff Monthly Safety Inspections of AirTrain facilities and equipment. Their inspection related activities are documented on the Staff Monthly Safety Inspection forms. Most issues discovered from these inspections are minor in nature and are corrected on the spot. The inspection forms document corrections made for minor issues and include the dates that the issues are fixed.
2. The required facilities inspections (i.e. Staff Monthly Safety Inspections) were performed in accordance with reference criteria.
3. The Staff Monthly Safety Inspections were properly documented on the corresponding forms.
4. All of the discrepancies noted on the Staff Monthly Safety Inspection forms that staff

reviewed were corrected in a timely manner, as was documented on the forms.

5. BTH utilizes the SCHNM process as detailed in its Health, Safety & Environment Investigation and Reporting Procedure for dealing with more severe defects. If hazards or safety concerns found from Staff Monthly Safety Inspections can't be corrected right away or will take some time to resolve, they will be reported on a SCHNM report, usually on the date of the discovery of the issue, and entered into BTH's database for maintaining SCHMN reports. BTH will use the SCHNM report to track the issue through resolution.
6. BTH has a goal to resolve SCHNMs reported on SCHMN reports within 30 days of discovery. SCHNMs that take longer than 30 days to resolve could be related to cases where the San Francisco International Airport (SFIA) or other agencies are involved. If a SCHNM involves SFIA to fix, AirTrain will generate a work order for the airport to address accordingly. AirTrain/BTH goes over the statuses of SCHNMs once a month. All SCHNMs are tracked on the SCHNM reports and database until they are resolved.
7. Out of the 11 SCHNM reports that staff reviewed, 7 were closed, and the 4 that remain open (reports #'s 136 (2/7/15), 138 (4/25/15), 140 (4/25/15), and 150 (5/13/16)) are being tracked monthly until they are resolved. AirTrain/BTH has monthly all-employee meetings for all three shifts where management goes over issues and reviews open SCHNMs with employees.
8. Any safety information including SCHNMs will be entered into shift passdown forms so that BTH gets information to all employees across all three shifts. This form calls attention to any problems, concerns or other issues to be noted throughout the system, including delays, facilities, SCHNMs, and vehicles. Many notes arise from preventive maintenance. Every shift updates the forms, so it is updated three times a day. Issues in these passdown forms that get resolved will be removed in the subsequent updates to the forms. Issues will typically stay on these forms until they are fixed, or, for more long-term issues, until employees are judged to be sufficiently aware of them.
9. The shift passdown form is for all employees, such as technicians. When they report to work, BTH supervisors and lead employees have meetings (aka pass down or turn over meeting about 10 minutes long) to go over the problems on the forms with employees. There are three passdown meetings for all three shifts every day, given by lead employees with supervisors present. The passdown forms basically let every employee know what the previous shift has done and current issues for the employees to be aware of and show problems technicians can work on repairing during their shifts. Most of the issues on the passdown forms are fixed on the day they are discovered. If an issue needs some time to fix, it will be tracked on work orders through resolution.
10. Potential hazards found during inspections are tracked from recommendation, corrective action(s), and implementation collectively using the following: Staff Monthly Safety Inspection forms, SCHNM reports including the Health, Safety, and Environmental Dangerous Situation/Near Miss Reports and Total Transit Systems Safety Concern/Hazard and Near Miss Reports, shift passdown forms, as well as the database for maintaining SCHMN reports.

<u>Findings:</u>

None.

Recommendations:

None.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR

SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**15 - A**	Subject	Maintenance Audits and Inspections – CPUC Signal Inspector
Date of Review	Aug 02, 2016	Departments	Bombardier Transportation Holdings
CPUC Reviewers/ Inspectors	Shane Roberson	Person(s) Contacted	Chris Aman, BTH Engineering Manager Jeffery Douglas, BTH Field Service Engineer

REFERENCE CRITERIA

1. General Order 164-D
2. AirTrain System Safety Program Plan (SSPP)
3. AirTrain's APM System Contractors Maintenance Management Information System

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Maintenance Audits and Inspections -CPUC Signal Inspector

1. Signal System Inspection
   a. Perform detailed inspections of the signal system and components to determine whether or not they are in compliance with the applicable reference criteria.

RESULTS/COMMENTS

Activities:

Staff reviewed Air Trains maintenance management system (Maximo) for tracking P/M's and generating W/O's.2) Staff inspected 4 Switch and Relay cabinets within the shop and on the guideway.

Findings:

1) Staff found that Maximo was not designed to fit the particular needs of Air Train and P/M's were randomly being missed. At the time of inspection, Staff noted that 15 P/M's were past due. Air Train previously noted Maximo was not calculating the last date in which an inspection was completed but it was calculating the next date due based on the original date it was due when entered into the system. Staff noted that Air Train had recognized the defect and was making changes to Maximo to fit the needs of Air Trains system.

2) Staff noted that all relay blocks were not properly labeled in any of the cabinets. Staff also noted that Air Train had installed labels made of masking tape on several relays.

Recommendations:

1) Air Train should continue to monitor Maximo to ensure all changes made to the system are working as designed and all PM's should be completed on a timely basis

2) Air Train should generate a procedure to ensure all cabinets are properly labeled. Staff also recommends that Air Train reframe from the use of masking tape as a label material and use a proper label..

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**15 - B**	Subject	Maintenance Audits and Inspections – Train Inspection - CPUC Equipment Inspector
Date of Review	Aug 04, 2016	Department(s)	Bombardier Transportation Holdings
CPUC Reviewers/ Inspectors	Adam Freeman	Person(s) Contacted	Tim Bollinger, Operations & Maintenance Manager Eric Riego, Field Support Specialist George Maung, Maintenance Supervisor Bombardier Transportation

REFERENCE CRITERIA

1. General Order 164-D
2. AirTrain System Safety Program Plan (SSPP)
3. AirTrain's APM System Contractors Maintenance Management Information System
4. AirTrain's APM Vehicle Equipment Manual

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Maintenance Audits and Inspections – Train Inspection - CPUC Equipment Inspector

1. Perform detailed inspections to determine if Bombardier is properly and adequately maintaining:
   a. Axle Mounted Gearbox
   b. Truck, axle, and wheel assemblies
   c. Brake systems
   d. Door Assemblies

e. Lighting
f. Passenger doors
g. Passenger component and safety appliances
h. Public address and intercom systems

2. Based on the review and the inspections, determine whether or not the cars are in compliance with the applicable reference criteria.

RESULTS/COMMENTS

Activities:

Staff inspected a total of five Bombardier APM vehicles which included some of the following components:

- Air Compressor, main reservoir tanks and brake control package
- Traction motors, brake resistors
- Truck, axle, tires, wheel assemblies, suspension system, safety discs and guidance system components
- Brake systems
- Couplers
- Door assemblies and blocked door function
- Lighting
- Passenger side doors, safety appliances & passenger components
- PED instruction and usage decals
- In cab cameras
- Communications system: PA/Intercom/Radio/Emergency response panel.

Staff also reviewed maintenance records pertaining to Bombardiers APM vehicles which included the following maintenance intervals: Bi-Daily, 1500, 15000, 45000, & 90000 PM inspections, all defects that are being found are being repaired and documented through work orders and reviewed by Bombardier Supervisors and Management. Staff interviewed Bombardier Maintenance Technicians to ensure employees are receiving adequate training and all updated maintenance procedures and policies pertaining to their duties. Staff also verified that employees have ease of access to parts, tools, testing and measurement equipment pertaining to their duties.

Findings:

The APM preventive maintenance schedule is not being completed on time according to the Bombardier vehicle equipment manual specifications. PM records reviewed going back three years indicates that PM inspections are frequently being completed well over the PM miles interval.

Recommendations:

Bombardier management must ensure preventive maintenance inspections are being completed on time according to the scheduled intervals.

Staff did note that Bombardier management has most recently made improvements. In an effort to properly manage the preventative maintenance schedule Bombardier has increased staff by hiring additional employees as well as offering overtime hours to employees to complete preventive maintenance inspections on time.

Staff reviewed with Bombardier management the recent improvement related to the scheduling and completion of PM Inspections, significant improvement has been made only recently as of April-August 2016.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR

SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**15-C**	Subject	Equipment Maintenance Program, Signal Systems Including Maintenance, and Vital Relays Maintenance – Records Review
Date of Review	Aug 02, 2016	Department(s)	Bombardier Transportation Holdings
CPUC Reviewers/ Inspectors	Shane Roberson	Person(s) Contacted	Chris Aman, BTH Engineering Manager Jeffery Douglas, BTH Field Service Engineer

REFERENCE CRITERIA

1. General Order 164-D
2. AirTrain System Safety Program Plan (SSPP)
3. AirTrain's APM System Contractors Maintenance Management Information System

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Equipment Maintenance Program, Signal System and Vital Relays Maintenance – Records Review

Randomly select at least 4 vital relay preventive maintenance (PM) inspection records from the past 12-months to determine if:

1. Vital Relay Maintenance
   a. Bombardier conducted inspections at the required frequencies.
   b. Inspections were properly documented.
   c. Defects found were closed out in a timely manner.
   d. Review Hardware Failure Detection and Data Quality Checks

RESULTS/COMMENTS
Activities: Staff performed inspections of 13 P/M's and W/O's from 2016/15 as well as 6 P/M's and W/O's from 2012 of AirTrains Vital relay's. Staff also addressed upcoming P/M's for the remaining year of 2016. Findings: Staff noted that **ALL** Vital Relay inspection are due in the year of 2016 and that Air Train has not been able to keep up with the overload of work created in having **ALL** P/M's due in one year. As of the date of inspections, Staff noted Air Train has approximately 60% remaining and all were past due. Some as much as 153 days. Staff noted that as of the date of inspection Air Train had 39 defective relay's (with high resistance) which have not yet been addressed due to the overload of Relay inspection past due. Recommendations: Vital Relay inspections must take place in a timely manner. Air Train should create a P/M program that would split up the list of required Vital Relay P/M's over the next four years. Within each one of the 4 years, Air Train should spread said ¼ load of the inspection over the entire year.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR

SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**16**	**SUBJECT**	**TRAINING AND CERTIFICATION PROGRAM FOR EMPLOYEES AND CONTRACTORS**
Date of Review	AUG 03, 2016	Department(s)	Bombardier Transportation Holdings
CPUC Reviewers/ Inspectors	Mike Borer	Person(s) Contacted	Carla Reyes, Training Coordinator Bombardier Transportation Chris Hendrickson, HSE Professional Bombardier Transportation

REFERENCE CRITERIA

1. General Order 164-D
2. AirTrain System Safety Program Plan (SSPP)
3. AirTrain's APM System Contractors Training Documentation
4. Cal-OSHA Safety Orders
5. SFIA AirTrain Certification Policy

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Training and Certification Program for Employees and Contractors

Interview AirTrain and AirTrain's APM System Contractor representative(s) in charge of Controllers, Maintenance, and signal maintenance employees Certification Programs. Review appropriate records to determine whether or not:

1. The employee has completed the initial training program, refresher, and remedial training as necessary.
2. The employee has been recertified at the correct frequency and currently meets the criteria to perform his/her duties.

RESULTS/COMMENTS

Activities:

Staff reviewed training and certification; there are 40 employees at Airtrain. Staff requested 10% of their maintenance and controller employees training records. All records where up to date. One was missing a signature. Staff asked for the RWP training records Airtrain does not have a RWP training program.

Findings:

Airtrain does not have a RWP training program per GO 175 section 3.1

Recommendations:

Airtrain should develop a RWP training program per GO 175 section 3.1

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**17**	**SUBJECT**	**CONFIGURATION MANAGEMENT AND CONTROL**
Date of Review	AUG 02, 2016	Department(s)	Bombardier Transportation Holdings
CPUC Reviewers/ Inspectors	RUPA SHITOLE	Person(s) Contacted	Tim Bollinger, Operations & Maintenance Manager Eric Riego, Field Support Specialist

REFERENCE CRITERIA

1. General Order 164-D
2. AirTrain System Safety Program Plan (SSPP)
3. AirTrain's SFO APM Modification / Change Request Form
4. AirTrain's APM System Contractors System Configuration Management Plan
5. Directive Control of Documents/Data and Records
6. Procedure: Engineering Change Approval and Documentation

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Configuration Management

1. Randomly select at least two recent changes pertaining to the APM system at AirTrain during the last year to ensure configuration management documentation was properly updated to include at a minimum:
   a. As-built drawings.
   b. As-built specifications.

2. Randomly select a Project Concept Submitted to SSC and verify that:
   a. SFO APM Modification / Change Request form forms were used.
   b. Forms were circulated to the SSC.
   c. SSC performed a review, analysis, and approval of form by completing the SFO APM Modification / Change Request form for project.
   d. AirTrain's Manager was advised of the changes.
   e. Change was circulated to the proper departments for implementation.
   f. All necessary parties or contract employees within or outside the agency were properly notified about the change.

RESULTS/COMMENTS

Activities:

CPUC Staff interviewed the AirTrain representative responsible for Configuration Management Process. The following information was provided and the appropriate records were also reviewed:

1. AirTrain did not have any major configuration changes for the last 3 years. A list of minor configuration changes was provided. For a few of the minor changes AirTrain had As-built drawing and or specifications updated. Reviewed documents for FMI #SFOB-0106 & FMI #SFOB-0108.
2. CPUC Staff randomly reviewed the minor configuration changes for the last 3 years. The TCA and FMI completed forms were also reviewed. The forms were completed and verified by a group of assigned reviewers from each department and finally the Quality Assurance Engineer signed and verified it before closeout. Reviewed AirTrain Monthly Summary Report dated June 2016. An Engineering Report section is provided in this summary report that provides TCA and FMI status update to overall AirTrain management. Monthly meetings discuss the status of each FMI and AirTrain management is involved in the meetings. Reviewed SFO Site Bulletin #097 effective date 12/09/2014 as a sample. Sign-up sheet was reviewed for all necessary parties within the agency were properly notified about the changes.
3. Reviewed and discussed following documents:
   - FMI SFOB-0106 ORS PC Software versions 5.2 FR1743 Date July 16, 2014 Closed March 25, 2015
   - FMI SFOB-0108 ORS PC RATP Software Release Date July 17, 2014 Closed October 17, 2014
   - FMI SFOB-0112 Vehicle Tire Pressure Monitoring System Released Feb 15, 2015 Open (as built drawing and specifications are completed with FMI)
   - TCA ID SF-000273 ORS/MRS modulation R/F frequencies Closed March 2, 2016. (Test suspended due to RF contractor not available.)

Findings:

None.

Recommendations:

None.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR

SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**18**	**SUBJECT**	**LOCAL, STATE, AND FEDERAL REQUIREMENTS AND EMPLOYEE SAFETY PROGRAM**
Date of Review	**AUG 03, 2016**	Department(s)	Bombardier Transportation Holdings
CPUC Reviewers/ Inspectors	Jimmy Xia Yan Solopov	Person(s) Contacted	Chris Hendrickson, HSE Professional Bombardier Transportation Marla McPherson SPC Site Director – Systems Division, Bombardier

REFERENCE CRITERIA

1. General Order 164-D
2. AirTrain System Safety Program Plan (SSPP)
3. Cal-OSHA Safety Orders
4. AirTrain's APM System Contractors Tool Box Meeting records
5. AirTrain's APM System Contractors All Employee Meetings (AEM)
6. AirTrain's APM System Contractors Safety Concern Hazard Near Miss program

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Local, State, and Federal Requirements for Employee Safety Program

Conduct the necessary interviews and review appropriate records to determine if:

1. AirTrain's APM contractor held monthly meetings on safety issues.
2. An appropriate procedure and reporting form is being implemented and is periodically distributed to all employees to effectively report safety hazards in the work place.
3. Required corrective actions have either been satisfactorily completed or are being

actively tracked and documented.

RESULTS/COMMENTS

Activities:

Staff interviewed AirTrain/BTH representatives and reviewed the following records in relation to AirTrain's Employee Safety Program:

1. Presentation slides for Bombardier's monthly All Employee Meeting conducted on 6/23/2016, Health, Safety, & Environmental portion
2. SFIA SDC O&M AirTrain AEM meeting sign-in sheets for the meetings held on 1/20/16, 2/25/16, 3/23/16, 4/28/16, 5/25/16, and 6/23/16
3. AirTrain/BTH Staff Meeting Agendas dated 4/26/16, 5/24/16, 6/21/16, and 7/28/16
4. Shift Passdown forms dated 7/29/16 and 8/2/16
5. Safety Concern/Hazard and Near Miss (SCHNM) Reports:
    a. Health, Safety, and Environmental Dangerous Situation/Near Miss Report Forms
        - Report #145, Date reported: 8/12/15, Closed date: 6/2/16
        - Report #148, Date reported: 10/8/15, Closed date: 4/26/16
        - Report #158, Date reported: 6/20/16, Closed date: 7/14/16
    b. Total Transit Systems Safety Concern/Hazard and Near Miss Report Forms
        - Report #146, Date reported: 8/21/15, Closed date: 9/11/15
        - Report #147, Date reported: 8/31/15, Closed date: 9/25/15
        - Report #149, Date reported: 2/3/16, Closed date: 7/7/16
        - Report #150, Date reported: 5/13/16, Not closed as of the date of this audit
        - Report #157, Date reported: 6/30/16, Closed date: 7/14/16

Staff took note of the following during the interviews and records review:

1. AirTrain/BTH holds three identical sessions of All Employee Meetings (AEMs) on the same day every month in order to allow all employees from all three work shifts to attend. During the AEMs, the discussion topics include statuses of SCHNMs and various issues throughout the system. Occasions where employees miss AEMs do occur from time to time, usually due to sickness, vacations, or responding to incidents at the time of the meeting. For the employees who miss the meeting, supervisors print out the AEM presentation and review it with them in a group setting.
2. AirTrain/BTH also has a monthly staff meeting for the management group the day before the AEM to discuss topics to discuss at the AEM including statuses of open SCHNMs. Staff meetings cover all issues going on in the agency and consist of PowerPoint presentations made by various departments.
3. Any safety information including SCHNMs will go on shift passdown forms so BTH gets information to all employees across all three shifts. This form covers problems throughout the system, including delays, facilities, SCHNMs, and vehicles, many of which are from preventive maintenance. Every shift updates the forms, so it is updated three times a day.

Issues in these passdown forms that get resolved will be removed in the subsequent updates to the forms. The issues will stay on these forms until they are fixed.

4. The shift passdown form is for all employees, such as technicians. When they report to work, BTH supervisors and lead employees have meetings (aka pass down or turn over meeting about 10 minutes long) to go over the problems on the forms with employees. There are three passdown meetings for all three shifts every day, given by lead employees with supervisors present. The passdown forms basically let every employee know what the previous shift has done and current issues for the employees to be aware of and show problems technicians can work on repairing during their shifts. Most of the issues on the passdown forms are fixed on the day they are discovered. If an issue needs some time to fix, it will be tracked on work orders through resolution.
5. BTH has a procedure entitled "Health, Safety & Environment Investigation and Reporting" that documents the SCHNM process for the reporting and resolution of safety hazards in the work place. This procedure is available to all employees upon request. While shift passdown forms are of informative nature to convey safety related information towards all the work shifts, the SCHNM report form is BTH's official form used to report safety hazards in the work place. BTH employees can file SCHNM report forms to management when they observe any safety concerns or hazards around the AirTrain facilities. Blank SCHNM report forms are available for employees to pick up in the maintenance shop anytime they want to report safety concerns or hazards. BTH also has a PowerPoint presentation for the SCHNM process, which is utilized to train newly hired employees in relevant areas of the procedure mentioned above.
6. SCHNMs and the progress of the resolution of SCHNMs are documented through SCHNM reports. The report form gets populated as the SCHNM gets addressed. Anything that arises to the level of SCHNMs will result in corrective actions to be resolved using the SCHNM process. AirTrain has a database for tracking corrective actions. Every SCHNM that originates from the SCHNM reports is entered by supervisors into that database for tracking as soon as it is reported. The AirTrain Site Director is responsible for the timely completion of all open SCHNMs.
7. BTH has a goal to resolve SCHNMs reported on SCHMN reports within 30 days of discovery. SCHMNs that take longer than 30 days to resolve could be related to cases where the San Francisco International Airport (SFIA) or other agencies are involved. If a SCHNM involves SFIA to fix, AirTrain will generate a work order for the airport to address accordingly. AirTrain/BTH goes over the statuses of SCHNMs once per month. All SCHNMs are tracked on the SCHNM reports and database until they are resolved.
8. BTH has a follow-up procedure to close out resolution of SCHNMs. When a SCHNM reported by an employee is resolved, the supervisor who worked on resolving the issue will have an individual meeting with the employee to discuss the resolution implemented to resolve the SCHNM to make sure the supervisor addressed the issue satisfactorily.
9. Out of the 11 SCHNM reports the auditors reviewed, 7 are closed, and the 4 that remain open (reports #'s 136 (2/7/15), 138 (4/25/15), 140 (4/25/15), and 150 (5/13/16)) are being tracked monthly until they are resolved. The SCHNMs that remain open as of the date of this checklist review are being tracked on the database and documented on the

corresponding report forms through closure. Open SCHNMs are closed out in the corresponding reports when they are completely addressed. AirTrain then closes them out in the database. They are tracked by AirTrain in order to ensure that they are completed in a timely manner.

Findings:

None.

Recommendations:

None.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR

SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**19**	**SUBJECT**	**HAZARDOUS MATERIALS PROGRAMS**
Date of Review	**AUG 03, 2016**	Department(s)	Bombardier Transportation Holdings
CPUC Reviewers/ Inspectors	Jimmy Xia Yan Solopov	Person(s) Contacted	Chris Hendrickson, HSE Professional Bombardier Transportation Peggy Kiriaze, Procurement Manager

REFERENCE CRITERIA

1. General Order 164-D
2. AirTrain System Safety Program Plan (SSPP)
3. Santora Sales Hazard Communications Program and the Blood borne Pathogen Training Program
4. AirTrain's APM System Contractors Hazardous Communication Program
5. AirTrain's APM System Contractors MSDS
6. AirTrain's APM System Contractors Spill Log
7. AirTrain's APM System Contractors Monthly / Weekly Facility Inspections
8. OSHA, General Order, Title 8

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Hazardous Materials Programs

1. Select at random two Bombardier employees responsible for handling hazardous materials and verify that they have received specific training for reporting requirements, product release or spill, and the response and cleanup of spill incidents.
2. Verify that hazardous materials discharge/spill reports for incidents that occurred

during the past year have been prepared and filed.

3. Verify all Safety Data Sheets (SDS) are available to all personnel who handle hazardous materials.

RESULTS/COMMENTS

Activities:

1. Staff requested the required training records from two Bombardier Transportation Holdings employees involved in hazardous waste management selected at random from a list of employee names.
   A) For the first BTH employee selected: Arnel Mendoza, staff received and reviewed the following documents:
      i. SFIA AirTrain HSE Orientation/Training Hazard Communication – Knowledge Check exam, dated 9/25/12.
      ii. Training-related Competence Quiz Pollution Prevention, dated 5/23/14, which shows "Pass."
      iii. Training-related Competence Quiz for Environmental Awareness, dated 6/28/14, which shows "Pass."

   B) For the second BTH employee selected: Claudio Castro, staff received and reviewed the following documents:
      i. SFIA AirTrain HSE Orientation/Training Hazard Communication – Knowledge Check exam. It is missing a full date, and only has a '25' written-in, possibly meaning 9/25/12.
      ii. Training-related Competence Quiz Pollution Prevention, dated 5/22/14, which shows "Pass."
      iii. Training-related Competence Quiz for Environmental Awareness, dated 6/19/14, which shows "Pass."

   C) Staff reviewed printouts of Microsoft PowerPoint presentations taken from the coursework offered to BTH employees entitled "Hazardous Materials and Emergency Response", dated 10/15/15, for which the certifications above were awarded. Staff determined that the training adequately addressed the areas of reporting requirements, product release or spill, and the response and cleanup of spill incidents.

   D) Additionally, Peggy Kiriaze, the Materials Management Supervisor, showed staff her own certificates entitled "DOT Hazardous Materials Webcast" dated 9/4/13 and "Hazardous Waste Management Annual Update – Website" presented by Environmental Resource Center dated 9/3/13. Both certificates are valid for 3 years. She stated that she is required to hold the two mentioned certifications in order to coordinate with Safety Clean, a company/vendor chosen by BTH that picks up and disposes of AirTrain's hazardous wastes, which consist primarily of gear oil. She

also showed staff her certificate for Bombardier/San Francisco (SFO) Online Training entitled "RCRA Training for Hazardous Waste Generators" dated 8/21/15.

E) Staff learned that training pertaining to Hazardous Materials and Emergency Response as mentioned above is given initially to new employees, and then on an as-needed basis or as directed by BTH's company headquarters.

2. AirTrain has not experienced any hazardous spills requiring reporting during the past year. As such, no hazardous materials discharge/spill reports exist. In the event of a hazardous spill, the BTH employee(s) on the site would immediately contact BTH's safety management, who would then notify the San Francisco International Airport, the designated party to address hazardous spill incidents at AirTrain.

3. BTH has seven binders containing copies of their Safety Data Sheets (SDS), which recently replaced the former MSDS sheets located on a shelf at the maintenance floor, which is where employees use all the chemicals. They are available for review at all times to all AirTrain and BTH employees who know about these sheets through their hazard communication / Global Harmonizing System (GHS) training. AirTrain only utilizes physical binders rather than offering on-line or electronic varieties, in order to avoid the use of electronics on-site. The binders are organized alphabetically with tabs dividing letters to assist a user in quickly finding the proper SDS sheet. These binders were presented to staff for visual verification of their existence at the premises. In the event that BTH plans to use a new chemical in the future, they will review the SDS for it and add it into the SDS binders accordingly.

Findings:

None

Recommendations:

None

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR

SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**20**	**SUBJECT**	**DRUG AND ALCOHOL PROGRAM**
Date of Review	AUG 03, 2016	Department(s)	Bombardier Transportation Holdings
CPUC Reviewers/ Inspectors	Colleen Sullivan	Person(s) Contacted	Frank Del Gaizo, BTH Advisor, Human Resources

REFERENCE CRITERIA

1. General Order 164-D
2. AirTrain System Safety Program Plan (SSPP)
3. AirTrain's APM System Contractors Corporate Drug and Alcohol Policy
4. Employee File Review

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Drug and Alcohol Program

Conduct the necessary interviews and review appropriate records prepared during the last year to:

1. Confirm that the number of employees in safety sensitive positions who tested positive or refused to take the test during the past year was accurately reported.
2. Confirm Bombardier has a policy in place for managing the use of over-the-counter drugs.
3. Randomly select at least one safety sensitive employees who tested positive for drugs or alcohol in the past year and review the appropriate records to determine whether or not:
   a. The employee was evaluated and released to duty by a Substance Abuse Professional (SAP).
   b. The employee was administered a return-to-duty test with verified negative results.

c. Follow-up testing was performed as directed by the SAP according to the required follow-up testing frequencies of the reference criteria after the employee has returned to duty.
d. Consequences for repeat offenders were carried out as required by the reference criteria.

RESULTS/COMMENTS

Activities:

Drug and alcohol tests were reviewed for the years 2013 – 2015. Bombardier has a staff of staff of 60 safety sensitive employees as of August 3, 2016. Bombardier Drug & Alcohol policy AME-5 section 3.3.3 states that 25% of the workforce population will be randomly chosen to be tested for drugs, and 10% will be randomly chosen for alcohol each year. Employees are subject to random testing for drugs and/or alcohol in accordance with and subject to federal, state, and local laws and regulations.

2015

Fifteen drug and six alcohol tests were administered. These tests are tracked by social security numbers, and employee identification numbers. One employee tested positive for drugs in December 2015. This employee was employee number 10186626. These are the employee identification numbers that were tested in 2015 and reviewed in this audit: 10117492, 1017782, 10164901, 10180583, 10202193, 10202298, 10177828, 10177828, 10164901, 10117465, 10117477, 10174401, 10147538, 10201397, and 10186626.

2014

Fifteen drug and six alcohol tests were administered. These tests are tracked by social security numbers, and employee identification numbers. All tests came back negative. These are the employee identification numbers that were tested in 2014 and reviewed in this audit: 10117487, 10117487, 10149381, 10201821, 10186628, 10117466, 10201821, 10201820, 10152468, 10147520, 10200292, 10117455, 10143456, 10180582, and 10179349.

2013

Fifteen drug and six alcohol tests were administered. These tests are tracked by social security numbers and employee identification numbers. All tests came back negative. These are the employee identification numbers that were tested in 2013 and reviewed in this audit: 10181015, 10181014, 10200686, 10144340, 00186628, 00164139, 10147544, 10200823, 10200297, 00152484, 00180583, 10200824, 00200686, 00152468, and 00114899.

Bombardier does have a policy in place for managing the use of over-the-counter drugs. This policy is outlined in AME-5 section 8. It is the responsibility of the employee, when selecting an over-the-counter medication, to read all warning labels before selecting it for use while working. Medications whose labels indicate they may affect mental function, motor skills, or judgment should not be selected. The employee has the responsibility to refrain from using any over-the-counter medication that causes performance altering side effects, whether or not the label warns of them. For the safety of the employee and the employees around him, the employee must notify a Human Resources (HR) Representative regarding any medication he may be on prior to beginning work. Subsequently, the HR Representative sends the employee to AirTrain's clinic for evaluation. This evaluation determines if the over-the-counter medication the employee is taking makes him fit or unfit for his particular job duties.

Bombardier has a zero tolerance police for the usage of drugs and alcohol. If an employee's drug or alcohol test comes back positive, he is immediately dismissed from his job. Also, if any employee does not agree to take the drug or alcohol test, he is immediately dismissed from his job.

Findings:

None

Recommendations:

None.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR

SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**21**	Subject	Procurement Process
Date of Review	Aug 04, 2016	Department(s)	Bombardier Transportation Holdings
CPUC Reviewers/ Inspectors	Adam Freeman	Person(s) Contacted	Peggy Kiriaze, Procurement Manager Eric LeVeque, Storeroom Clerk Bombardier Transportation

REFERENCE CRITERIA

1. General Order 164-D
2. AirTrain System Safety Program Plan (SSPP)
3. AirTrain's APM System Contractors Procurement Quality Assurance Procedures
4. AirTrain's APM System Contractors MSDS
5. SDC Materials Management
6. Shipping and Receiving
7. RMR Process (Return Material Report)
8. Calibration of SDC Tools and Test Equipment

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Procurement Process

Conduct the necessary interviews and review appropriate records prepared during the last year to:

1. Verify Bombardier personnel are following the Procurement Policy to ensure that safety issues and concerns are addressed in the procurement process.
2. Adequate procedures and controls are in place to preclude the introduction of defective

or deficient equipment into the APM system environment.

3. Adequate procedures are in place to safely deal with defective or deficient equipment in the event these are introduced to the APM system at AirTrain.

RESULTS/COMMENTS

Activities:

CPUC Staff interviewed Bombardier staff and reviewed documentation/records related to the following:

- APM parts inventory, warranty & return
- Tool calibration & Inventory
- MSDS
- SDC management
- SSPP

CPUC staff inspected tools used by Bombardier Technicians which included digital multimeters, torque wrenches and various other electronic testing instruments for proper calibration dates and reviewed tool inventory data sheets which included upcoming calibration dates. Tool calibration is being managed appropriately; tool inventory is sufficient allowing technicians to always have the appropriate tools available as needed.

New and/or replacement chemical data sheets are available for review in the MSDS binders; they are properly updated and made available for review to all employees in a central location as needed. Disposing and Recycling of hazardous materials is being identified and properly labeled, as well as proper distribution of material. Chemicals are being properly stored in labeled metal flammable lockers throughout the shop floor as well as inventory storage locations.

Based on the records and documentation reviewed and interviews conducted with staff, Bombardier is properly managing the procurement of parts, materials and services provided by outside contractors in accordance with the laws and regulations as well as what is outlined in AirTrains Procurement policy and procedures.

Findings:

None

Recommendations:

None

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**22**	**SUBJECT**	**CPUC GO 172 – PERSONAL ELECTRONIC DEVICE PROHIBITIONS/IN-CAB CAMERAS**
Date of Review	AUG 2, 2016	Department(s)	Bombardier Transportation Holdings
CPUC Reviewers/ Inspectors	Steve Espinal	Person(s) Contacted	Lee Mitchell, AirTrain Manager, Operations and Maintenance Michael Robert, AirTrain Assistant Manager

REFERENCE CRITERIA

1. CPUC General Order 172
2. AirTrain System Safety Program Plan (SSPP)
3. AirTrain Zero Tolerance Policy

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Interview AirTrain representatives to determine GO 172 Compliance:

1. Verify that in-cab cameras are installed on all required vehicles.
2. Verify that in-cab camera recordings are being reviewed in response to reportable accidents and incidents.
3. Verify that a zero-tolerance policy for personal electronic device usage is in-place, and that employees who violate this policy are being properly disciplined by AirTrain.
4. Verify that AirTrain is conducting periodic operational evaluations and inspections for potential GO 172 violations, and those records of these activities are being properly retained and documented.

5. Ask AIRTRAIN to describe the functionality of their inward-facing cameras:

    a) Which types of vehicles are fitted with cameras, and any exemptions currently in place for any of the RTA vehicles?

    b) AIRTRAIN's program of inspection of in-cab camera systems for failures or any that are not functioning properly.

    c) Determine whether cameras conduct continuous recordings that cover at least eight (8) continuous days of operation.

RESULTS/COMMENTS

Activities:

Airtrain has no operators in the cab. The trains are operated remotely with video cameras showing the interior of the cars and its passengers. General Order 172 excludes airport people movers from its jurisdiction. There are no cameras showing the remote Operators Operating the train.

Airtrain has a zero-tolerance policy for phone use operating a train. Airtrain has dismissed Operators in training for violating their personnel electronic device rules.

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Airtrain staff inspects monthly for cell phone use and is documented on the Staff Monthly Safety Inspections report. All vehicles at Airtrain are equipment with cameras except the maintenance recovery vehicle.

All cameras are inspected daily for proper functionality. The cameras maintain the video footage for approximate 30 days prior to taping over.

Currently Airtrain is in the process of replacing all the hard drives.

Findings:

None.

Recommendations:

None.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**23**	Subject	CPUC GO 175 – Rules and Regulations Governing Roadway Worker Protection Provided by Rail Transit Agencies and Fixed Guideway Systems
Date of Review	**Aug 04, 2016**	Department(s)	Bombardier Transportation Holdings
CPUC Reviewers/ Inspectors	Kevin McDonald	Person(s) Contacted	Marla McPherson SPC Site Director – Systems Division, BombardierChris Hendrickson, HSE Prfessional Bombardier TransportationTim Bollinger Operations & Maintenance Manager

REFERENCE CRITERIA

1. CPUC General Order 175
2. AirTrain System Safety Program Plan (SSPP)
3. AirTrain Roadway Worker Protection Plan

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Part 1: General Topics

1. Ask AirTrain to describe their program(s) aimed at ensuring roadway worker protection is in accordance with G.O. 175.

2. Verify that the AirTrain has created a separate dedicated manual excerpting all necessary roadway worker safety procedures and rules from its rule book(s), and that this manual is freely available to its roadway workers when they are performing job functions.

3. Verify that the AirTrain's compliance testing program includes Roadway Worker Protection (RWP) rules, and that these rules are tested to assess the degree of compliance, as well as changed when necessary to enhance compliance. Determine if these are included in the manual described in question 2.

4. Determine whether AirTrain uses flag protection to provide roadway worker safety, and if so, determine whether it has established written flag protection procedures. Determine if these are included in the manual described in question 2.

5. Review the AirTrain's safety equipment requirements for their staff. Verify that all employees who access the track zone are required to wear high visibility clothing (safety vests or jumpsuits).

6. Verify that AirTrain requires anyone with access to the track zone (by request, easement, or other form of permission) to either complete the required RWP training, or be escorted by a RWP-trained employee.

Part 2: Job Safety Briefings

1. Verify, by collecting sign-in sheets, that AirTrain requires the employee in charge (EIC) of each roadway work site to provide a safety briefing prior to commencement of work within the right-of-way. Verify that the briefings are required to include the following aspects, when applicable:
   a) The general work plan
   b) The hazards involved, and the means by which safety will be provided. Considerations must include presence of roadway maintenance vehicles, adjacent tracks, and any need to widen track zone
   c) Personal protective equipment requirements
   d) Identification and location of key personnel, such as the watchperson and EIC.
   e) Flag use and placement
   f) A predetermined "place of safety," where workers can move to within 15 seconds before rail vehicles moving at maximum speed authorized on that track can pass their previous location on the track. Considerations such as visibility, noise interference, and time required to get to the place of safety must be discussed.
   g) The means of communication amongst roadway workers to be used
   h) Acknowledgement that each employee understands the rules to be used
   i) If a watchperson is used, they and all other employees must receive a review of their

duties – specifically, to provide a warning in compliance with the aforementioned 15-second rule, and to refrain from performing or assisting in any other type of work.

2. Verify that it is AirTrain's practice to conduct follow-up safety briefings, in cases where the crew or scope of work changes after initial safety briefing.

3. Verify that it is AirTrain's practice to conduct safety briefings through a discussion between the roadway worker and employee providing authorization to enter the roadway, which includes the protection to be used, in cases of an individual roadway worker moving from one location to another, or performing a minor task.

Part 3: Roadway Worker Protection Training

1. Verify that AirTrain has adopted a Roadway Protection (RWP) training program aimed at educating workers about the hazards of working along the right-of-way, as well as the methods to safely work on the right-of-way.
   a) Request that AirTrain describe their RWP training program.
   b) Ensure that the training program includes classroom training
   c) Ensure that the training program includes experience in a representative field-setting.
   d) Ensure that the training program covers AirTrain's rules and procedures.

2. Ensure that no employees whose duties are those of a rail worker are required to perform work without training.
   a) Request a list of job types/classifications of the utility's employees which are required to attend RWP training.
   b) Request that AirTrain provide roll call sheets or any other documentation verifying the attendance of staff at RWP training/re-training sessions, for the time period of three years ago to the present.
   c) Select several employees at random, preferably with different job classifications, and confirm their attendance a RWP training course at intervals of 24 months, or more frequently.
   d) Verify that records of training are retained by the utility for at least 3 years.

3. Ensure that the RWP training courses entail checks or tests to ensure the ability to comply with RWP instructions given by persons performing or responsible for, on-track safety and RWP functions.

a) Ask for details regarding completion certificates and the extent of testing (if any) required to receive them.
b) For the random employees selected in section 2(c), request copies of completion certificates for each training session completed.

4. Ask whether RWP training courses provide an opportunity for trainees to raise and discuss issues regarding the effectiveness of the program.

5. Ensure that the RWP training courses educate employees about the functions of various persons involved with RWP procedures.

Part 4: Near-Miss Reporting Programs and Record Keeping

1. Request that AirTrain describe, its program for reporting and recording near-misses regarding roadway worker protections

2. Verify that AirTrain retains near-miss records for a period of 3-years or more, and that they are available to CPUC staff on demand

3. Verify that AirTrain's near-miss program includes:
   a) A policy statement supporting the near-miss program signed by the CEO
   b) A process to encourage and allow roadway workers to report near-misses
   c) Methods to store, easily access, and track near-misses and corrective actions
   d) Analysis to identify primary and contributory causal factors, and implementation of corrective actions

4. Verify that AirTrain periodically reviews the effectiveness of its near-miss program, and adjusts it in response to changes in industry practices

Part 5: Compliance with Minimum Controls / Limitations Prescribed in G.O. 175

1. When performing the following types of work, at track other than that at its yard(s) and end-of-line storage track, verify that AirTrain always utilizes the specific minimum controls and limitations outlined in Sections 6.1 through 6.3 of General Order 175:
   a) Moving from one location to another – Requirements described in Section 6.1
   b) Performing minor tasks – Requirements described in Section 6.2
   c) Performing visual inspections, maintenance, and repairs. Using hand tools,

machines, or equipment. All other roadway worker / crew activities not covered in Sections 6.1 and 6.2 – Requirements described in Section 6.3

d) Verify that AirTrain complies with its yard and end-of-line storage track RWP.

RESULTS/COMMENTS

Activities:

Staff interviewed Airtrain representatives regarding their RWP program and inquired as to all the Elements listed above (parts 1 through 5).

Detailed description of Findings of Non-Compliance.

1) Part 1 #2, Airtrain has not "created a separate *dedicated* manual excerpting all necessary roadway worker safety procedures and rules from its rule book(s)".

Airtrain's RWP program consists of protections that are spread across *three* separate documents/modalities that are not linked: 1. SFIA-OPM-008; 2. SFIA/SFO Rule Book Revision 6 June, 2015; 3. The third "leg" of roadway worker protection is found within SFO's 15 separate "Operating Modes" which dictate protections for various sections of the guideway and running surface.

2) Part 1: #3, SFO Airtrain is currently not conducting compliance testing on its RWP program.

3)Part 1: #6 SFO Airtrain's current RWP training program consists of a video and does not include either classroom or field training, per section 9.5 (a) and (b).

4) Part 3: #1 SFO Airtrain has not adopted a focused RWP training program. Their RWP training program currently consists of a video for both employees and escorted contractors. Employees and contractors then sign a sheet acknowledging that they viewed the video. Employees are given a copy of this sign in sheet entitled "Document Acceptance Sheet" and it is reviewed with employees annually by their supervisor.

5) Part 3 #3 Since SFO Airtrain's RWP training program consists of a video with no classroom or field training, no checks or tests are being conducted to "ensure the ability to comply with RWP instructions given by persons performing, or responsible for, on-track safety and RWP functions"

6) Part 3 #4 Since SFO Airtrain's RWP training program consists of a video with no classroom or field training, there are no "opportunities for trainees to raise and discuss issues regarding the effectiveness of the program.

7) Part 3: #5 Since SFO Airtrain's RWP training program consists of a video with no classroom or field training; they cannot currently "ensure that the RWP training courses educate employees about the functions of various persons involved with RWP procedures".

8) Part 5 #1 (c) SFO Airtrain is currently not in compliance with the specific minimum controls and limitations regarding performing visual inspections, maintenance, and repairs, using hand tools, machines, or equipment (G.O. 175-A, section 6.3), in regard to their "***safety observer" or watchperson***.

Currently, SFO Airtrain uses a "safety observer" as a watchperson; however this safety observer is permitted to engage in work other than providing effective warning. Per SFIA-OPM-008, section 4.1, the safety observer is allowed to "monitor personnel performing work" (subsection 7) and "notify Control" (of the status of the group), subsections 8 and 9.

Per G.O. 175-A, section 2.23, a watchperson's "sole duty is to provide effective warning…" This means that a watchperson or safety observer may not use a radio to communicate with Control (unless in case of emergency).

SFO Airtrain is also out of compliance with G.O. 175-A, sections 2.4 and 6.3 (b), in regards to the ***"Employee in Charge" (EIC).*** SFO Airtrain does not currently have an "EIC" as the "employee with responsibility for supervising and ensuring safety, including use of roadway worker protections at a *right of way* worksite.

9) Part 5: #1(d) SFO currently does not have a yard and end-of-line storage track RWP plan.

Findings:

AirTrain does not fully comply with all applicable sections of GO 175-A. Review Activities section above regarding specific violations.

Recommendations:

AirTrain should comply fully comply with GO 175-A (see checklist for details).

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR

SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**24**	**SUBJECT**	**HOURS OF SERVICE: OPERATORS AND MAINTENANCE, AND TRACK**
Date of Review	AUG 03, 2016	Department(s)	Bombardier Transportation Holdings
CPUC Reviewers/ Inspectors	MIKE BORER	Person(s) Contacted	Frank Del Gaizo, BTH Advisor Human Resources

REFERENCE CRITERIA

1. General Order 164-D
2. AirTrain System Safety Program Plan (SSPP)
3. AirTrain's APM Time Cards
4. AirTrain's APM System Contractors Operations Rule Book, Revision 5, January 2016

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Hours of Service: Controllers & Maintainers

1. Randomly select three employees. Review the selected employees' "time on duty" records prepared during a three-month period within the past 12 months and determine if:
   a. They complied with the requirement that employees in safety-sensitive positions may not remain on duty for more than 12 consecutive hours, or for more than 12 hours spread over a period of 16 hours, and;
   b. The initial on duty status for each of these employees only began after eight consecutive hours off duty.

RESULTS/COMMENTS

Activities:

Staff randomly selected four Airtrain employees. Reviewed the selected employee's time on duty records within the past 12 months February 2015, September 2015 and February 2016.

Findings:

None.

Recommendations:

None.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR

SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**25**	Subject	Contractor Safety Program
Date of Review	**Aug 4, 2016**	Department(s)	Bombardier Transportation Holdings
CPUC Reviewers/ Inspectors	Kevin McDonald	Person(s) Contacted	Chris Hendrickson, HSE Professional Bombardier Transportation Marla McPherson SPC Site Director - Systems Division, Bombardier

REFERENCE CRITERIA

1. General Order 164-D
2. AirTrain System Safety Program Plan (SSPP)
3. Contractors' Training Power Point Presentation
4. Procedure Control of Contractors
5. Health, Safety & Environment (HSE) System Manual
6. 2016 SFO Rule Book

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Contractor Safety Program

Interview the AirTrain representative in charge of the Contractor Safety Program and review AirTrain's internal safety audit requirements, audit reports and other records to determine if:

1. AirTrain/Bombardier's procedures and practices clearly identify, for the contractors and AirTrain managers, that AirTrain is in charge and that its contractors and their employees must comply with all established safety rules and procedures and;
2. AirTrain/Bombardier procedures establish the range of activities for its monitoring and enforcement of contractor's and contractor employee's compliance with the safety requirements by regular unscheduled and unannounced compliance checks as well as by scheduled periodic audits and inspections
3. AirTrain/Bombardier's monitoring and enforcement activities are properly recorded, distributed, and filed.

RESULTS/COMMENTS

Activities:

Staff interviewed Airtrain's representatives regarding the Contractor Safety Program.

Findings:

Airtrain representatives confirmed that they do in fact, have a Contractor Safety Program (SYS-40-10-35-010632 "Procedure Control of Contractors"). This meets the requirements of Element One.

However, Airtrain representatives told staff that they currently are not monitoring or recording contractor compliance with Airtrain safety rules and procedures, which does not meet the requirements of Elements Two and Three. Airtrain stated that they intend to have policies and procedures in place soon to monitor contractor activities using compliance checks, audits and inspections that would then be properly recorded.

Comments:

None

Recommendations:

Staff recommends that Airtrain develop policies and procedures to monitor contractor activities using compliance checks, audits and inspections that would then be properly recorded, per SYS-40-10-35-010632, section 6.5, section 20 of the System Safety Program Plan, Revision 3, February 24, 2015 and General Order 164-D.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR

SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**26**	Subject	Track Maintenance
Date of Review	Aug 04, 2016	Department(s)	Bombardier Transportation Holdings
CPUC Reviewers/ Inspectors	Kevin McDonald	Person(s) Contacted	Jeffrey Douglas Field Service Engineer

REFERENCE CRITERIA

1 General Order 164-D
2 Airtrain System Safety Program Plan (SSPP)

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Guideway Maintenance

Interview the AirTrain representative in charge of the Guideway Maintenance and review AirTrain's internal safety audit requirements, audit reports and other records to determine if:

1) Review records related to guideway, power feeds, guide beams, seismic joints, guideway switches and any other trackside mounted equipment.

RESULTS/COMMENTS

Activities:

Staff interviewed the Airtrain representative regarding guideway maintenance and inspections. Staff examined 2014, 2015 and 2016 work orders and inspection records for:

A. Seismic sensors
B. Wayside Amps
C. Power rails
D. Switches-monthly

Findings:

1) The Airtrain representative produced records that demonstrated to staff that guideway

maintenance was conducted at the proper frequencies in 2014 per SFIA-PRG 002 "Wayside Maintenance Program". However, the representative stated that Airtrain had instituted a new maintenance software program in March of 2015 that had a "glitch". The representative stated that because of this software problem, maintenance and inspections for Wayside Amps, Power Rails and Switches were not conducted at the required frequencies per their SFIA-PRG 002. Staff confirmed this assertion by the Airtrain representative.

2) Wayside Amps inspections are to be done annually for two separate regions: 1ATC and 2ATC. Staff confirmed that only region 2ATC was inspected in 2015 on 6-30-2015. Also, only region 1ATC was inspected in 2016 on 2-2-2016. One Wayside Amps inspection was missing for both 2015 and 2016. Again, the Airtrain representative stated that this was due to a software problem.

3) Power Rail inspections are to be done every 30 to 46 days. Staff determined that there was no January 2016 inspection for Power Rail ITG2-T2-2 and no inspection for Power Rail SB-12 for January or February of 2016. Again, the Airtrain representative stated that this was due to a software problem.

4) Staff examined inspection records for Switch # 101 and determined that records for May, September and November of 2015 were missing. Staff also determined that switch # 101 records for February, March and July of 2016 were missing.

Recommendations:

Staff recommends that Airtrain should ensure that guideway maintenance PM's and inspections are conducted at the required frequencies, per their SFIA-PRG 002 "Wayside Maintenance Program" and per section 8.3 of the System Safety Program Plan, Revision 3, February 24, 2015.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR

SAN FRANCISCO INTERNATIONAL AIRPORT - AIRTRAIN

Checklist No.	**27**	**SUBJECT**	**TRACTION POWER SUBSTATION**
Date of Review	AUG 02, 2016	Department(s)	Bombardier Transportation Holdings
CPUC Reviewers/ Inspectors	STEVE ESPINAL	Person(s) Contacted	Jeff Douglas, Field Service Engineer Eric Riego, Field Support Specialist Tim Bollinger, Operations & Maintenance Manager

1 General Order 164-D
2 AirTrain System Safety Program Plan (SSPP)

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Traction Power System

Interview the AirTrain representative in charge of the traction power maintenance and review AirTrain's internal safety audit requirements, audit reports and other records to determine if all maintenance records related to relays, circuit breakers, transformers and other associated equipment are kept as per applicable requirements.

RESULTS/COMMENTS

Activities:

Airtrain uses five substations in which three substations were inspected and tested in July of

2016. Two of the five substations will be inspected and tested by the end of 2016.

Airtrain procedures for maintenance of the substation states maintenance shall be conducted every 1 to 3 years. There have been no maintenance problems for the traction power system in the last three years. Airtrain maintenance staff has decided to conduct testing biannually. The dates of testing and inspection are shown below:

Internation Terminal G (ITG) – 7/26/19, 7/29-30/2014
Low Voltage Breakers
High Volt Breakers
Transformer PM

International Terminal A (ITA) 7/21/16, 6/12/14
Transformer PM
High Voltage Breakers
Low Voltage Breakers

Rent a Car Center (RCC) – 7/14/16, 6/16/14
Transformer
High Voltage Breakers
Low Voltage Breakers

Maintenance Storage and Facilities Substation (MSF) 8/10/14
Low Voltage Breakers
Medium Voltage Air Circuit Breaker Report
Transformer

Lot C – 7/1/14
Low Voltage Circuit Breaker
Medium Voltage Circuit breaker
Transformer Report

Rent a Car Center (RCC) 6/16/14
Low Voltage Circuit Breaker
Medium Voltage Air Circuit Breaker
Transformer Report 6/16/14

All substations were inspected by staff including ITA, ITG, RCC Lot C and MSF. All fire extinguishers were current upon inspection and eye washers were present for caustic material usage for battery maintenance. Substation ITG, Lot C and MSF were clean and maintained. Substation ITA and RCC were dusty should be swept out to mitigate dust and prevent arching.

Comments

1. The Rent A Car Center and International Terminal A should be swept out to mitigate the possibility of arching in the substation due to dust.
2. TRACS recommend the use of infrared testing for tractions power systems.

Findings:

1. Proper ranges are not provided for numerical values including voltage, breaker trip time, megger tests or contact resistance. Acceptable ranges should be in included in the test sheets for all numerical results to determine if the numerical values are in an acceptable ranges Airtrain informed staff the proper ranges could not located.

Recommendations:

1. Approach the manufacturer and request proper ranges for the breaker trip time, contact resistance and meggar test resistance.