
2011 ON-SITE SAFETY REVIEW OF THE ANGELS FLIGHT RAILWAY COMPANY

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SAFETY AND ENFORCEMENT DIVISION
RAIL TRANSIT AND CROSSINGS BRANCH
RAIL TRANSIT SAFETY SECTION
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FINAL REPORT
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ACKNOWLEDGEMENT

The Rail Transit Safety Section of the California Public Utilities Commission conducted this system safety program review. Staff members directly responsible for conducting safety review and inspection activities include:

Anton Garabetian – Sr. Utilities Engineer
Don Filippi – Sr. Operating Inspector
Noel Takahara – Utilities Engineer (Lead Reviewer)
Michael Borer – Associate Railroad Equipment Inspector
Thomas Govea – Associate Railroad Signal and Control
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Howard Huie – Utilities Engineer
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1. EXECUTIVE SUMMARY

The Rail Transit Safety Section staff (staff) of the California Public Utilities Commission (Commission) conducted an on-site safety review of the Angels Flight Railway Company (AFRC) system safety program in September 2011. The review was comprehensive in nature and addressed AFRC safety programs and practices in the design, operation, and maintenance of the system.

Staff performed records reviews of the AFRC safety program to ensure compliance with maintenance and operational requirements and regulations. In addition, staff performed physical inspections of AFRC track and vehicles.

The review results indicate that AFRC has a comprehensive system safety program and that AFRC effectively implements its System Safety Program Plan (SSPP). However, staff noted exceptions during the review which are summarized in the Findings and Recommendations Section of this report. Staff found 9 recommendations for corrective action from the 14 checklists.

The Introduction and Background sections of this report are presented in Sections 2 and 3 respectively. The Background section contains a description and brief history of the AFRC system. Section 4 describes the review procedure, and Section 5 provides the review findings and recommendations. Appendices attached to the back of the report include the report acronyms list, the checklist index, a recommendations list, and the review checklists.

2. INTRODUCTION

Commission General Order (GO) 164-D, *Rules and Regulations Governing State Safety Oversight of Rail Fixed Guideway Systems* requires Commission staff to perform a review of each rail transit agency's implementation of its system safety program plan a minimum of 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 assess the level of compliance with GO 164-D as well as other Commission safety requirements. This is the first safety review of AFRC since Angels Flight was re-opened in March, 2010.

On September 8, 2011 staff scheduled safety review activities with the AFRC President. At that time of scheduling, staff provided the 14 checklists that would serve as the basis of the review. Two of the 14 checklists outlined inspections of track and vehicles. The remaining 12 checklists focused on the verification of acceptable implementation of the AFRC SSPP. Staff conducted records reviews and interviews to confirm implementation of requirements from the SSPP, standards referenced in the SSPP, AFRC standard operating procedures, AFRC related maintenance manuals, ANSI B77.2-2004, and other AFRC rules.

3. BACKGROUND

Angels Flight is a landmark funicular railway that was originally built in 1901 in the Bunker Hill region of downtown Los Angeles. Since 1997, Angels Flight has been effectively owned by the Angels Flight Railway Foundation (Foundation) via a 99 year long-term ground lease with the Community Redevelopment Agency of the City of Los Angeles (CRA/LA). The Angels Flight Railway Company (AFRC) operates Angels Flight on behalf of the Foundation.

Between 1901 and 1969, Angels Flight was owned by 6 different entities. CRA/LA was the eventual owner of Angels Flight and dismantled the funicular in 1969. In 1996, after 27 years of storage, CRA/LA oversaw the project to restore and reconstruct Angels Flight and the funicular was reopened to the public after being reinstalled 2 blocks south of its 1969 location. The track structure was rebuilt and the drive system was redesigned. In 2001 the redesigned drive system failed resulting in one of the cars freefalling down the 33 degree incline before colliding with the other car resulting in several injuries and a fatality. The accident was heavily investigated by CPUC and the National Transportation Safety Board (NTSB), and the funicular was shut down.

In January 2007, AFRC met with CPUC staff to notify staff of their intent to refurbish and re-open Angels Flight. AFRC contracted the engineering and manufacturing services of POL-X West Inc, Jewett Engineering, Wespac Automated Ltd, and Murray Latta Inc. to refurbish Angels Flight. In March 2010 Angels Flight was once again reopened to the public with improved safety features that included a secondary safety cable, redundant fail-safe braking, and fail-safe carrier track brakes. The mechanical drive was once again redesigned, a state of the art controller was installed, and the entire system was refurbished in conformance to funicular standards (ANSI B77.2 – 2004) developed by the American National Standards Institute.

The rail transit safety section (RTSS) regulates AFRC as a rail transit agency (RTA) operating a rail-fixed guideway funicular system. A funicular is a system that operates on an incline with simultaneous ascending and descending carriers on guideways counterbalancing one another. Carriers reciprocate between the terminals, propelled and controlled by a wire rope or other flexible element operating through drive and tensioning equipment installed at the terminals. Safety standards specified in GO-143B for light rail transit are not directly applicable to funiculars; therefore RTSS oversees AFRC safety matters according to GO-164D requirements and ANSI B77.2-2004 standards.

4. REVIEW PROCEDURE

Staff conducted the review in accordance with the Rail Transit Safety Section Procedure RTSS-4, *Procedure for Performing Triennial On-Site Safety and Security Reviews of Rail Transit Agency*. Staff developed fourteen (14) checklists to cover various aspects of system safety responsibilities based on Commission requirements, the AFRC SSPP, safety related AFRC documents, and staff knowledge of the system. The 14 checklists are included in Appendix D.

Each checklist identifies safety-related elements and characteristics reviewed or inspected by staff. The completed checklists include review findings. If the review findings indicate non-compliances, then recommendations are included. The methods used to perform the review included:

- Discussions with AFRC 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 rail operations and are known or believed to be important in reducing safety hazards and preventing accidents.

5. FINDINGS AND RECOMMENDATIONS

The results of the on-site safety review indicate that AFRC has a comprehensive SSPP and that AFRC has been effectively implementing that plan. Review findings identify areas where changes should be made to further improve the SSPP or SSPP implementation. The review results are derived from staff activities observed, documents reviewed, issues discussed with management, and field inspections. Overall, the review results confirm that AFRC is in compliance with its SSPP. The review identified 9 recommendations from the 14 checklists. The findings and recommendations for each checklist are given below.

1. Hazard Identification and Analysis, SSPP Compliance, and System Safety

Staff found the following deficiency/s:

- Certain aspects of AFRC hazard identification can be improved upon.
- AFRC tracks corrective actions to completion but there are instances of failure to sign items off as closed.
- AFRC end gate design requires further study for possible improvements.

Recommendation/s:

1. AFRC should report any new hazards to CPUC according to AFRC SSPP Section 9.1.1.
2. AFRC should revise AFRC SSPP to improve documentation practices that would clarify appropriate closure of corrective actions.
3. AFRC should conduct further studies for possible improvements to the current end-gate design.

2. Maintenance, Inspections, and Testing (Daily, Weekly, Monthly)

Staff found the following deficiency/s:

- The 12/12/2010 weekly "A" and "B" log was incomplete.
- The 10/6/2010 weekly "B" log was incomplete.
- The 8/13/2010 monthly inspection log was incomplete.

Recommendation/s:

4. AFRC should complete weekly and monthly inspection logs properly.

3. Maintenance, Inspections, and Testing (Quarterly, Bi-Annual, and Annual)

No Findings of non-compliance; no recommendations

4. Accident/Incident Investigation and Reporting

No Findings of non-compliance; no recommendations

5. **Internal Safety Audit Process**

No Findings of non-compliance; no recommendations

6. **Emergency Response Planning, Coordination, Training**

Staff found the following deficiency/s:

- AFRC EPP/EEP does not fully conform to ANSI B77.2-2004 standards.
- AFRC EPP/EEP earthquake plan lacks supervisor and expert review requirements in addition to safety processes and procedures that should take place in the event of an earthquake.
- AFRC and NTSB disagree on ANSI B77 code requirements regarding emergency walkways.

Recommendation/s:

5. AFRC should revise the EPP/EEP to conform to ANSI B77.2-2004.
6. AFRC should revise EPP/EEP earthquake plan.
7. AFRC should clarify and reach concurrence with the ANSI B77 committee and the NTSB regarding adequate emergency walkway provisions.

7. **Internal Safety Audit Process**

No Findings of non-compliance; no recommendations

8. **Rules and Procedures Review and Compliance**

No Findings of non-compliance; no recommendations

9. **Configuration Management, System Modification Review/Approval, Safety Certification Process**

No Findings of non-compliance; no recommendations

10. **Hazardous Materials Program and Procurement**

No Findings of non-compliance; no recommendations

11. **Track Inspection**

Staff found the following deficiency/s:

- Wheel flange is making contact with the pandrol clips on both north and south tracks.

Recommendation/s:

8. AFRC should determine the cause and possible effects of wheel flanges

making contact with the pandrol clips.

12. **Rolling Stock Inspection**

No Findings of non-compliance; no recommendations

13. **Operational Observation**

No Findings of non-compliance; no recommendations

14. **Corrective Action Plans and Safety Data Collection**

Staff found the following deficiency/s:

- AFRC occasionally performs non-routine inspections and maintenance activities for safety data collection purposes and this practice is not described in the SSPP.

Recommendation/s:

9. AFRC should update SSPP safety data collection to reflect actual practice and include language that would require AFRC to include CPUC in activities related to non-routine inspections and maintenance.

APPENDICES

- A. Abbreviations List
- B. 2011 AFRC Safety Review Checklist Index
- C. 2011 AFRC Safety Review Recommendations List
- D. 2011 AFRC Safety Review Checklists

**APPENDIX A
ABBREVIATIONS LIST**

Acronym	Definition
AFRC	Angels Flight Railway Company
ANSI	American National Standards Institute
Commission	California Public Utilities Commission
CPSD	Consumer Protection and Safety Division (of CPUC)
CPUC	California Public Utilities Commission
CRA/LA	Community Redevelopment Agency of the City of Los Angeles
EEP	Emergency Evacuation Plan
EPP	Emergency Preparedness Plan
Foundation	Angels Flight Railway Foundation
GO	General Order
NTSB	National Transportation Safety Board
RTA	Rail Transit Agency
RTSS	Rail Transit Safety Section (of CPUC)
SOP	Standard Operating Procedure
SSPP	System Safety Program Plan
Staff	Rail Transit Safety Section Staff

APPENDIX B
2011 AFRC SAFETY REVIEW CHECKLIST INDEX

Checklist No.	Element
1	Hazard Identification and Analysis, SSPP Compliance, and System Safety
2	Maintenance, Inspections, and Testing (Daily, Weekly, Monthly)
3	Maintenance, Inspections, and Testing (Quarterly, Bi-Annual, and Annual)
4	Accident/Incident Investigation and Reporting
5	Internal Safety Audit Process
6	Emergency Response Planning, Coordination, Training
7	Training and Qualification Review Program, Drug and Alcohol Program
8	Rules and Procedures Review and Compliance
9	Configuration Management System Modification Review/Approval/Safety Certification process
10	Hazardous Materials Program and Procurement
11	Track Inspection
12	Rolling Stock Inspection
13	Operational Observation
14	Corrective Action Plans and Safety Data Collection

APPENDIX C
2011 AFRC SAFETY REVIEW RECOMMENDATIONS LIST

No.	Recommendation	Checklist No.
1	AFRC should report hazards to CPUC according to AFRC SSPP Section 9.1.1.	1
2	AFRC should revise AFRC SSPP to improve documentation practices that would clarify appropriate closure of corrective actions.	1
3	AFRC should conduct further studies for possible improvements to the current end-gate design	1
4	AFRC should complete weekly and monthly inspection logs properly.	2
5	AFRC should revise the EPP/EEP to conform to ANSI B77.2-2004.	6
6	AFRC should revise EPP/EEP earthquake plan	6
7	AFRC should clarify and reach concurrence with the ANSI B77 committee and the NTSB regarding adequate emergency walkway provisions	6
8	AFRC should determine the cause and possible effects of wheel flanges making contact with the pandrol clips.	11
9	AFRC should update SSPP safety data collection to reflect actual practice and include language that would require AFRC to include CPUC in activities related to non-routine inspections and maintenance.	14

APPENDIX D

2011 AFRC SAFETY REVIEW CHECKLISTS (14 CHECKLISTS TOTAL)

**2011 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR THE
ANGELS FLIGHT RAILWAY COMPANY**

Checklist	1	Hazard Identification and Analysis, SSPP Compliance, and System Safety	
Review Date	9/22/11	Department	Operations
Reviewers	Anton Garabetian Noel Takahara	Persons Contacted	John Welborne John Benke

REFERENCE CRITERIA

1. CPUC General Order 164-D
2. Angels Flight Railway Company (AFRC) System Safety Program Plan (SSPP) Section 9

ELEMENT, CHARACTERISTICS, AND METHOD OF VERIFICATION

Hazard Identification and Analysis, SSPP Compliance, and System Safety

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

1. Hazards are properly being identified, reported, and assessed a priority number according to the reference criteria.
2. Corrective actions in response to hazards are being tracked to completion.
3. AFRC is appropriately reporting to CPUC all mechanical, maintenance, and operational hazards and or issues etc. relating to system safety and in accordance with the SSPP.
4. AFRC interpretation and implementation of hazards reporting requirements meet Rail Transit Safety Section staff expectations.
5. There were any types of hazardous conditions that did not meet current reporting thresholds that should be reported to Rail Transit Safety Section staff in the future.

FINDINGS AND RECOMMENDATIONS

Findings:

1. AFRC identifies hazards on corresponding forms during weekly, monthly, quarterly, and semi-annual inspections. All the inspection records were well organized. The logs identified the Olivet door malfunction and Olivet and Sinai wheel flange shavings. According to AFRC, they took appropriate measures to mitigate the Olivet door malfunction by having an attendant on board Olivet monitoring the passengers, but AFRC failed to have a plan to have an alternate on-board attendant when the assigned attendant took a break. Thus, AFRC operated the Olivet train with no on-board attendant to mitigate the malfunctioning doors. This constituted a hazard that was identified by an unannounced CPUC staff inspection. For the trains' wheel shaving issue, AFRC sought expert opinions from their 3rd party consulting engineer. The engineer advised AFRC that the thinning wheel flanges did

not constitute a hazard and recommended increased monitoring of the thinning wheel flanges. However, routine CPUC inspections would determine that the thinning wheel flanges constituted a hazard. AFRC was directed on these two separate occasions to shut down revenue service. AFRC mitigated these hazards in a timely manner and was authorized by staff to resume revenue service operations. AFRC management agrees that the thinning wheel flanges possibly should have been reported as a hazard to CPUC staff upon discovery.

2. AFRC tracks corrective actions to completion but fails to sign off as closed. For example, on April 6, 2011, on Daily Operating Log, Angels Flight had problems with the batteries. They identified the problem and the technician repaired it. The form did not have a sign off from the management. AFRC agrees that management should sign off on the repairs.
3. AFRC was questioned if the end-gates/doors were built according to any applicable standards. AFRC stated that they would consult with the ANSI B77 committee for clarification regarding passenger containment requirements.

Recommendations:

1. AFRC should report hazards to CPUC according to AFRC SSPP Section 9.1.1.
2. AFRC should revise SSPP to improve documentation practices that would clarify appropriate closure of corrective actions.
3. AFRC should conduct further studies for possible improvements to the current end-gate design.

**2011 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR THE
ANGELS FLIGHT RAILWAY COMPANY**

Checklist	2	Maintenance, Inspections, and Testing (Daily, Weekly, and Monthly)	
Review Date	9/26/11	Department	Maintenance
Reviewers	Michael Borer John Madriaga	Persons Contacted	John Benke, John Welborne

REFERENCE CRITERIA

1. CPUC General Order 164-D
2. Angels Flight Railway Company (AFRC) System Safety Program Plan (SSPP)
3. AFRC Operations and Maintenance Manual Chapters 2, 3
4. 2004 ANSI B77.2 for Funiculars Sections 2.3.3, 2.3.4.

ELEMENT, CHARACTERISTICS, AND METHOD OF VERIFICATION

Maintenance, Inspections, and Testing (Daily, Weekly, and Monthly)

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

1. Preventive maintenance, inspection, and testing practices are in compliance with the reference criteria.
2. Corrective actions in response to system safety issues discovered during maintenance/inspection/testing are being tracked to completion.
3. Daily Operations Procedures are being administered in compliance with SSPP and operations manual requirements with activities being recorded by the operators on the appropriate forms and logs.
4. Weekly Inspections "A" and "B" are being administered according to the reference criteria with activities being recorded by the maintenance technician on the appropriate forms and logs.
5. Monthly Inspections are being administered according to the reference criteria with activities being recorded by the maintenance technician on the appropriate forms and logs.

FINDINGS AND RECOMMENDATIONS

Findings:

1. The 12/12/2010 weekly "A" and "B" log was incomplete, and the 10/6/2010 "B" Log was incomplete. The 8/13/2010 monthly inspection log was incomplete. No exceptions noted on other reviewed records. AFRC states that the incomplete logs are most likely a minor record keeping error and this statement is consistent with the results of the overall maintenance

records review and physical inspection of the system.

Recommendations:

1. AFRC should complete weekly and monthly inspection logs properly.

**2011 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR THE
ANGELS FLIGHT RAILWAY COMPANY**

Checklist	3	Maintenance, Inspections, and Testing (Quarterly, Bi-Annual, and Annual)	
Review Date	9/26/11	Department	Maintenance
Reviewers	Michael Borer John Madriaga	Persons Contacted	John Benke, John Welborne

REFERENCE CRITERIA

1. CPUC General Order 164-D
2. Angels Flight Railway Company (AFRC) System Safety Program Plan (SSPP)
3. AFRC Operations and Maintenance Manual Chapter 3
4. 2004 ANSI B77.2 for Funiculars Sections 2.3.3, 2.3.4.

ELEMENT, CHARACTERISTICS, AND METHOD OF VERIFICATION

Maintenance, Inspections, and Testing (Quarterly, Bi-Annual, and Annual)

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

1. Preventive maintenance and inspection practices are in compliance with the reference criteria.
2. Corrective actions in response to maintenance issues are being tracked to completion.
3. Quarterly, Bi-Annual, and Annual Inspection are being administered according to the reference criteria with activities being recorded by the maintenance technician on the appropriate forms and logs.
4. The Annual Survey Inspection is being administered according to the reference criteria with activities being recorded by the selected surveyor and maintenance technician on the appropriate forms and logs.

FINDINGS AND RECOMMENDATIONS

Findings:

1. Records indicate that AFRC is meeting quarterly, bi-annual, and annual maintenance requirements.

Recommendations:

none

**2011 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR THE
ANGELS FLIGHT RAILWAY COMPANY**

Checklist	4	Accident/Incident Investigation and Reporting	
Review Date	10/4/11	Department	Operations
Reviewers	Noel Takahara	Persons Contacted	John Welborne

REFERENCE CRITERIA

1. CPUC General Order 164-D
2. Angels Flight Railway Company (AFRC) System Safety Program Plan (SSPP) Sections 15, 23

ELEMENT, CHARACTERISTICS, AND METHOD OF VERIFICATION

Accident/Incident Investigation and Reporting

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

1. Accidents/incidents are being reported to Rail Transit Safety Section staff in accordance with the reference criteria.
2. Accidents/incidents are being investigated in accordance with the reference criteria.

FINDINGS AND RECOMMENDATIONS

Findings:

1. AFRC states that no GO-164D reportable accidents occurred since the March, 2010 reopening of Angels Flight.

Recommendations:

none

**2011 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR THE
ANGELS FLIGHT RAILWAY COMPANY**

Checklist	5	Internal Safety Audit Process	
Review Date	10/4/11	Department	Operations
Reviewers	Noel Takahara	Persons Contacted	John Welborne

REFERENCE CRITERIA

1. CPUC General Order 164-D
2. Angels Flight Railway Company (AFRC) System Safety Program Plan (SSPP) Section 16

ELEMENT, CHARACTERISTICS, AND METHOD OF VERIFICATION

Internal Safety Audit Process

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

1. AFRC complied with the requirements of GO 164-D Section 5 and SSPP Section 16.
2. AFRC properly documented Internal Safety Audits and submitted them to the CPUC on an annual basis prior to February 15th each year.
3. AFRC developed a 3 year auditing schedule for the 21 SSPP elements.

FINDINGS AND RECOMMENDATIONS

Findings:

1. AFRC is in compliance of GO-164-D Section 5 and SSPP Section 16 requirements.
2. AFRC internal safety audit report meets CPUC requirements.
3. AFRC has developed a 3 year schedule for the 21 SSPP elements in accordance with GO 164-D requirements.

Recommendations:

none

**2011 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR THE
ANGELS FLIGHT RAILWAY COMPANY**

Checklist	6	Emergency Response Planning, Coordination, and Training	
Review Date	9/22/11	Department	Operations
Reviewers	Noel Takahara	Persons Contacted	John Welborne

REFERENCE CRITERIA

1. CPUC General Order 164-D
2. Angels Flight Railway Company (AFRC) System Safety Program Plan (SSPP) Section 21

ELEMENT, CHARACTERISTICS, AND METHOD OF VERIFICATION

Emergency Response Planning, Coordination, and Training

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

1. An annual table-top drill with local emergency responders was conducted in accordance with SSPP Section 21 requirements.
2. A full scale drill with local emergency responders is being implemented every two years in accordance with SSPP Section 21 requirements.
3. Any deficiencies in terms of emergency planning were exposed as a result of the drills.
4. Any needed improvement or revision to emergency plans was implemented.

FINDINGS AND RECOMMENDATIONS

Findings:

1. ANSI B77.2-2004 code specifies to include in the emergency evacuation plan (EEP) an estimate of the amount of time it would take to evacuate the funicular. AFRC drafted an evacuation drill report that recorded the amount of time it took to evacuate to be approx 30 minutes; however this drill report is not a part of the emergency evacuation plan.
2. The earthquake plan of the Emergency Preparedness Plan (EPP) and EEP lacks supervisor and expert review requirements in addition to safety processes and procedures that should take place in the event of an earthquake. GO 164-D requires annual review of SSPP and associated plans. GO-164-D requires that revisions be made to SSPP and associated plans as necessary.
3. Annual table top drill and full scale drill were conducted in accordance with SSPP section 21 requirements. AFRC organized and coordinated the drills with the Los Angeles Fire Department. An after action report for the full scale drill describes a successful evacuation drill. The National Transportation Safety Board (NTSB) issued a recommendation to AFRC

to retrofit the system with a track adjacent emergency walkway in order to conform to ANSI B77.2 emergency egress standards. The NTSB recommendation was issued prior to this emergency drill. AFRC believes that the successful drill in which the LAFD utilized the current walkway with ladders is sufficient and conforms with the intent of the ANSI standard.

Recommendations:

1. AFRC should revise the EPP/EEP to conform to ANSI B77.2-2004.
2. AFRC should revise EPP/EEP earthquake plan
3. AFRC should clarify and reach concurrence with the ANSI B77 committee and the NTSB regarding adequate emergency walkway provisions.

**2011 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR THE
ANGELS FLIGHT RAILWAY COMPANY**

Checklist	7	Training and Qualification Review Program, Drug and Alcohol Program	
Review Date	10/4/11	Department	Operations
Reviewers	Noel Takahara	Persons Contacted	John Welborne

REFERENCE CRITERIA

1. CPUC General Order 164-D
2. Angels Flight Railway Company (AFRC) System Safety Program Plan (SSPP) Sections 20, 26, 27

ELEMENT, CHARACTERISTICS, AND METHOD OF VERIFICATION

Training and Qualification Review Program, Drug and Alcohol Program

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

1. The training and qualification review program is compliant with SSPP Section 20.
2. Annual training is administered to operating personnel according to SSPP Section 20.1.
3. Operating personnel are receiving annual training of rules and procedures.
4. Supervisor training is being administered according to SSPP Section 20.2.
5. Maintenance personnel training is being administered according to SSPP Section 20.3.
6. Contractor safety coordination is being administered according to SSPP Section 27.
7. All applicable employees according to SSPP Section 26 received a copy of the AFRC Drug and Alcohol Policy.
8. All applicable supervisors according to SSPP Section 26 received training in the signs and symptoms of alcohol and drug influence, intoxication, and misuse.

FINDINGS AND RECOMMENDATIONS

Findings:

1. Operators, Supervisors, and Maintainers receive on the job training year round and also routine training in accordance to SSPP section 20 requirements.
2. Contractor safety coordination was properly administered with Bragg Crane employees.
3. AFRC management provides AFRC drug and alcohol policy to employees via the operator rules manual.
4. AFRC supervisors receive training available online in the signs and symptoms of alcohol and drug influence, intoxication, and misuse.

Recommendations:

none

**2011 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR THE
ANGELS FLIGHT RAILWAY COMPANY**

Checklist	8	Rules and Procedures Review and Compliance	
Review Date	9/26/11	Department	Operations
Reviewers	Don Filippi	Persons Contacted	John Welborne

REFERENCE CRITERIA

1. CPUC General Order 164-D
2. Angels Flight Railway Company (AFRC) System Safety Program Plan (SSPP) Section 19

ELEMENT, CHARACTERISTICS, AND METHOD OF VERIFICATION

Rules and Procedures Review and Compliance

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

1. Rules and procedures are being revised as appropriate according to SSPP Section 19.3
2. In addition to annual training, AFRC is performing tests and inspections (efficiency testing) of personnel to ensure compliance with the operating rules and procedures, in accordance with SSPP Section 19.1.

FINDINGS AND RECOMMENDATIONS

Findings:

1. AFRC revises rules and procedures as appropriate according to SSPP Section 19.3.
2. AFRC is performing tests and inspections of personnel in accordance with SSPP Section 19.1.

Recommendations:

none

**2011 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR THE
ANGELS FLIGHT RAILWAY COMPANY**

Checklist	9	Configuration Management, System Modification Review/Approval, Safety Certification Process	
Review Date	10/6/11	Department	Operations
Reviewers	Howard Huie	Persons Contacted	John Welborne

REFERENCE CRITERIA

1. CPUC General Order 164-D
2. Angels Flight Railway Company (AFRC) System Safety Program Plan (SSPP) Section 22

ELEMENT, CHARACTERISTICS, AND METHOD OF VERIFICATION

Configuration Management, System Modification Review/Approval, Safety Certification Process

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

1. There have been any changes to the system (vehicles, facilities, or property).
2. The changes or improvements were reviewed, approved, filed, and tracked according to SSPP Section 22.
3. AFRC is in compliance with the GO-164D safety certification process for major projects.

FINDINGS AND RECOMMENDATIONS

Findings:

1. AFRC has not made any modifications in the last year to any of their equipment, facilities, or property.
2. Not applicable as there were no modifications made in the last year to the record.
3. AFRC has not proposed or created any new projects in the last year to warrant a safety certification plan or process.

Recommendations:

none

**2011 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR THE
ANGELS FLIGHT RAILWAY COMPANY**

Checklist	10	Hazardous Materials Program and Procurement	
Review Date	10/6/11	Department	Operations
Reviewers	Howard Huie	Persons Contacted	John Welborne

REFERENCE CRITERIA

1. CPUC General Order 164-D
2. Angels Flight Railway Company (AFRC) System Safety Program Plan (SSPP) Sections 25, 28

ELEMENT, CHARACTERISTICS, AND METHOD OF VERIFICATION

Hazardous Materials Program and Procurement

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

1. AFRC is in compliance with the AFRC hazardous materials program outlined in the SSPP Section 25.
2. AFRC is in compliance with SSPP Section 28 for the procurement of hazardous materials.

FINDINGS AND RECOMMENDATIONS

Findings:

1. All train operators and most maintenance personnel are not direct employees of AFRC. All contractors are trained via their company policies and procedures. Contractors bring all chemicals or tools that are needed to complete the job. Once the job has been completed, the contractor cleans up leaving nothing behind at AFRC.
2. All chemicals used at AFRC are purchased in small amounts. AFRC's chemicals are stored in a fire resistant cabinet, which conforms to NFPA 30 standards. AFRC's chemicals consists of various colors of exterior house paint (all one gallon and below), silicon caulk, all in one oil (spray cans under 32 fluid oz), and automotive break cleaner (all under 32 fluid oz). The chemical cabinet is in a well ventilated area next to a delivery door and within a few feet of air vents.

Recommendations:

none

**2011 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR THE
ANGELS FLIGHT RAILWAY COMPANY**

Checklist	11	Track Inspection	
Review Date	9/26/11	Department	Maintenance
Reviewers	John Madriaga	Persons Contacted	John Welborne, John Behnke

REFERENCE CRITERIA

1. CPUC General Order 164-D
2. Angels Flight Railway Company (AFRC) System Safety Program Plan (SSPP) Sections 17, 18
3. Weekly Inspection Logs "A" and "B"
4. Monthly, Quarterly, Bi-annual, and Annual Inspection Logs

ELEMENT, CHARACTERISTICS, AND METHOD OF VERIFICATION

Track inspection

Conduct the necessary interviews and physically inspect the AFRC track for any deficiencies. Review the inspection logs and determine the accuracy of the results with regard to AFRC track inspections.

FINDINGS AND RECOMMENDATIONS

Findings:

1. Vehicle wheel flanges are making contact with the pandrol clips on both north and south tracks.

Recommendations:

1. AFRC should determine the cause and possible effects of wheel flanges making contact with the pandrol clips.

**2011 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR THE
ANGELS FLIGHT RAILWAY COMPANY**

Checklist	12	Vehicle Inspection	
Review Date	9/26/11	Department	Maintenance
Reviewers	Michael Borer	Persons Contacted	John Welborne, John Benke

REFERENCE CRITERIA

1. CPUC General Order 164-D
2. Angels Flight Railway Company (AFRC) System Safety Program Plan (SSPP) Sections 17, 18
3. Weekly Inspection Logs "A" and "B"
4. Monthly, Quarterly, Bi-annual, and Annual Inspection Logs

ELEMENT, CHARACTERISTICS, AND METHOD OF VERIFICATION

Vehicle Inspection

Conduct the necessary interviews and physically inspect the AFRC Vehicles for any deficiencies. Review the inspection logs and determine the accuracy of the results with regard to AFRC vehicle maintenance.

FINDINGS AND RECOMMENDATIONS

Findings:

1. AFRC vehicles are in compliance of the reference criteria.

Recommendations:

none

**2011 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR THE
ANGELS FLIGHT RAILWAY COMPANY**

Checklist	13	Operational Observation	
Review Date	9/26/11	Department	Operations
Reviewers	Don Filippi	Persons Contacted	John Welborne

REFERENCE CRITERIA

1. CPUC General Order 164-D
2. Angels Flight Railway Company (AFRC) System Safety Program Plan (SSPP)
3. Operations and Maintenance Manual Chapter 2: AFRC Rules and Instructions
4. Operator's Daily Start-up Procedures

ELEMENT, CHARACTERISTICS, AND METHOD OF VERIFICATION

Operational Observation

1. Observe revenue service operations in normal duty to determine if AFRC is operated in accordance with the reference criteria.
2. Observe the operator conducting the daily start-up procedures to determine adherence

FINDINGS AND RECOMMENDATIONS

Findings:

1. AFRC operator adheres to procedures and rules.

Recommendations:

none

**2011 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR THE
ANGELS FLIGHT RAILWAY COMPANY**

Checklist	14	Corrective Action Plans and Safety Data Collection	
Review Date	10/6/11	Department	Operations
Reviewers	Noel Takahara	Persons Contacted	John Welborne

REFERENCE CRITERIA

1. CPUC General Order 164-D
2. Angels Flight Railway Company (AFRC) System Safety Program Plan (SSPP) Section 23

ELEMENT, CHARACTERISTICS, AND METHOD OF VERIFICATION

Corrective Action Plans and Safety Data Collection

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

1. AFRC is appropriately documenting and tracking corrective actions to completion.
2. There are any corrective actions that have not been completed.
3. A maintenance log is being administered according to SSPP Section 23.2 requirements.
4. Trends are being identified in the maintenance log and integrated accordingly into the hazard resolution process.
5. AFRC safety data collection will continue to investigate and confirm identified probable cause/s of excessive vehicle wheel wear.
6. AFRC has any further plans to utilize Parsons Brinkerhoff or other consultants for safety data collection.
7. AFRC has implemented any new processes of safety data collection, such as special investigations, since opening for revenue service.
8. AFRC has updated/revised the AFRC SSPP to reflect the new processes.

FINDINGS AND RECOMMENDATIONS

Findings:

1. AFRC occasionally performs non-routine inspections and maintenance activities for safety data collection purposes. This practice is not described in the SSPP. AFRC does not notify RTSS staff of these non-routine activities in time to allow for staff participation. Staff participation in these activities would improve communication of system safety issues.
2. AFRC tracks corrective action items to completion using several maintenance and operation logs.

3. AFRC inspects and measures wheel wear on a monthly basis.
4. AFRC utilizes consultants from Parsons Brinkerhoff for technical advice on wheel wear issues. AFRC utilizes consultants from LB Foster for technical advice on guardrail extensions. AFRC is seeking APTA vibration committee comments to improve ride quality.

Recommendations:

1. AFRC should update SSPP safety data collection to reflect actual practice and include language that would require AFRC to include CPUC in activities related to non-routine inspections and maintenance.