



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendations

Date: August 21, 2003

In reply refer to: R-03-14 and -15

Mr. Michael R. Peevey
President
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, California 94102

The National Transportation Safety Board is an independent Federal agency charged by Congress with investigating transportation accidents, determining their probable cause, and making recommendations to prevent similar accidents from occurring. We are providing the following information to urge your organization to take action on the safety recommendations in this letter. The Safety Board is vitally interested in these recommendations because they are designed to prevent accidents and save lives.

The recommendations are derived from the Safety Board's investigation of the collision of the two cars of the Angels Flight funicular railway in Los Angeles, California, on February 1, 2001, and are consistent with the evidence we found and the analysis we performed.¹ As a result of this investigation, the Safety Board has issued seven safety recommendations, two of which are addressed to the California Public Utilities Commission. Information supporting these recommendations is discussed below. The Safety Board would appreciate a response from you within 90 days addressing the actions you have taken or intend to take to implement our recommendations.

About 12:17 p.m. on February 1, 2001, the two cars of the Angels Flight funicular railway (Angels Flight) collided in downtown Los Angeles, California. The accident resulted in 7 injuries and 1 fatality among the 20 passengers aboard the two cars and injuries to a pedestrian. The Angels Flight Operating Company estimated monetary damage to the cars at \$370,000 with an additional \$1.2 million to replace the funicular haul system.

The National Transportation Safety Board determined that the probable cause of this accident was the Yantrak Company's (Lift Engineering's) improper design and construction of the Angels Flight funicular drive and the failure of the City of Los Angeles Community Redevelopment Agency, its contractors (Pueblo Contracting Services, Yantrak, and Harris and Associates), and the California Public Utilities Commission to ensure that the railway system conformed to initial safety design specifications and known funicular safety standards.

¹ For additional information, see National Transportation Safety Board, *Uncontrolled Movement, Collision, and Passenger Fatality on the Angels Flight Railway in Los Angeles, California, February 1, 2001*, Railroad Accident Report NTSB/RAR-03/03 (Washington, D.C.: NTSB, 2003).

Among other issues, the investigation considered the adequacy of the safety oversight of the Angels Flight reconstruction project. The Public Utilities Commission had responsibility for the safety of the design, construction, and eventual operation of Angels Flight. The Public Utilities Commission required that the Community Redevelopment Agency and its consultants perform safety hazards analyses on the Angels Flight project and indicate what actions were planned that would mitigate the danger to passengers and employees through design solutions or operating procedures. But the Public Utilities Commission did not require that track brakes, end gates, or an evacuation walkway be installed to address the safety hazards identified by the analyses. These inconsistent decisions suggest that the Public Utilities Commission policies and procedures were insufficient for ensuring the safety of Angels Flight.

The Public Utilities Commission granted limited authority for Angels Flight to operate for a 3-day dedication ceremony beginning February 23, 1996. The authorization letter acknowledged that there were “outstanding issues” related to safety at the time. Yet, Angels Flight opened for passenger service on February 26, 1996, without those safety issues (the lack of track brakes, end gates, and an evacuation walkway) being resolved. The Public Utilities Commission did not have an effective process in place to ensure that Angels Flight met all safety requirements before passenger operations were allowed to begin. The Safety Board therefore concluded that the Community Redevelopment Agency and the Public Utilities Commission failed to fulfill their safety oversight responsibilities for the Angels Flight reconstruction by allowing Angels Flight to begin passenger operations with unresolved safety issues.

The Safety Board is encouraged by the Public Utilities Commission’s new General Order 164-C involving safety certification. The circumstances surrounding this accident accentuate the need to make ongoing safety assessments from the outset of a project. Under rules existing at the time of the accident, an agency or organization could potentially operate for 3 years before the first safety inspection.

California has no standards or regulations for the design, construction, and operation of funiculars. Although funicular standards of another State were available, the Public Utilities Commission did not require that the Angels Flight Railway be reconstructed and operated in accordance with them. Without established regulations, the Public Utilities Commission had no clear standards to use to evaluate the safety of the Angels Flight funicular project.

The National Transportation Safety Board makes the following safety recommendations to the California Public Utilities Commission:

Adopt comprehensive funicular design, construction, and operation regulations that include provisions for (1) emergency stopping under all foreseeable failure modes, (2) containment of passengers in the event of a collision, and (3) emergency ingress and egress for passengers and emergency responders.
(R-03-14)

Before certifying Angels Flight to restart passenger service, independently verify that the drive system meets accepted industry standards and engineering practices and the funicular includes provisions for (1) emergency stopping under all foreseeable failure modes, including track brakes or some other independent backup system on the cars to prevent a runaway car if a failure occurs in the cable or its associated braking systems; (2) containment of passengers in the event of a collision; and (3) emergency egress and ingress for passengers and emergency responders. (R-03-15)

The Safety Board also issued safety recommendations to the City of Los Angeles Community Redevelopment Agency and the American National Standards Institute. In your response to the recommendations in this letter, please refer to Safety Recommendations R-03-14 and -15. If you need additional information, you may call (202) 314-6177.

Chairman ENGLEMAN, Vice Chairman ROSENKER, and Members GOGLIA, CARMODY, and HEALING concurred in these recommendations.

By: Ellen G. Engleman
Chairman