

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: August 22, 1978

Forwarded to:

Honorable Langhorne M. Bond
Administrator
Federal Aviation Administration
Washington, D.C. 20591

SAFETY RECOMMENDATION(S)

A-78-56 through 58

On November 6, 1977, a Semco Model T hot air balloon was involved in an accident near Mosquero, New Mexico. The National Transportation Safety Board's investigation of the accident disclosed an unsafe design characteristic associated with the gondola which should be corrected.

After a routine flight, the balloon made a normal landing approach. The landing was made in a southwesterly surface wind of 5 to 15 knots. When the balloon bounced during the landing, the gondola was turned on its side and was dragged 30 feet by the wind. When the gondola turned over, the pilot's right foot slipped off the gondola deck and was trapped between the edge of the deck and the ground. As a result, the pilot's ankle was fractured.

A similar accident occurred on January 24, 1976, near Death Valley, California, involving another Semco balloon, the Challenger AX-7. This accident resulted from an encounter with high winds and turbulence just before landing. When the pilot executed an emergency rip landing in rough terrain, the gondola turned on its side immediately after hitting the ground. The pilot's legs slipped off the deck and became trapped between the deck and the ground. The high winds dragged the gondola for 300 yards. The pilot suffered multiple compound fractures of both legs.

The gondolas on the Semco Model T and the AX-7 balloons are similar in design and construction. They have a plywood deck with tubular aluminum corner posts, rails, and diagonal supports. The gondola is enclosed by a one-piece canvas "dodger" which surrounds the structure. The dodger, when properly installed, is woven between the diagonal supports and the corner posts and the ends laced together securely. However, the dodger extends only to within 2 to 4 inches of the deck; this space between the dodger and the gondola deck allows the feet of occupants to slip through and become trapped. Furthermore, the condition of the canvas dodgers is affected by usage, age, and exposure to adverse weather conditions which can cause the canvas to stretch and work loose, thereby increasing the accident potential of this installation.

Evidence indicates that the canvas dodger in the Semco Model T accident in Mosquero, New Mexico, was improperly installed on the gondola frame. The pilot, who also owned the balloon, had removed the dodger for cleaning and had replaced it improperly. The Safety Board's review of the maintenance manual for this balloon disclosed that it did not contain instructions on the proper installation or the maintenance of the dodger.

The applicable standards governing balloons are contained in 14 CFR 31. Although these standards relate to the airworthiness of balloons, little is required in the way of maintenance information. In fact, a manufacturer's maintenance manual is not required by this Part. The Safety Board is aware of the proposed changes to 14 CFR 31 which are contained in Notice of Proposed Rule Making (NPRM) 75-31, Notice No. 8, issued on July 11, 1975. This NPRM proposes to require manufacturers to provide the necessary service, maintenance, and repair information for manned free balloons. Even though these maintenance information requirements might have provided sufficient information for the Model T owner to install the canvas dodger correctly, had they been adopted expeditiously by FAA, this design still most probably would have provided a potential hazard to the pilot.

The Safety Board has learned of corrective measures taken by one Semco Model T owner to eliminate the hazardous gap in the gondola by lashing a nylon dodger to the deck proper. This simple alteration was submitted to and approved by the FAA's Southwest Regional Office on a Major Repair and Alteration Form 337. The Board understands also that this Regional Office has been in contact with Semco Balloon, Inc., concerning their gondola design.

Ballooning is a rapidly growing sport in the United States. There were only 158 certificated hot air balloons in 1973; as of December 1976, there were 824 certificated balloons -- more than a five-fold increase. The Board's accident data indicate that in the past 4 years, 11 balloon accidents have resulted in 1 fatality and 17 injuries.

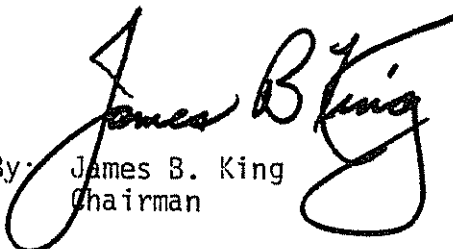
In view of the above, the National Transportation Safety Board recommends that the Federal Aviation Administration:

Issue an Airworthiness Directive to require means for securing the canvas dodger to the deck or require other means for eliminating the existing gap between the dodger and the deck on Semco Model T and Challenger AX-7 balloons. (Class II - Priority Action) (A-78-56).

Amend 14 CFR 31.59 to require that baskets, gondolas, or other enclosures for occupants of manned free balloons be designed to prevent lower extremities from protruding from the provided enclosure when the enclosure is subjected to the test conditions outlined in 14 CFR 31.27(c). (Class II - Priority Action) (A-78-57).

Expedite the adoption of the 14 CFR 31 rule changes contained in NPRM 75-31, specifically in regard to the requirements for a Manual of Instructions for Continued Airworthiness which is proposed in Appendix A of these rule changes. (Class II - Priority Action)(A-78-58).

KING, Chairman, McADAMS, HOGUE and DRIVER, Members, concurred in the above recommendations.


By: James B. King
Chairman