

NATIONAL TRANSPORTATION SAFETY BOARD  
WASHINGTON, D.C.

ISSUED: May 1, 1979

Forwarded to:

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

SAFETY RECOMMENDATION(S)

A-79-16 through -20

On March 1, 1978, a Continental Airlines DC-10 overran the departure end of runway 6R at the Los Angeles International Airport and caught fire following a rejected takeoff. Flames, radiant heat, and a girt fabric overload failure eventually resulted in total failure of all the passenger evacuation systems. Thus, to escape from the burning aircraft, about 40 of the 200 occupants were forced to jump to the ground while another 15 persons used the escape rope at the first officer's sliding window. Two passengers died and 31 persons were seriously injured during the evacuation.

Because of the seriousness of these failures, the National Transportation Safety Board arranged with the National Aviation Facilities Experimental Center of the Federal Aviation Administration (FAA) to examine the effects of fire and thermal radiation on evacuation slide fabrics and to determine the effectiveness of reflective and ablative coatings on slide materials. As a result of these promising cursory examinations, the FAA's Flight Standards Service on October 20, 1978, requested that the Systems Research and Development Service conduct a more detailed research project on the thermal vulnerability of currently used evacuation slides and identify new and compatible slide fabrics. The Safety Board is encouraged by FAA's initiative in this area, and it urges immediate funding of this project so that early regulatory changes can be made.

The Safety Board's investigation of the failure of girt fabric on one of the slide/raft units in this accident revealed that a reduced slide/raft angle, caused by the failure of the left main landing gear, resulted in an unusual and asymmetric distribution of passengers on the slide/raft which overloaded the girt fabric.

The failed slide involved a PICO 26-foot slide/raft. Its girt width was about 3½ feet wide, while the slide, including the raft extensions (sponsons), was about 14½ feet wide. Because of its shallow angle, passengers were unable to escape from the bottom of the slide as fast as others entered from the aircraft. Consequently, passengers attempted to climb across one of the sponsons to escape from the slide. Because of the additional width of the slide created by the sponsons, an unusually high torsional moment caused uneven tensile loads on the girt fabric and it tore at the girt bar.

The slide/rafts utilized on this aircraft were developed in the late 1960's under guidelines issued by the FAA in "Commentary on Slide/Raft Devices." This letter defined FAA's thoughts on the minimum standards for the certification of these devices in the absence of a Technical Standard Order (TSO). In addition, the requirements of the existing TSO's for evacuation slides and liferafts were imposed (TSO-C69, TSO-C12, and TSO-C70).

The Safety Board has learned that, during the slide/raft development, conflicts arose between the requirements imposed by the commentary letter and those of TSO-C69, particularly with respect to dual-lane devices, strength requirements, and critical angle testing. These conflicts were resolved by doubling the strength requirements of TSO-C69; however, critical angle tests were never required. The Safety Board believes that this action was inappropriate, because TSO-C69 does not address dual-lane devices nor does it address the higher load factors and torsional moments associated with these evacuation slides. The Safety Board believes that the absence of adequate critical angle test guidance in a TSO and the adoption of arbitrary strength requirements contributed to the girt failure of the slide/raft unit.

Finally, to prevent a similar accident with more disastrous consequences, the Board believes that a secondary means of escape should be provided at the exits of aircraft currently requiring emergency escape slides. We believe that installation of ropes would be a suitable method to provide the additional safeguard.

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

Fund and give highest priority to an evacuation slide fabric test project with a view toward developing and certifying fire-resistant materials for these devices. (Class II - Priority Action) (A-79-16)

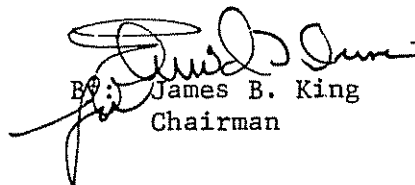
Issue an Airworthiness Directive requiring the strengthening of the girt fabric of the PICO 26-foot slide/raft to insure its reliability when the unit is deployed at its most critical angle. (Class II - Priority Action)(A-79-17)

Amend Technical Standard Order C69 to address requirements for dual-lane evacuation slides and to require critical angle performance testing for these devices. (Class II - Priority Action) (A-79-18)

Issue a Technical Standard Order for slide/raft devices. (Class II - Priority Action)(A-79-19)

Amend 14 CFR 25.809 to require a secondary means of escape at all floor-level cabin exits currently requiring emergency escape slides. These secondary escape means could be ropes or other means demonstrated to be suitable for evacuation purposes. (Class II - Priority Action)(A-79-20)

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

  
By: James B. King  
Chairman