

NATIONAL TRANSPORTATION SAFETY BOARD  
WASHINGTON, D.C.

ISSUED: April 20, 1977

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Forwarded to:

Honorable Quentin S. Taylor  
Acting Administrator  
Federal Aviation Administration  
Washington, D.C. 20591

SAFETY RECOMMENDATION(S)

A-77-16 and 17

On November 16, 1976, Texas International Airlines Flight 987, a McDonnell Douglas DC-9-14, ran off the end of runway 8R during an aborted takeoff at Stapleton International Airport, Denver, Colorado. The aircraft's structure was damaged when the left landing gear collapsed. Structural damage to the left wing caused fuel to leak and feed the fire that erupted on the left side of the fuselage.

The National Transportation Safety Board's investigation of the crash revealed that most of the damage to the aircraft was caused by (1) two ditches -- one 18 inches deep and the other 3 feet deep -- which traversed an area within 1,000 feet of the end of the runway; and (2) the nonfrangible steel structures supporting the approach light system (ALS). The aircraft sustained the most damage within the first 1,000 feet beyond the departure end of runway 8R. The Safety Board believes that, had this area been free of ditches and had the ALS structures been constructed of frangible materials, the aircraft would have sustained significantly less structural damage. Furthermore, the likelihood of fire would have been greatly reduced.

The FAA has recognized the value of an extended runway safety area at airports served by air carriers for several years. However, the criteria are mandatory only at certificated airports which have been constructed recently. We believe that the extended runway safety area increases the level of safety for an aircraft which undershoots or overruns the runway, and we believe that the criteria for the extended runway safety area should be mandatory at all certificated airports, regardless of the date of construction. When the geography of an airport or the availability of airport property will not allow the full 1,000-foot area, the extended runway safety area should be as close to the criteria as possible. At Stapleton International Airport, the land is available for a 1,000-foot safety area, but the safety area has not been established as recommended in AC 150/5335-4.


Examination of the wreckage revealed that pieces of the ALS structures severed the left outer wingtip. The concrete support structures had been pulled out of the ground. In contrast, the first ALS structure, which had frangible fittings, broke off at the base and caused virtually no damage to the aircraft. During the Eastern Airlines B-727 accident at John F. Kennedy International Airport, June 1975, nonfrangible ALS structures also compounded the severity of the aircraft damage. The Safety Board is aware that the FAA has a retrofit program for the installation of frangible ALS structures. The Safety Board believes this to be a very significant program, which has the potential to provide an important safety advantage at those airports where it has been implemented. Accordingly, the Safety Board believes that the retrofit program should be given a priority to assure that it can be completed in 3 to 5 years.

Therefore, the National Transportation Safety Board recommends that the Federal Aviation Administration:

Amend 14 CFR 139.45 to require, after a reasonable date, that extended runway safety area criteria be applied retroactively to all certificated airports. At those airports which cannot meet the full criteria, the extended runway safety area should be as close to the full 1,000-foot length as possible.  
(Class III, Longer Term Followup) (A-77-16)

Expedite the retrofit of ALS structures with frangible materials and fittings by allocating additional fundings or by increasing the priority of the existing program so that it can be completed within 3 to 5 years.  
(Class II, Priority Followup) (A-77-17)

TODD, Chairman, BAILEY, Vice Chairman, McADAMS, HOGUE, and HALEY, Members, concurred in the above recommendations.



By: Webster B. Todd, Jr.  
Chairman