

ADOPTED: 3/5/90

Log# 2184



# National Transportation Safety Board

Washington, D.C. 20594

## Safety Recommendation

**Date:** March 13, 1990

**In reply refer to:** A-90-22 through -24

Mr. J. Nichols  
Executive Vice President and  
Chief Operating Officer  
Trans World Airlines, Inc.  
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On August 25, 1989, at about 1137 local time, Trans World Airlines, Inc. (TWA), flight 880, a Boeing 727-231, N52309, struck a 30-inch-high power control box while rotating for takeoff from runway 19 at the New Orleans International Airport, Kenner, Louisiana. The power control box was located on the paved safety area, approximately 240 feet beyond the end of runway 19. Also, broken branches from a 30-foot pine tree, located about 1,300 feet beyond the departure end of runway 19, are believed to have been the result of either the jet blast from, or impact with, the B-727. After the incident the scupper from the left main landing gear of N52309 was found near the power control box. None of the 149 persons on board was injured. At the time of the incident, visual meteorological conditions prevailed, with the wind reported from 050° at 4 knots.

Although the investigation is continuing, preliminary evidence indicates that the incident resulted from the flightcrew's use of takeoff data for runway 10, which is printed on the opposite side of the takeoff performance data sheet, rather than for runway 19, the assigned runway for takeoff. The flightcrew's use of the shorter runway, runway 19, with takeoff data for runway 10 resulted in a situation in which the airplane was about 6,800 pounds over the runway limit weight. Also, the flaps were positioned at 15° instead of the 25° needed for a shorter runway. As a result of its preliminary investigation, the Safety Board believes that Trans World Airlines, Inc., should take immediate action to preclude the possibility of a similar occurrence in the future.

Safety Board investigators have reviewed the Trans World Airlines B-727 Flight Handbook, "Normal Procedures" section. TWA's current operating procedures do not assign the takeoff data computations to a specific member of the flightcrew, nor is there a provision for a cross-check of the computations by a different crewmember. Experience from past accident investigations has indicated

that duties of the flightcrew, especially duties involving critical functions, should be assigned to a specific member of the flightcrew with provisions for cross-checking by another crewmember. The absence of specific duty assignments increases the possibility of poor crew coordination. Therefore, the Safety Board believes that Trans World Airlines should assign the takeoff data computations to a specific member of the flightcrew and should require a cross-check of those computations by a different crewmember.

Furthermore, no requirement or provision presently exists in the Trans World Airline procedures for verifying that the departure runway is the one for which the takeoff data was prepared. The Safety Board believes that verbal verification should be required on the B-727 taxi checklist, probably under the item "T/O DATA, EPR & A/S BUGS." In the TWA flight 880 incident, both the captain and the first officer stated that they were fully aware that runway 19 was the departure runway. However, had there been a requirement for a flightcrew member to verbalize the runway on which the takeoff data is based, the incident could likely have been averted. The Safety Board is aware that some major air carriers do require verbalization of the departure runway for which the takeoff data is computed.

The Safety Board's investigation indicates that this incident involved a breakdown in flightcrew coordination, and as a result sought to determine measures that would eliminate or limit the possibility of future occurrences. The Safety Board believes that the possibility of flightcrew error would be limited by improvements of the takeoff performance data sheets used by Trans World Airlines. These improvements should address factors pertinent to the flight 880 incident as well as other factors such as type size, flap settings, and format (sheet vs. flip cards). While the Safety Board does not wish to specify how the information on the takeoff performance data sheets should be presented, it believes that Trans World Airlines should consider the following areas:

(1) A review of the takeoff data for runway 19 at New Orleans International indicates that flight 880's runway limit weight, at 87 °F and 25° flaps, would have been approximately 161,800 pounds; the airplane's actual gross takeoff weight was 168,600 pounds. Not only did flight 880 depart runway 19 at a higher-than-authorized takeoff weight, but 15° flaps were used for takeoff instead of the mandatory 25° flaps. The Safety Board is aware that the majority of B-727 takeoffs on TWA's route structure require 15° takeoff flaps. For those few runways on which 5° or 25° takeoff flaps are used, the Safety Board believes that flightcrew awareness would be greater if the takeoff data sheet for 5° and 25° flap settings was "color-coded" to a color other than white, which is presently used for all takeoff data sheets.

(2) On current takeoff data sheets, the V-speeds are the same type size as aircraft weights and ambient temperatures, and thus could easily be misread due to small letter type size. "Flip cards," such as those used for TWA's DC-9 fleet, or a similar presentation, which provide the data in a larger, more readable format, would provide more visual enhancement than the current takeoff data sheets.

Therefore, the National Transportation Safety Board recommends that Trans World Airlines, Inc.:

Amend the "Normal Procedures" section of the B-727 Flight Handbook to require (1) designation of a member of the flightcrew to be responsible for takeoff data computations, and (2) designation of a different member of the flightcrew to be responsible for verification of those computations. (Class II, Priority Action)(A-90-22)

Amend the B-727 taxi checklist, item "T/O DATA, EPR & A/S BUGS," to include a requirement to verbalize the departure runway for which the takeoff data are computed. (Class II, Priority Action)(A-90-23)

Examine methods to improve presentation of information on the B-727 takeoff data sheets to reduce the possibility of misinterpretation. (Class II, Priority Action)(A-90-24)

KOLSTAD, Chairman, COUGHLIN, Acting Vice Chairman, LAUBER and BURNETT, Members, concurred in these recommendations.

  
By: James L. Kolstad  
Chairman