

Log 2615



# National Transportation Safety Board

Washington, D.C. 20594  
Safety Recommendation

Date: November 15, 1996  
In reply refer to: A-96-141

Honorable Linda Hall Daschle  
Acting Administrator  
Federal Aviation Administration  
Washington, D.C. 20591

On October 2, 1996, at 0116 local time, a Boeing 757-200 (B-757), N52AW, operated by Aeroperu, crashed into the Pacific Ocean, about 30 miles off the coast of Lima, Peru. This was a scheduled passenger flight from Lima to Santiago, Chile. The flightcrew declared an emergency immediately after takeoff because of erroneous airspeed and altitude indications and was attempting to return to Lima when the accident occurred. All 70 people on board were killed, and the airplane was destroyed. The National Transportation Safety Board is participating in the investigation, which is being conducted by Peru's Director General of Air Transportation, under the provisions of Annex 13 to the Convention on International Civil Aviation.

Although the investigation is continuing, the Safety Board has identified a safety issue that it believes the Federal Aviation Administration (FAA) should address immediately.

Data from the cockpit voice recorder (CVR) and flight data recorder (FDR) revealed that the airspeed and altitude readings were normal during the takeoff roll. However, as the airplane began to climb, the flightcrew noticed that the airspeed indications were too low and that the altitude indications were not increasing properly. Shortly after takeoff, the windshear warning activated, despite calm wind conditions and no significant weather activity. The flightcrew declared an emergency and expressed confusion about the airplane's airspeed and altitude displays. Analysis of FDR data indicates that the airplane subsequently climbed to a maximum altitude of approximately 13,000 feet. When the airplane descended, the captain's altitude and airspeed displays were still erroneous -- indicating higher than actual conditions. During the descent, the first officer's indicated airspeed slowed to the point of stall warning stick shaker activation; however, the captain's airspeed indicator read over 350 knots, and the overspeed warning was sounding. Flightcrew confusion about airspeed and altitude was evident as the airplane continued its final descent. At impact into the Pacific Ocean, the captain's flight instruments were reading approximately 9,500 feet and 450 knots.

There are three sets of airspeed and altitude indicators in the B757: the captain's, the first officer's, and the standby. The indicators for the captain and first officer have separate air data computers that receive inputs from separate pitot probes and flush-mounted static ports located

on both sides of the fuselage. The standby airspeed indicator is pneumatically operated directly from an independent pitot probe and dual static ports. The indication of airspeed is based on the difference between dynamic air pressure measured by the pitot probes and static air pressure measured at the static ports, and altitude is determined by static pressure only, which will decrease as the airplane climbs.

A blockage of the flush-mounted static ports can cause erroneous airspeed and altitude indications. A partial blockage (such as that caused by paper or tape) will create a lag in airspeed and altitude indications that will cause the readings to be too low while climbing and too high while descending (depending on the amount of leakage through the blockage). The erroneous indications recorded by the FDR are consistent with a partial blockage of the static ports.

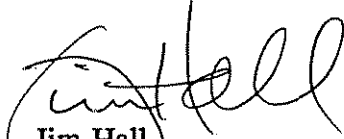
N52AW was polished immediately before its return to service for the accident flight. Section 12-25-01 of the Boeing 757 Maintenance Manual contains the instruction for cleaning and polishing the airplane. When preparing the airplane for cleaning and polishing, maintenance personnel are instructed to prepare the airplane by taping moisture-resistant paper over the static ports to prevent the entry of any contaminant. Interviews with Aeroperu maintenance personnel revealed that while the airplane was on the ground in Lima, masking tape had been applied to the static ports before the airplane was cleaned and polished. Recovery of a portion of the airplane's wreckage revealed that the three static ports on the left side of the fuselage remained obstructed by masking tape. While the investigation continues, the circumstances of this accident raise concerns about the practice of applying tape inconspicuously to static ports, and the potential for catastrophic results if the tape is not removed.

The Safety Board learned that some manufacturers, such as McDonnell Douglas and Airbus Industrie, have designed protective covers for operators to place over static ports while cleaning and polishing their airplanes. These covers are brightly colored and have warning flags attached to ensure that they are seen and removed before flight. The Safety Board is also aware of at least one U.S. airline that has developed a procedure to attach a colored streamer to the tape used to cover static ports during maintenance procedures. The use of adhesive tape coverings alone does not attract adequate attention to ensure that the coverings are removed before flight. Thus, they could easily be overlooked. The Safety Board believes that the FAA should take immediate action to review and amend, as necessary, all airplane maintenance manuals to require operators to use only standardized, highly conspicuous covers with warning flags attached in any situation in which static ports would need to be covered.

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

Immediately review and amend, as necessary, all airplane maintenance manuals to require operators to use only standardized, highly conspicuous covers with warning flags attached in any situation in which static ports would need to be covered. (Urgent) (A-96-141)

Chairman HALL, Vice Chairman FRANCIS, and Members HAMMERSCHMIDT, GOGLIA and BLACK concurred in this recommendation.

By:   
Jim Hall  
Chairman

---

---