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National Transportation Safety Board

Washington, D.C. 20594
Safety Recommendation

Date: April 23, 1997

In reply refer to: A-97-28

Mr. Barry L. Valentine
Acting Administrator
Federal Aviation Administration
Washington, D.C. 20591

On February 21, 1997, at approximately 1400 eastern standard time, a deHavilland DHC-8 (Dash 8), N923HA, operated by Piedmont Airlines as flight 3241, experienced a flight control malfunction while on approach to Pittsburgh International Airport in Pittsburgh, Pennsylvania. Just before touchdown, there was an uncommanded disconnect of the roll system. The captain was able to continue the approach and land the airplane safely. No injuries were reported, and the airplane was not damaged. Flight 3241 was being conducted under the provisions of Title 14 Code of Federal Regulations (CFR) Part 121 as a domestic, scheduled passenger service flight from Charlottesville, Virginia, to Pittsburgh.

The Dash 8 is equipped with interconnected dual control wheels that provide roll axis control through the use of ailerons and flight spoilers. If either the ailerons or roll spoiler cables jam, the roll system can be manually disconnected through the use of the roll disconnect handle in the cockpit. The handle is connected by a spring-loaded cable and pulley system to a clutch mechanism. Pulling the handle disengages the clutch mechanism, which allows the control wheels to be disconnected from one another. In this disconnected condition, the left side control wheel retains control of only the roll spoilers, and the right side control wheel controls only the ailerons. Under normal flight conditions, sufficient roll authority is retained so that pilots can exercise adequate roll control from either control wheel following a roll system disconnect. However, under abnormal circumstances, such as the loss of power from one engine, or high crosswinds during landing approach, the roll control available to one pilot may not be adequate.

As flight 3241 was on final approach to runway 28L, the crew reported that the wind was from a heading of 190°, gusting to 25 knots. The captain, who was the flying pilot, stated that turbulence required frequent reversals of roll control inputs. Just before touchdown, the captain noticed that the first officer's control wheel was not moving in tandem with his control wheel, indicating that a roll disconnect had occurred. However, the roll disconnect handle had not moved. Flight recorder data confirmed that a disconnect had occurred. The crew reported that this resulted in a "firm" landing with some side-load. The captain stated that he was not able to maintain runway centerline during rollout until the ailerons were turned into the wind by use of the first officer's control wheel.

According to deHavilland, there have been three previous incidents in which the roll system disconnected on other Dash 8 airplanes while flying in turbulence. These disconnects occurred when turbulence caused the spring-loaded disconnect handle cable to disconnect the clutch mechanism without the roll disconnect handle moving. To reduce the possibility of additional occurrences, deHavilland issued Service Bulletin (SB) 8-27-79, "Subject: Flight Controls - Roll Disconnect System - Relocation of Lever Return Spring - Modification 8/2376," on August 9, 1996. The modification described in this SB, which requires only 2 man-hours to accomplish and requires no new parts, increases the force required to separate the roll disconnect clutch mechanism to prevent disconnect without pulling the roll disconnect handle. Although deHavilland strongly recommended that operators perform this modification at their earliest convenience, the investigation revealed that the modification had not been performed on N923HA. Following this incident, the operator performed the modification on this airplane and has begun to incorporate the modification on the rest of its fleet.

While none of the occurrences to date have resulted in damage or injuries, the Safety Board is concerned that uncommanded disconnects of the roll system, particularly during approaches in turbulent conditions, could pose a hazard and that steps should be taken to prevent repeat occurrences. Therefore, the Safety Board believes that the Federal Aviation Administration should issue an airworthiness directive to make compliance with deHavilland Dash 8 SB 8-27-79 mandatory to reduce the possibility of uncommanded roll system disconnects.

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

Issue an airworthiness directive to make compliance with deHavilland Dash 8 Service Bulletin 8-27-79 mandatory to reduce the possibility of uncommanded roll system disconnects. (A-97-28)

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

By:


Jim Hall
Chairman