



National Transportation Safety Board

Washington, D.C. 20594
Safety Recommendation

Log 2124

Date: JUN 28 1989

In reply refer to: A-89-50

Mr. Robert E. Whittington
Acting Administrator
Federal Aviation Administration
Washington, D.C. 20591

On January 11, 1989, the flightcrew of Continental Express flight 2276, a de Havilland DHC-7 (Dash 7), N926RM, felt the airplane list to the right during the landing roll at Gunnison, Colorado. The landing gear indicator lights indicated that the landing gear was down and locked. The flightcrew completed the landing roll, taxied to the gate, and disembarked the passengers with engines No. 3 and No. 4 running to maintain hydraulic system pressure to the landing gear. After leaving the airplane, the captain joined maintenance personnel to inspect the right main landing gear. The gear was found partially retracted, which allowed the bottom of the aft fuselage to contact the ground during the landing roll and taxi portions of the flight.

Further inspection of the airplane by the maintenance personnel revealed that the upper lock strut assembly had separated in the area of the boss for the spring-loaded cable attachment. The separation allowed the drag strut to move beyond its normal gear-down position until the gear strut jammed against the upper drag strut, which prevented the complete collapse of the gear. The Safety Board is continuing its investigation of the incident; investigators have determined that the failed upper lock strut assembly was part No. 15707-3.

A similar instance of partial retraction of the main landing gear occurred in 1980. As a result, de Havilland issued service bulletin 7-32-21, which directed installation of modification No. 7/1838. The modification introduced a lock strut actuator with improved dampening to lower the dynamic load on the lock strut assembly; the modification also replaced the original upper lock strut assembly with an improved part, No. 15707-5. The service bulletin also recommended repetitive inspections of the struts until the improved parts of modification No. 7/1838 were installed; the inspections were to detect cracks in the upper lock strut. The Federal Aviation Administration mandated compliance with the service bulletin by Airworthiness Directive (AD) 80-17-13, effective August 21, 1980.

The airplane involved in the incident had completed modification No. 7/1838 on May 20, 1980. After the incident, the operator--Rocky Mountain Airways--inspected the remainder of its Dash 7 fleet and found one other upper lock strut with part No. 15707-3. The part was replaced with the correct one, part No. 15707-5, and the airplane was returned to service.

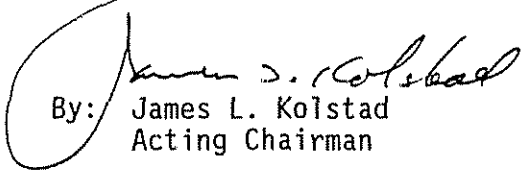
During its investigation, the Safety Board learned that strut assemblies manufactured in the original configuration but not delivered by the vendor were reworked by shot peening and then reidentified as improved struts by changing the part from 15707-3 to 15707-5. Some upper lock struts, however, were inadvertently shot peened for only half of the part's length and were not reidentified. These improperly reworked parts were included in some modification kits that were supplied to the operators of Dash 7 airplanes. The number of improperly reworked parts introduced to the fleet is not known.

Following the incident in Gunnison, de Havilland issued alert service bulletin A7-32-93, on January 30, 1989. The bulletin recommended a one-time inspection of the upper locks to ensure that the installed struts bore the correct part number. The bulletin also recommended that if part No. 15707-3 was found, the operator either replace the strut with a properly configured part or initiate a repetitive inspection of the strut until the replacement part was installed. The Safety Board believes that, because the number of improperly reworked lock struts is not known, an inspection and replacement program similar to that outlined in de Havilland alert service bulletin A7-32-93 should be mandated to remove these parts from service.

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

Issue an airworthiness directive requiring inspection of the main landing gear upper lock struts on all de Havilland DHC-7 airplanes to determine if the properly configured part is installed. If upper lock struts with part No. 15707-3 are found, operators should institute a repetitive inspection for cracks in the area of the spring-loaded cable attachment boss until a properly configured lock strut is installed. (Class II, Priority Action) (A-89-50)

KOLSTAD, Acting Chairman, and BURNETT, LAUBER, NALL, and DICKINSON, Members, concurred in this recommendation.


By: James L. Kolstad
Acting Chairman