

SP-20  
Log 1613

**NATIONAL TRANSPORTATION SAFETY BOARD**  
**WASHINGTON, D.C.**

ISSUED: September 12, 1983

Forwarded to:

Honorable J. Lynn Helms  
Administrator  
Federal Aviation Administration  
Washington, D.C. 20591

SAFETY RECOMMENDATION(S)

A-83-63

About 0910 mountain standard time on January 3, 1983, N805C, a Canadair Challenger CL-600, owned and operated by the A.E. Staley Manufacturing Company, Inc., Decatur, Illinois, crashed into a mountain about 2.2 nmi north of the Friedman Memorial Airport, Hailey, Idaho. At the time, the airplane was proceeding to land at the airport.

Shortly before the accident, N805C had completed an instrument flight rules (IFR) flight from Decatur to a position over the Sun Valley Airport and had descended in visual flight rules (VFR) flight conditions. The weather at the airport was overcast, ceilings were reported to have been between 800 and 1,500 feet above the airport, and the visibility was reported to have been 10 miles. The base of the clouds was below the tops of the surrounding mountains, and the visibility was less to the north of the airport.

N805C missed the airport, flew to the north over the town of Hailey, and into an area of lowering ceilings and worsening visibility. After passing the airport, the pilot apparently initiated a climb to clear the mountains but was not successful. The airplane was destroyed during the crash, and the pilot and copilot, the only persons on board, were killed.

The Safety Board has determined that the probable cause of the accident was the flightcrew's failure to adhere to the recommended visual arrival procedures for the Sun Valley Airport, and their failure to execute timely terrain avoidance actions. The reasons for the flightcrew's failures could not be established conclusively.

At the time of the accident, N805C had accumulated only 203 hours since new. Although not found as a factor in this accident, hydraulic fluid samples taken from the airplane's hydraulic reservoirs, pump case drain filters, return manifold filters, pressure manifold filters, and control systems hydraulic actuators indicated that the hydraulic fluid was highly contaminated. The particle count contamination levels for all three hydraulic systems were Class 11 according to standards defined in National Aerospace Standard No. 1638. This particle count level was 32 times greater than the maximum level for delivery and 4 times greater than the maximum level for extended service use. The major contaminant was rubber particles; however, Teflon and paint particles also were found. Typical magnetic and non-magnetic metal particles were also present but in small amounts. The low time on the accident airplane raises specific questions and concerns about hydraulic fluid contamination for all CL-600 airplanes. The concern is compounded by the fact that a CL-600 airplane, which crashed in 1980 during FAA certification tests, also had highly contaminated hydraulic fluid in the number three system.

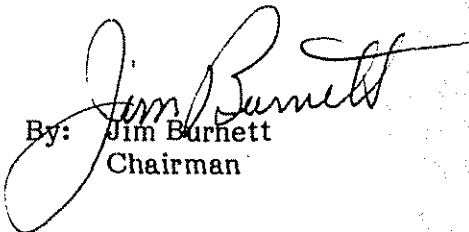
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Any form of solid contaminants, including rubber and Teflon, can clog actuator orifices and can cause an actuator to malfunction. The Safety Board believes that the hydraulic systems of CL-600 airplanes may have abnormally high contamination levels of rubber which may be going undetected. Therefore, the Safety Board believes that hydraulic fluid samples should be taken from a representative number of CL-600 airplanes and tested for rubber, Teflon, and paint contamination. Correlation between airplanes with low and high flight hours should be established and appropriate corrective action should be taken.

As a result of its investigation, the National Transportation Safety Board recommends that the Federal Aviation Administration:

In conjunction with the appropriate Canadian authorities, conduct a survey of Canadair CL-600 airplanes to determine whether the hydraulic systems of the airplanes characteristically develop high levels of rubber/Teflon particle contamination; if unacceptable levels of contamination are found, determine and correct the cause of the contamination, and require the necessary improvements in the hydraulic filtration systems to prevent contaminants from entering vital components, such as flight control actuators. (Class II, Priority Action) (A-83-63)

BURNETT, Chairman, GOLDMAN, Vice Chairman, and McADAMS, BURSLEY, and ENGEN, Members, concurred in this recommendation.

  
By: Jim Burnett  
Chairman