National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: MAY 17 2006

In reply refer to: A-06-41

Honorable Merlin Preusse
Director General Civil Aviation
Transport Canada
330 Sparks Street
Place de Ville, Tower C
Ottawa, Ontario
Canada
K1A 0N5

On August 13, 2004, about 0049 eastern daylight time, Air Tahoma, Inc., flight 185, a Convair 580, N586P, crashed about 1 mile south of Cincinnati/Northern Kentucky International Airport, Covington, Kentucky, while on approach to runway 36R. The first officer was killed, and the captain received minor injuries. The airplane was destroyed by impact forces. The flight was operating under the provisions of 14 *Code of Federal Regulations* Part 121 as a cargo flight for DHL Express[1] from Memphis International Airport, Memphis, Tennessee, to Covington. Visual meteorological conditions prevailed for the flight, which operated on an instrument flight rules flight plan.[2]

The National Transportation Safety Board determined that the probable cause of this accident was fuel starvation resulting from the captain's decision not to follow approved fuel crossfeed procedures. Contributing to the accident were the captain's inadequate preflight planning, his subsequent distraction during the flight, and his late initiation of the in-range checklist. Further contributing to the accident was the flight crew's failure to monitor the fuel gauges and to recognize that the airplane's changing handling characteristics were caused by a fuel imbalance.

[1] Under a lease agreement, Air Tahoma supplied flight crews and airplanes to DHL to carry freight between several cities on a scheduled basis.

[2] For more information, see *Crash During Approach to Landing, Air Tahoma, Inc., Flight 185, Convair 580, N586P, Covington, Kentucky, August 13, 2004*, Aircraft Accident Report NTSB/AAR-06/03 (Washington, DC: NTSB, 2006).

Differential Fuel Boost Pump Output Pressure Settings

Prop-Jet Convair Bulletin (PJCB) 10-21, "Aircraft Fuel Boost Pump Output Pressure Limit-Reduce," which was published in October 1969, provided details on an optional procedure that allowed Convair 580 operators to reduce the typical fuel boost pump output pressure setting of 21 pounds per square inch (psi) to 15 psi to "improve the service life of the aircraft fuel boost pump." The bulletin stated that, although an aircraft could be operated with different boost pump output pressure settings, "preferably, aircraft should be operated with identical boost pump pressure settings." Postaccident testing of the accident fuel boost pumps revealed that the left and right fuel boost pumps had output pressure settings of 20 and 15 psi, respectively.

Air Tahoma maintenance personnel reported that they were not aware of PJCB 10-21 or the provision to lower the fuel boost pump output pressure setting to 15 psi. In June 2004, Air Tahoma replaced the left fuel boost pump on the accident airplane with a pump that had an output pressure setting of 21 psi. However, Air Tahoma did not replace the right fuel boost pump and did not measure or alter the output pressure setting. As a result, Air Tahoma was unaware that it was operating the airplane with different left and right fuel boost pump output pressure settings. The Safety Board is concerned that other Convair 580 operators may not be aware of PJCB 10-21 and its provision to allow fuel boost pumps to be set at different output pressure settings.

On September 21, 2004, a Nolinor Aviation Convair 580 experienced an in-flight fuel imbalance. The incident flight crew reported that a passenger had seen fuel coming from the right wing and that, about the same time, the fuel quantity indicators showed that the left and right fuel tanks had 4,000 and 6,000 pounds of fuel, respectively. The flight crew closed the fuel crossfeed valve after noticing that the valve was open. Nolinor Aviation ground maintenance personnel determined that the right and left fuel boost pumps had output pressure settings of 15 and 21 psi, respectively, and that the crossfeed valves had been left open, which allowed fuel to transfer from the left to the right fuel tank. Nolinor Aviation indicated that the incident airplane's left fuel boost pump had been replaced and had not been bench checked before installation. As a result, the company was unaware that the incident airplane's left fuel boost pump was operating with an output pressure setting of 21 psi. Nolinor Aviation indicated that it typically operated its Convair 580 airplanes with a fuel boost pump output pressure setting of 15 psi.

Kelowna Flightcraft, the Convair 580 type certificate holder, indicated that most operators normally set the fuel boost pumps to the same output pressure settings. However, the Safety Board is concerned that PJCB 10-21 allows Convair 580 airplanes to operate with different output pressure settings. Further, given the age of the Convair 580 fleet, current operators might not have a complete history of the airplanes, including possible changes made to the fuel boost pumps in accordance with PJCB 10-21. Although operating the Convair 580 with different fuel boost pump output pressure settings does not in itself create an unsafe operating condition, the Board notes that crossfeed valves are not monitored[3] and that the only indication that these valves are open is the switch position in the cockpit. Such operation did not factor in

[3] No positive indication, such as a light, exists in the cockpit to indicate whether the crossfeed system is operating.

the accident; however, the Nolinor Aviation incident did reveal that, if an airplane operates with different fuel boost pump output pressure settings and with the crossfeed valves unintentionally left open, a large amount of fuel can transfer from one tank to another in a short period of time, possibly causing structural failure or fuel overflow.

The Safety Board concludes that fuel transfer can occur on the Convair 580 airplane if it is operated with different fuel boost pump output pressure settings and with the fuel crossfeed valves unintentionally left open.

Therefore, the National Transportation Safety Board recommends that Transport Canada:

Require Convair 580 operators to set the left and right fuel boost pump output pressure settings on their airplanes to the same setting.[4] (A-06-41)

The National Transportation Safety Board is an independent Federal agency with the statutory responsibility "to promote transportation safety by conducting independent accident investigations and by formulating safety improvement recommendations" (Public Law 93-633). The Safety Board is vitally interested in any actions taken as a result of its safety recommendations and would appreciate a response from you regarding action taken or contemplated with respect to the recommendations in this letter. Please refer to Safety Recommendation A-06-41 in your reply.

Acting Chairman ROSENKER and Members ENGLEMAN CONNERS, HERSMAN, and HIGGINS concurred with this recommendation.

By: Mark V. Rosenker
Acting Chairman

[4] This recommendation was also made to the Federal Aviation Administration (A-06-40).