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of Transportation
**Federal Aviation
Administration**

SAFO

Safety Alert for Operators

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Flight Standards Service
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http://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safo

A SAFO contains important safety information and may include recommended action. SAFO content should be especially valuable to air carriers in meeting their statutory duty to provide service with the highest possible degree of safety in the public interest. Besides the specific action recommended in a SAFO, an alternative action may be as effective in addressing the safety issue named in the SAFO.

Subject: Fuel Crossfeed and Fuel Exhaustion in the Convair 580

Purpose: This SAFO is to familiarize Convair 580 operators with the circumstances of a recent accident that occurred from not following the manufacturer's approved procedures for fuel crossfeed. This SAFO replaces SAFO 06011, Convair 580 fuel crossfeed, and potential for fuel starvation.

Background: On August 13, 2004, a Convair 580 crashed while on approach, due to dual engine flameout. This occurred due to fuel exhaustion while crossfeeding from the left wing tank. The right fuel tank valve was left open, contrary to manufacturer's crossfeed procedures. This enabled both engine-driven fuel pumps to draw air from the left tank, causing both engines to flame out. The First Officer suffered fatal injuries and the airplane was destroyed. The National Transportation Safety board (NTSB) determined that the probable cause of this accident was fuel starvation resulting from the flightcrew not following the manufacturer's approved crossfeed procedures, which states: "When operating with the crossfeed system, turn off fuel valve for tank not being used." This Captain, believing that the fuel tank shutoff valves had a tendency to fail, chose not to close the right fuel tank valve.

Discussion: While fuel transfer is prohibited on the Convair 580 airplane, fuel transfer can occur in a relatively short time during crossfeed operations if the fuel tank shutoff valve for the tank not being used is left open. Fuel transfer can build up excessive pressure in a tank, thus causing structural failure or fuel to overflow through the vents. Additionally, it may result in a fuel imbalance, creating unusual airplane handling characteristics and accelerated fuel exhaustion, as occurred in this accident.

A Convair Bulletin dated Oct. 10, 1969, "Pump Output Pressure Limit-Reduce," allows fuel boost pump pressure to be reduced and recommends, but does not require, that pressures be set the same on each side. The accident airplane had differing fuel pump pressures, which caused fuel to transfer to the other tank due to an open fuel tank shut off valve.

Some operators have modified their airplanes by installing a one-way check valve to prevent fuel from flowing back into the tanks due to differential pressure with the fuel tank shutoff valve left open. The aircraft conformity and acceptance inspections do not especially evaluate or determine fuel pump set pressures or the existence of additional fuel tank one-way check valves. Such system differences are important for an operator to determine and train. However, the presence of fuel tank one-way check valves does not relieve the pilot from complying with airplane flight manual procedures.

Additionally, had this flightcrew been monitoring the fuel gauges, they would have seen the indications of the fuel imbalance, which developed over a 30-minute period. Thus, it is important that if a crew does crossfeed, they should have a procedure that reminds them to monitor fuel consumption.

Recommended Action: Directors of safety, directors of operations, instructors and pilots of certificate holders operating the Convair 580 should be familiar with the pertinent NTSB accident report and with the content of this SAFO. They should review the procedures contained in the operating manuals used by their pilots, and pertinent pilot training. They should revise their operating manuals and training as necessary to ensure uniform and effective implementation of the manufacturer's approved fuel crossfeed procedures, airplane system differences, and the importance of closing the fuel shutoff valve for the tank not being used.

Questions: For any questions pertaining to this SAFO, please contact Gloria R. LaRoche, AFS-210 at (202) 493-5427 or email to gloria.r.laroche@faa.gov.