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National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: May 22, 1997

In reply refer to: A-97-36

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

About 5:05 p.m., central standard time, on November 19, 1996, United Express flight 5925, a Beech (BE) 1900C landing on runway 13 at the Baldwin Municipal Airport in Quincy, Illinois, collided at the intersection of runway 13 and runway 04 with a Beech KingAir A-90 that was departing from runway 04. The collision resulted in a fire that engulfed both airplanes. As a result of the collision and fire, all 10 passengers and the 2 crewmembers aboard the United Express flight and the 2 crewmembers aboard the KingAir A-90 were fatally injured.

The BE-1900C was operated by Great Lakes Aviation as a Part 135 commuter flight on an instrument flight rules (IFR) flight plan from Burlington, Iowa. The KingAir airplane, based in St. Louis, Missouri, was being operated as a Part 91 flight. The United Express flight was under the control of the Federal Aviation Administration's (FAA) Kansas City air traffic control center until it entered the airport area on its approach for landing; at that time, the airplane had descended below the center's radar coverage and radar service was terminated.

Baldwin Municipal Airport is one of about 300 airports nationwide with scheduled commercial air service that do not have an air traffic control (ATC) tower or radar coverage. In this environment, arriving and departing aircraft are encouraged to broadcast their intentions on a common traffic advisory frequency (UNICOM), to maintain a listening watch on the same frequency, and to see and avoid other aircraft. In circumstances such as those at Quincy, in which there are no surviving crewmembers or ATC recordings from which to obtain information, data from the cockpit voice recorder can be critical to the accident investigation.

The Safety Board's readout of the cockpit voice recorder (CVR) installed on the Beech 1900C revealed that the recording of the outgoing radio transmissions was faint and of poor quality. As a result, the Board had difficulty determining the content of all transmissions. Further, the quality of the recorded voice communications between the flight crewmembers became noticeably poorer during radio transmissions; at other times, they were generally adequate for readout.

Although it is too early in the Safety Board's investigation to determine the exact cause of the CVR recording deficiency, the symptoms are similar to those found in the investigations of five other accidents/incidents in the past 2 years that also involved poor quality incoming and outgoing radio transmissions recorded by the CVR systems in Beech 1900 airplanes.¹ In four of these occurrences, there were no serious injuries or fatalities, and the poor quality of the recording was not a factor in the Board's determination of the circumstances surrounding the occurrences. The investigations revealed that the problem was not in the CVR units, but in the isolation amplifiers installed in the airplanes. The deficiencies of the CVR systems in these five occurrences and the Quincy accident raise concerns about the CVR systems installed in other Beech 1900 airplanes.

Beech Aircraft has been aware of this problem for more than a year and informed the Safety Board that it modified the audio amplifier to correct the problem on later model airplanes. Of the 250 plus Beech 1900 airplanes in service, however, more than 170 may not have had the modification. Beech has verbally indicated to Safety Board investigators that it plans to make a retrofit kit available to the owners of these airplanes.

The Federal Aviation Regulations (14 CFR 135.151 and 14 CFR 23.1457) address CVRs in the airplane types that include the Beech 1900. The CVRs must record, among other items, voice communications transmitted from or received in the airplane by radio, and voice communications of flight crewmembers on the flight deck. Part 23.1457 also requires that components of the CVR system be located, adjusted, or supplemented so that the intelligibility of the recorded voice communications among flight crewmembers on the flight deck is as high as practicable when played back. The regulations do not specifically address the intelligibility of the recorded radio transmissions; nevertheless, the intelligibility of recorded radio transmissions also needs to be as high as practicable because these transmissions are vital to accident investigations.

The FAA is aware, based on the Board's investigations of accidents described in this letter, of the inadequate recording capability of the CVRs installed on some Beech 1900 aircraft but has not taken corrective action. The Beech 1900 airplanes often operate at uncontrolled airports, so the CVR recording may be the only source of information related to the crew's operation of the airplane. Even when recordings of radio transmissions are available from other sources, investigators need intelligible recordings from the CVR to determine what radio transmissions were received by the pilots. Given the poor quality of the CVR recordings in the six occurrences investigated to date, critical information may not be retrievable in future occurrences and the accident investigations may be severely hindered. The Safety Board believes that the FAA should require the inspection of the CVR and associated equipment on all Beech 1900 aircraft and ensure that operators take corrective action to repair deficient CVR systems so that the intelligibility of recorded communications, including radio transmissions to and from the airplane, is as high as practicable.

¹ NTSB accidents FTW95FA004, FTA96FA198, and NYC97FA045; NTSB incidents FTW97IA003 and CHI95IA066.

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

Promptly require the inspection of the cockpit voice recorder (CVR) and associated equipment on all Beech 1900 aircraft and ensure that operators take corrective action to repair deficient CVR systems so that the intelligibility of recorded communications, including radio transmissions to and from the airplane, is as high as practicable. (A-97-36)

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


By: Jim Hall
Chairman
