Federal Aviation Administration

Memorandum

Date: July 18, 2006

To: Manager, Recommendation and Analysis Division, AAI-200, Attention: Jeff Gorney

From: Associate ACO Manager, Airframe and Services, Wichita Aircraft Certification Office, ACE118W

Prepared by: Bob Busto (316) 946-4157

Subject: Final Response to FAA Safety Recommendations 06.020 and 06.021

The purpose of this memorandum is to provide a response to FAA Safety Recommendations 06.020 and 06.021. These recommendations were originally drafted by the Transportation Safety Board of Canada (TSB) and concern the operation of the Cessna Model 208 in icing conditions.

Background:

As a result of a fatal accident involving a Cessna Model 208 that occurred on October 06, 2005 in Winnipeg, Manitoba the TSB began an investigation into the cause of the accident. The Winnipeg accident involved a Cessna Model 208B fitted with a 675 SHP turboprop engine. The accident aircraft, registration C-FEXS, was operated by Morningstar Air Express. Within minutes after takeoff the single pilot requested an immediate return to the airport due to icing considerations. Shortly after that request, the aircraft departed controlled flight and crashed. In the course of the investigation (A05C0187) the TSB discovered that there have been numerous icing related accidents involving the Cessna Model 208. As a result, the TSB issued the following safety recommendations:

A06-03 (FAA 06.020): The Federal Aviation Administration took action to revise the certification of Cessna 208, 208A, and 208B aircraft to prohibit flight into forecast or in actual icing meteorological conditions exceeding "light", until the airworthiness of these aircraft to operate in such conditions is demonstrated.

A06-04 (FAA 06.021): The Federal Aviation Administration require Cessna 208 operators maintain a minimum operating airspeed of 120 knots during icing conditions

and exit icing conditions as soon as performance degradations prevent the aircraft maintaining 120 knots.

Wichita ACO Response:

The FAA shares the same concerns as the TSB with regard to the operation of the Cessna Model 208 in icing conditions. Cessna and the FAA have been working together to understand the performance and handling qualities of the Model 208 when operating in icing conditions. We have conducted extensive flight tests on the Model 208 and 208B with simulated ice shapes, which include both critical intercycle ice accretions and critical runback ice accretions. Additionally, susceptibility to Ice Contaminated Tailplane Stall (ICTS) was re-investigated on both these models to verify no issues exist with this model aircraft. The Model 208 was also flown in natural icing conditions to examine different modes of pneumatic boot operation and the use of flaps in icing conditions.

In March of 2006, as data from the test effort, and most recent accidents (Winnipeg and Moscow) became available the FAA developed and issued AD 2006-06-06 which mandated a number of operational restrictions in icing conditions against the Cessna Model 208 aircraft. Actions from this AD that are directly applicable to the safety recommendations raised by the TSB are as follows:

A06-03 (FAA 06.020): The FAA agrees with the intent of this recommendation. AD 2006-06-06 requires, via POH/AFM limitation and placard, operators of Cessna Model 208/208B aircraft to depart icing conditions of moderate or greater intensity. The limitation and placard present a unique definition of moderate icing conditions for the Cessna Model 208/208B. This definition consists of the following four criteria:

- Airspeed in level flight at constant power decreases by 20 KIAS.
- Engine torque required to maintain airspeed increases by 400 ft. lbs.
- Airspeed of 120 KIAS cannot be maintained in level flight.
- Ice accretion of ¼ inch observed on the wing strut.

Under the AD the aircraft is allowed to dispatch into known or forecast icing conditions, but must depart when any of the above criteria are met. The basis of the criteria is the results of the flight tests and a review of aircraft accident data. This restriction differs from the TSB recommendation, but the FAA believes that by using the above criteria the intent of the recommendation is met without compromising safety.

A06-04 (FAA 06.021): The FAA agrees with this recommendation. As can be seen in the response to A06-03, one of the criteria mandated by AD 2006-06-06 requires exiting icing conditions if an indicated airspeed of 120 knots cannot be maintained in level flight. Additionally, a separate POH/AFM limitation mandated by AD 2006-06-06 requires a 120 KIAS minimum with flaps up in icing conditions with one exception that allows 110 KIAS to facilitate a climb to exit icing conditions. AD 2006-06-06 also requires the installation of a placard on the instrument panel indicating the airspeed limitation for operation in icing conditions.

In closing, the Wichita ACO believes it has met intent of the recommendations put forth by the TSB. The FAA has taken action in by issuing AD 2006-06-06 which limits the operation of the Cessna Model 208/208B to light icing conditions. Additionally, AD 2006-06-06 mandates an indicated minimum airspeed of 120 knots when operating in icing conditions. It requires that the aircraft exit icing condition when the indicated airspeed drops below 120 knots. Therefore, the Wichita ACO respectfully request that recommendations A06-03 (FAA 06.020) and A06-04 (FAA 06.021) be closed. Should you have any questions on this matter please contact Mr. Bob Busto at (316)946-4257.

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Eual M. Conditt, Jr.