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Airworthiness Concern Sheet

DEPARTMENT OF TRANSPORTATION
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Make, Model, Series, Serial No.: Cessna Aircraft Company
Models 208 and 208B, all serial numbers

Reason for Airworthiness Concern: Operating Procedures and
Limitations in Icing Conditions Need to be Established and
Equipment Installed to Prevent Accidents

FAA Description of Airworthiness Concern

The FAA is aware of a potentially unsafe condition regarding operations of the Cessna Model 208 in icing conditions. Service history of the C208 in icing conditions prompted the FAA, in 1991, to issue Air Carrier Operations Bulletin 2-91-1 and conduct a Special Certification Review (SCR) in 1995. The SCR led to an Airplane Flight Manual (AFM) revision and to the "Cessna Caravan Cold Weather Operations" portion of the Cessna Caravan Safety Awareness Program, which is offered by Cessna annually around the country. In 1996, AD 96-09-15 was issued, which added AFM information regarding severe icing and flight in freezing drizzle and freezing rain. This AD was not unique to the C208. Since 1996, the C208 has averaged about two icing-related accidents per year in the United States. Before 1996, it averaged almost one per year. These accidents include taking off with snow, frost or ice on the airplane and in-flight encounters of icing within the part 25, Appendix C icing certification envelope and outside it (freezing drizzle and freezing rain).

The FAA is considering mandating certain changes and additions to AFM limitations and normal procedures in icing conditions, and certain equipment, in order for the airplane to remain approved for flight in icing conditions. The attached Risk Assessment indicates a potential routine Airworthiness Directive (AD) or urgent safety of flight action (immediate adopted rule) may be required.

This Airworthiness Concern Sheet (ACS) is intended as a means for FAA Aviation Safety Engineers to coordinate airworthiness concerns with aircraft owner/operators through associations and type clubs. At this time, the FAA has not made a determination on what type of corrective action (if any) should be taken. The resolution of this airworthiness concern could involve an AD action or an SAIB, or the FAA could determine that no action is needed at this time. The FAA's final determination will depend in part on the information received in response to this ACS.

The FAA endorses dissemination of this technical information to all manufacturers and requests association and type clubs comments.

Attachments: *SDR(s) *A/IDSX *SL(s) X *SAIB *FAASR/*NTSBSR *AD *AMOC *RA

Notification: FAA X *AOPA X *EAA Type Club X *TC Holder X Other: caravan pilots.com

Response Requested 01/19/05: Emergency (10 days) Alert (30 days) X Information (90 days)

(Space Bar Adds "X" to Check Boxes)

FAA Description of Airworthiness Concern (continued)

The following is being considered for inclusion into the AFM Limitations Section:

- Prohibiting takeoff in ground icing conditions or if the airplane has been exposed to in-flight icing conditions since the previous takeoff unless either the pilot in command conducts a visual/tactile inspection of the wing upper surface and leading edge and verifies the airplane is free of ice, snow or any frost accumulation.

The following is being considered for inclusion into the Limitations Section of the Known Icing Equipment AFM Supplement:

- Mandating the 105 KIAS minimum speed for icing to the approach phase as well as cruise, and mandating a minimum speed for a flaps down approach.
- Removing the text in “Environmental Conditions” that says, “Flight into icing conditions which are outside the FAR defined conditions is not specifically prohibited.”
- Make the following text in “Environmental Conditions” boldface: “Flight in these conditions must be avoided.” The conditions referred to in the previous sentence are freezing rain, freezing drizzle, mixed conditions or conditions defined as severe.

The following is being considered for the Normal Procedures section of the Known Icing Equipment AFM Supplement:

- Change deicing boot procedures to cycle boots when airplane accretes ice and to repeat as necessary, no minimum ice thickness required.
- Change text to indicate that cycling the boots on approach (but not landing) is allowed, and adding procedure to cycle boots prior to landing.
- Change approach speeds in icing conditions to correspond to Performance section, simplifying procedures by eliminating dependence on type of ice.
 - An airspeed of 105 KIAS until short final.
 - Landing indicated airspeeds (50 ft. height) of 105-120 for flaps up, 100-110 for 10° flaps, and 90-100 for 20° flaps.
- Change deicing boot procedures to cycle boots when airplane accretes ice and to repeat as necessary, no minimum ice thickness required.

The following is being considered for the Performance section of the Known Icing Equipment AFM Supplement:

- Add text to indicate a flaps up landing should be made in icing conditions if field length allows.
- Change approach speeds in icing conditions to match Limitations section and add field length increase for higher airspeeds.
- Add text similar to “Ice accumulations on the airframe may result in a significant stall speed increase of 20 KIAS or more. The stall warning margin may also be degraded.”
- Add text similar to “Service ceiling with critical ice accretions may be significantly reduced”.

The FAA is considering mandating the following equipment for the airplane to remain approved for flight in icing conditions:

- Pilot assist handle modification kit (Cessna P/N SK208-146-2)
Cost: \$860 Estimated time to install: 5 man-hours
(In lieu of the pilot assist handle the airplane may carry a ladder that will allow the flightcrew tactile inspection of the wing upper surface)
- Low speed warning modification kit (Cessna P/N SK208-146-0)
Cost: \$3890 Estimated time to install: 10 man-hours
- Deicing boots for the main landing gear struts and cargo pod, if installed (Cessna Accessory Kit SK AK208-6C)
Cost: \$6,000, \$11,000 if plumbing needs to be installed Estimated time to install: 37 man-hours

Request for Information:

Because the FAA is considering airworthiness action on these airplanes, we are soliciting additional information from the Associations and C208 operators. Any information related to operations in icing such as airspeed, stall warning, performance, boot operation, and information on alternatives to the proposed mandated equipment and cost and time impact are solicited. We would also like to know if you received icing training and if that made a difference in your operations, and