



U.S. Department
of Transportation
**Federal Aviation
Administration**

SAFO

Safety Alert for Operators

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Flight Standards Service
Washington, DC

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.

Subject: Ground deicing practices for turbine aircraft in nonscheduled 14 CFR part 135 operations and in part 91.

Background: The General Aviation Joint Steering Committee (GAJSC) is the primary vehicle for Government/industry cooperation, communication, and coordination on general aviation (GA) accident mitigation. The Turbine Aircraft Operations Subgroup (TAOS) of the GAJSC works to mitigate accidents in operations of turbine aircraft, including turboprops and turbojets.

Recent high-profile accidents, including the crash of a Challenger 601 in Montrose, CO, made the TAOS aware of deficiencies in pilot training in the area of ground deicing practices, and a lack of thorough understanding by pilots as to the effects of airframe contamination on takeoff.

While many accidents may involve serious injury or death, ground icing-related accidents typically produce catastrophic results. Consequently, ground deicing training should place additional emphasis and awareness on the high-risk environment associated with these operations. Due to the seasonal nature of these operations, recurrent training should, whenever possible, be scheduled to precede the following winter season.

Discussion: Despite existing information and guidance available regarding the effects of icing on aircraft and methods for deicing, deficiencies are still apparent. More emphasis should be placed on the effects of airframe icing during flightcrew training and checking considering the high percentage of accidents attributable to airframe icing.

NOTE: There is no “acceptable” amount of airframe icing at takeoff. In addition, even when otherwise permitted, operators should avoid smooth or polished frost on lift-generating surfaces as an acceptable preflight condition.

The aircraft’s lift-generating surfaces should be **COMPLETELY** free of any contamination before flight.

Recommended Action: After considering the most common reasons for improper deicing, or no deicing, before flight, TAOS recommends the following:

1. Directors of safety, directors of operations, and fractional ownership program managers, as applicable, and flightcrew members of turbine aircraft, are encouraged to perform a comprehensive review of current deicing policies and procedures, with special emphasis placed on the following:

a. Does the operator have sufficient standard operating procedures (SOP) for winter weather operations, including the following:

(1) A regular review of cold weather SOPs.

(2) A regular review and familiarity with the Airplane Flight Manual (AFM) limitations and procedures necessary to deal with icing conditions before flight, as well as in flight.

(3) Procedures to ensure that the aircraft's lift-generating surfaces are COMPLETELY free of contamination before flight through a tactile (hands-on) check of the critical surfaces WHEN FEASIBLE. Even when otherwise permitted, operators should avoid smooth or polished frost on lift-generating surfaces as an acceptable preflight condition.

(4) Procedures to protect the aircraft while on the ground, if possible, from sleet and freezing rain by taking advantage of aircraft hangars.

(5) Procedures to take full advantage of the opportunities available at airports for deicing and not refuse deicing services simply because of cost.

NOTE: A "best practice" by the operator may be to ensure the flightcrew is not influenced by the cost of deicing by arranging direct billing with the service provider. The flightcrew should make its deicing decision based solely on safety of flight reasons, not cost or scheduling concerns.

(6) Procedures to cancel or delay a flight if weather conditions do not support a safe operation.

b. Is the information applicable to the aircraft operated?

c. Is the information concise and easy for flightcrews to understand and use?

d. Does the information provide for a systematic procedure for crews to recognize, evaluate, and address the associated icing risk, and offer clear guidance to mitigate this risk?

e. Is the information readily available during normal day-to-day aircraft operations (e.g., checklist or reference cards)?

f. Have the company manuals, checklists, and training programs been updated with the latest manufacturer information?

2. TAOS encourages operators of turbine aircraft and 14 CFR part 142 training centers to perform a comprehensive review of current winter weather operations training, with special emphasis placed on the following:

a. Is the information applicable to the aircraft operated?

b. Are flightcrews required to demonstrate a satisfactory working knowledge, both during training and checking, of the effects of airframe icing on the specific aircraft, and recommended procedures or best practices for evaluating and mitigating this risk?

Additional Resources:

<http://aircrafticing.grc.nasa.gov/index.html>

<http://www.ibac.org/is-bao/isbao.htm>

http://www.natasafety1st.org/bus_deice.htm

http://www.faa.gov/library/manuals/examiners_inspectors/8400/fsat/media/2005/fsat0502.doc

FAA Advisory Circulars (current editions):

http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgAdvisoryCircular.nsf/MainFrame?OpenFrameSet&CFID=56957&CFTOKEN=71066012&CFID=1409204&CFTOKEN=89169026

AC 91-74, Pilot Guide Flight in Icing Conditions

AC 135-9, FAR Part 135 Icing Limitations

AC 135-16, Ground Deicing and Anti-icing Training and Checking

AC 135-17, Pilot Guide - Small Aircraft Ground Deicing (pocket)

AC 120-58, Pilot Guide Large Aircraft Ground Deicing

AC 120-60, Ground Deicing and Anti-icing Program

AC 120-71, Standard Operating Procedures for Flight Deck Crewmembers

Flight Standards Information Bulletins for Air Transportation (FSAT) (current editions):

http://www.faa.gov/library/manuals/examiners_inspectors/8400/fsat/

FSAT 98-18, Turbopropeller Airplane Operations in Icing Conditions: Company Operating Manuals and Training Program Revision for Compliance with Current Airplane Flight Manual index.

FSAT 05-02, FAA-Approved Deicing Program Updates, Winter 2005-2006 (includes FAA Holdover Times Guidelines 2005-2006)

FAA Notices:

http://www.faa.gov/library/manuals/examiners_inspectors/8000/

N 8000.309, Dispatching During Precipitation Conditions of Ice Pellets, Snow Pellets, or Other Icing Events for Which No Holdover Times Exist