

NOTICE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION

N 8400.77

3/18/05

Cancellation
Date: 3/18/06

SUBJ: EVALUATION OF DEICING/ANTI-ICING PROGRAMS AND TRAINING PROGRAMS

1. PURPOSE. This notice is for principal operations inspectors (POI) of certificate holders that are required under Title 14 of the Code of Federal Regulations (14 CFR) part 121, section 121.629, and other certificate holders operating under 14 CFR parts 125 and 135 that have elected to comply with part 121, section 121.629. It advises those inspectors and applicable certificate holders of the importance and need for proper visual and tactile inspection of aircraft without leading edge devices. It also stresses the need for a reevaluation by each certificate holder of its deicing/anti-icing program and its flightcrew training to assure that thorough visual and tactile inspections are being emphasized and that corresponding training is conducted. This notice is in response to the concerns of the Director, Flight Standards Service, and the National Transportation Safety Board (NTSB).

2. DISTRIBUTION. This notice is distributed to the division level in the Flight Standards Service in Washington headquarters; to the branch level in the regional Flight Standards divisions; to the Flight Standards District Offices, and to the Regulatory Standards Division at the Mike Monroney Aeronautical Center. This notice is also distributed electronically to the division level in the Flight Standards Service in Washington headquarters and to all regional Flight Standards divisions and district offices. This information is also available on the Federal Aviation Administration's (FAA) Web site at:
<http://www.faa.gov/avr/afs/notices/8400/N8400-77.doc>.

3. BACKGROUND. Recent accidents involving upper wing ice on aircraft without leading edge flaps or slats (hard-wing) have focused the attention of the FAA and NTSB on the criticality of ice contamination on such wings. Investigations into these accidents indicate that pilots are either not detecting the upper wing ice, are failing to deice properly without a thorough post-deicing check, or continue to harbor erroneous concepts as to how to operate in icing conditions. With the growing number of hard-wing aircraft being introduced into service, the FAA is concerned that an upward accident trend related to ice contamination may develop unless steps are taken to arrest this trend.

4. DISCUSSION.

a. Accident history shows that hard-wing aircraft have been involved in a number of takeoff accidents where upper wing ice is believed to have been present. The FAA believes that most pilots are unaware of the significant degradation to lift and performance that small amounts of ice can cause when present on the upper wing. Wind tunnel test data shows that an upper wing

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surface roughness caused by particles the size of table salt grains, distributed over the wing at about one grain per square centimeter, can result in a 22 percent lift loss in ground effect and a 33 percent lift loss in free air. Pilots may observe what they perceive to be an insignificant amount of ice on the aircraft's wing surface but could be unaware that it may still be a risk because of reduced stall margins resulting from icing-related degradation of performance.

b. In situations of failing performance, caused from small amounts of ice on the upper wing surface, pilots often mistakenly believe that they can power through the performance degradation. This is an extremely hazardous belief since, as NTSB has stated, engine power will not prevent a stall and loss of control at lift-off where the highest angles of attack are normally achieved. Further, small areas of almost imperceptible ice can result in localized, asymmetrical stalls on the wing, which can result in roll control problems during lift-off.

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c. Accident history also indicates that pilots may be unaware of the potentially catastrophic consequences of small amounts of ice on such critical surfaces as wings. Trying to visually detect small amounts of ice, especially in wet or night conditions, can be extremely difficult and should not be relied on as an accurate determination of the presence of ice. The Flight Standards Service considers it imperative that, under certain conditions (e.g., post-deicing, light icing conditions as directed by the aircraft manufacturer), pilots or other appropriate personnel should perform a close tactile inspection on the leading edges of hard-wing airplanes and at any other location on the wing, or other critical surfaces, designated by the aircraft manufacturer.

5. ACTION. POIs affected by this notice should make the information known to the director of safety of each certificate holder operating under part 121, or to the director of operations or chief pilot, or to each single pilot/single pilot-in-command operator of each certificate holder operating under part 135. This information may be conveyed by copy of this notice or by referring the respective director to the following Web site: <http://www.faa.gov/avr/afs/notices/8400/N8400-77.doc>. The FAA recommends that each certificate holder assure that pilots and other appropriate personnel are being trained in the procedures, techniques, and necessity of tactile inspections for icing, and that these provisions are adequately addressed in the Management Plan Section of the certificate holder's ground deicing/anti-icing program.

6. PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS). Document the conveyance of the information contained in this notice for each air carrier affected:

- a. Use PTRS code 1307, Convey Non-Reg. Info.
- b. Enter "N840077" in the "National Use" field (without the quotes).
- c. Once the above information has been provided to the air carrier, close out the PTRS.

7. DISPOSITION. This notice will not be incorporated into Order 8400.10, Air Transportation Operations Inspector's Handbook. Questions concerning this notice should be directed to the Air Carrier Operations Branch, AFS-220, at (202) 267-3749.

/s/ James J. Ballough
Director, Flight Standards Service