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# Highlights

Highlights of [GAO-10-441T](#), a testimony before the Subcommittee on Aviation, Committee on Transportation and Infrastructure, House of Representatives

## Why GAO Did This Study

Ice formation on aircraft can disrupt the smooth flow of air over the wings and prevent the aircraft from taking off or decrease the pilot's ability to maintain control of the aircraft. Taxi and landing operations can also be risky in winter weather. Despite a variety of technologies designed to prevent ice from forming on planes, as well as persistent efforts by the Federal Aviation Administration (FAA) and other stakeholders to mitigate icing risks, icing remains a serious concern. As part of an ongoing review, this statement provides preliminary information on (1) the extent to which large commercial airplanes have experienced accidents and incidents related to icing and contaminated runways, (2) the efforts of FAA and aviation stakeholders to improve safety in icing and winter weather operating conditions, and (3) the challenges that continue to affect aviation safety in icing and winter weather operating conditions. GAO analyzed data obtained from FAA, the National Transportation Safety Board (NTSB), the National Aeronautics and Space Administration (NASA), and others. GAO conducted data reliability testing and determined that the data used in this report were sufficiently reliable for our purposes. Further, GAO obtained information from senior FAA and NTSB officials, representatives of the Flight Safety Foundation, and representatives of some key aviation industry stakeholder organizations. GAO provided a draft of this statement to FAA, NTSB, and NASA and incorporated their comments where appropriate.

View [GAO-10-441T](#) or key components. For more information, contact Gerald L. Dillingham at (202) 512-2834 or [dillinghamg@gao.gov](mailto:dillinghamg@gao.gov).

## AVIATION SAFETY

### Preliminary Information on Aircraft Icing and Winter Weather Operations

#### What GAO Found

According to NTSB's aviation accident database, from 1998 to 2009 one large commercial airplane was involved in a nonfatal accident after encountering icing conditions during flight and five large commercial airplanes were involved in nonfatal accidents due to snow or ice on runways. However, FAA and others recognize that *incidents* are potential precursors to accidents and the many reported icing incidents suggest that these airplanes face ongoing risks from icing. For example, FAA and NASA databases contain information on over 600 icing-related incidents involving large commercial airplanes.

FAA and other aviation stakeholders have undertaken many efforts to improve safety in icing conditions. For example, in 1997, FAA issued a multiyear plan for improving the safety of aircraft operating in icing conditions and has since made progress on the objectives specified in its plan by issuing regulations, airworthiness directives, and voluntary guidance, among other initiatives. Other government entities that have taken steps to increase aviation safety in icing conditions include NTSB, which has issued numerous recommendations as a result of its aviation accident investigations, and NASA, which has contributed to icing-related research. The private sector has deployed various technologies on aircraft, such as wing deicers, and operated ground deicing and runway clearing programs at airports.

GAO identified challenges related to winter weather aviation operations that, if addressed by ongoing or planned efforts, could improve safety. These challenges include (1) improving the timeliness of FAA's winter weather rulemaking efforts; (2) ensuring the availability of adequate resources for icing-related research and development; (3) ensuring that pilot training is thorough and realistic; (4) ensuring the collection and distribution of accurate weather information; and (5) developing a more integrated approach to effectively manage winter operations.

#### Example of Ground Deicing to Help Ensure Clean Aircraft



Source: Gerald R. Ford International Airport.