

CALLBACK

From NASA's Aviation Safety Reporting System



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Enticements of

ICE



ASRS incident reports offer useful descriptions of a variety of aircraft ground and airborne icing hazards. Air carrier reporters often focus on ground-related issues such as inadequate deicing procedures, deicing fluid ingestion hazards, and deficient inspections for snow and ice accumulation. GA reporters are apt to describe airborne icing events that involve immediate decision making or controllability issues. Our January 2010 *CALLBACK* offers a “slice of ice” from the narratives of ASRS reporters.

Hurry Up and Wait

A B757 flight crew experienced a lengthy flight delay after short-staffed Maintenance and Deicing personnel failed to anticipate needed icing inspections.

■ *During preflight... the First Officer noticed ice and snow adhering to airframe, wings, and tail, which had pooled and refrozen in both engine inlets aft of the fan section. He notified me (Captain), Station, Maintenance, and Deicing, and after looking at it myself, we agreed that Maintenance needed to view ice in engines... Weather was CAVOK and forecast to remain so after severe winter storm the previous day, so deicing only (with a 50/50 mix) was required (and took over an hour just off the gate, as Station told us they were understaffed). Maintenance had us attempt to cycle reversers, which were frozen, requiring additional deicing. Deicing confirmed ‘clean airplane, deicing complete,’ and we continued normal pushback and start. Per FOM guidance we elected to taxi out with flaps and slats retracted to prevent clutter on taxiways from damaging/contaminating flaps and slats with gear spray. Upon arriving at departure end of runway...we set flaps 15 and completed before-takeoff checklist. Purser then advised us a passenger sitting in window seat just aft of wing noticed ice accumulation on newly exposed flap sections. The First Officer performed a visual inspection from cabin confirming this, and we returned to gate for additional deicing with flaps remaining extended....*

After severe icing storm of previous day, airplane should have been proactively inspected by Maintenance, including inside engines and viewing fully extended flaps/slats, and then deiced early that morning well before our scheduled departure time... This one, simple, proactive procedure would have mitigated the entire 4-hour delay and possible takeoff with ice adhering to flaps. Had the flight been at night, we never would have seen ice on flaps during extension....

“Smoke Gets In Your Eyes”

For a Hawker 800 flight crew, accumulation of deicing fluid in an Auxiliary Power Unit (APU) after takeoff led to an emergency return.

■ *Smoke [entered] the aircraft cabin resulting from deice fluid ingestion into the aircraft’s Auxiliary Power Unit (APU). Event*

resulted in emergency return to the airport...Deice fluid can pool within the air inlet duct of the APU which causes ingestion upon takeoff rotation...This hazard is not noted in aircraft’s POH [Pilot’s Operating Handbook] and has not been properly communicated to Operations...The amount of smoke in the cabin and flight station was surprisingly large....

No Way to Spray

In an unfortunate incident involving a CRJ-700 flight and cabin crew, the aircraft’s door seal was no match for point-blank spraying of deicing fluid.

■ *After pushing back from gate to conduct deicing operations approximately 100 feet away from the gate but short of taxiway, we configured the aircraft for deice. The ramp agents began deicing with Type 1 when I received a call from Flight Attendant 1. She reported that deicing fluid was coming in from the top of the main cabin entry door and some fluid had landed on Flight Attendant 2’s hair and uniform jacket. (Both Flight Attendants were in the forward galley area during deice operations.) Flight Attendant 2 was able to dry off her hair as best as possible and remove her soaked uniform jacket and put on a sweater. Our crew discussed the event and concurred that we were OK to continue. Flight Attendant 2 reported she was OK for duty. We agreed that we would keep in touch throughout the flight and check on Flight Attendant 2 just to make sure she had no ill effects from the exposure to the deicing fluid. As the flight progressed, Flight Attendant 2 began to feel lethargic and her eyes became irritated. After arrival and the deplaning process was complete, Flight Attendant 2 was not feeling well. We began making phone calls and...Flight Attendant 2 was released from the trip and told to seek immediate medical attention for possible chemical exposure and burns to her skin....*

Emphasize to the Ramp Agents to avoid spraying directly on doors and hatches that have cabin or cockpit accessibility. The door or hatch seals can’t take a point blank range hit from the deice nozzle. During deicing operations, have the Flight Attendants seated in their jumpseats, or if cabin duties or galley duties are still being performed, make sure they stay away from the main cabin entry door roof line.

“Always Have a Plan B”

An ATP-rated Cessna 340 pilot with many thousands of hours in mountain flying experienced an inflight hazard ASRS has received many reports on from other GA pilots — unforecast icing.

■ *IFR flight, VFR conditions most of the way with numerous contingency airfields en route...I had received current weather from FSS about 25 minutes prior, weather above minimums with lower clouds and higher overcast. Flight continued...between layers, overcast above, broken clouds about 2,000 feet below, with no precipitation encountered. Unable to hear the destination airport’s AWOS-3 weather report. Unfortunately, this AWOS is...unreadable until close to airport....We continued originally at 15,000 feet MSL (filed altitude), we stepped down to 14,000 feet MSL then 13,000 feet MSL per ATC clearance. About the time AWOS became readable our flight entered solid overcast IMC with*

ASRS Alerts Issued in November 2009	
Subject of Alert	No. of Alerts
Aircraft or aircraft equipment	8
Airport facility or procedure	2
ATC equipment or procedures	2
Company policy	1
TOTAL	13

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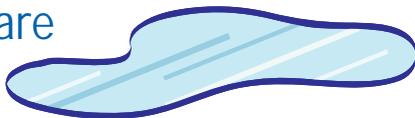
November 2009 Report Intake	
Air Carrier/Air Taxi Pilots	2599
General Aviation Pilots	873
Controllers	419
Cabin/Mechanics/Military/Other	319
TOTAL	4210

severe icing. All de-ice/anti-ice equipment, including boots/hot props/windscreen protection were functioning normally, but it was apparent the conditions encountered were rapidly overwhelming the aircraft capability. The altered flight characteristics, burble, airframe vibration and general control deterioration from ice build-up required immediate action. I disconnected the autopilot and turned 180 degrees while descending to 12,000 feet MSL, the MVA, in search of warmer air and to fly out of the IMC/icing conditions we had entered. While turning/descending, I declared an emergency with Center and apprised the controller of our change in course/altitude. The aircraft flew out of IMC conditions at 12,000 feet and we terminated our emergency status with Center...While inbound Approach Control took down the icing info from our experience and passed it along, resulting in an icing SIGMET issuance....

It is important to realize that the de-ice/anti-ice capability of prop-driven GA aircraft is inadequate to handle severe icing situations. I am convinced our immediate change in direction to reverse course was the correct response to the weather encountered. Always have an 'out' or 'Plan B' if weather conditions are different from forecast.

A Flare on the Glare

A potential problem faced by both GA and air carrier pilots who fly into Non-Towered fields is the lack of current NOTAM, automated weather, or ATC information about adverse airport conditions. Here's a report from the pilot of a private turbojet aircraft who encountered a 'no go' situation after landing.



■ After a normal descent and ILS approach on Runway 21 I landed with a 20-knot right crosswind. Shortly after touchdown, I realized the entire airport property was covered with 1/4 inch of glare ice. Braking action was nil and the aircraft could only be controlled with rudder, speed brakes, and differential use of thrust reversers. The ice was not visible on final because of overcast conditions. Local FBO personnel told us of 'ice' on short final but this did not nearly describe the severity of the situation. The previous night's rain had frozen a couple of hours before and runways were left untreated. I was able to bring the aircraft to a safe stop; however, I could not taxi off the runway to the ramp area. Notified Approach of the situation and was towed to ramp. There were no NOTAMS issued, no information on ASOS, and no information from Approach regarding the airport condition.

I would recommend the airport authority treat runways promptly or close the airport in such conditions while notifying pilots through NOTAM system, ASOS, or approach controllers to prevent an accident.



Boxed In, But a Way Out

A low-time, instrument rated Cessna 172 pilot demonstrated good situational awareness and decision skills after encountering unforecast icing.

■ Flight departed after receiving a weather briefing for the route of flight. Weather was VFR and predicted to remain VFR for the flight. A shelf of clouds started to develop about 1,000 feet below the aircraft and ceilings about 2,500 feet above the aircraft. In-between the shelf and base, I could make out airport in the distance, so I requested VFR clearance on top to airport. I received the clearance via radar vectors and flew the vector. The temperature was at 32 degrees F and I requested vectors that would not make me penetrate visible moisture. At this point the shelf merged with the bases and prior to continuing, I looked behind the aircraft and saw a cloud rolling in behind the aircraft, almost as a curtain drawing, making it impossible to divert. I followed the vectors to the best of my ability, but was distracted, making it difficult.

After penetrating a cloud, I noticed approximately 1/8 inch of ice on the leading edge. At this point, I announced my icing condition to ATC and they gave me priority handling. Shortly after, I declared an emergency and ATC gave me vectors for the ILS. I tuned and identified the ILS and tried to track it, but I was unable to receive the glideslope. I then received vectors for the airport and descended to 400 feet AGL. At this point I had closer to 1/4 to 1/2 inch of mixed ice on the wings. I had visual on the airport abeam runway...and circled to land using no flaps and had a smooth, safe landing. After landing, I proceeded to the FBO with Airport Rescue following me in. After examining the aircraft, the propeller was clear and the wings had about 1/3 inch of ice extending about 6 inches aft of the leading edge.