

# CALLBACK



From NASA's Aviation Safety Reporting System

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## ASRS "COLD WEATHER" Incidents

This month's CALLBACK is devoted to cold-weather incidents reported to ASRS by general aviation and air carrier pilots. The general aviation reports emphasize the helpfulness of Aeronautical Decision Making (ADM) techniques and careful preflight preparations when encountering icing and snow conditions. The air carrier reports describe the importance of following standard ground handling procedures to ensure the safety of flight.

### "A GREAT TOOL TO LOOK AT WEATHER, BUT..."

A CFI with instrument and multi-engine ratings reported an incident to ASRS that involved a Technically Advanced Aircraft (TAA) – a Cessna 182 equipped with an onboard satellite weather display. Our reporter made a "go" decision based on the availability of the technology onboard, but realized too late that the weather data provided was not "real-time."

■ Got weather for ZZZ1, IFR enroute, thunderstorms north of our route of flight. Clear at destination...Decided to go because of onboard [satellite] weather and ability to keep an eye on the thunderstorms north of our route. Flying in actual conditions in and out of clouds at 11,000 feet (MEA 10,000 feet), weather display showed rain north of our route of flight as forecast, OAT 4 degrees C, otherwise clear of rain on our route. Entered a cloud and 30 seconds later heard rain on the windshield, looked up to see the entire windshield was white with ice, looked at the strut and ice was building quickly...Immediately started a 180-degree right turn to depart the area; ATC was busy on the radio at the time.... Approximately 1/2 way through turn managed to contact ATC and advise of our situation. They cleared me down to 10,000 feet. Noted OAT had dropped from 4 degrees C just 2-3 minutes earlier to -7 degrees C. Completed the 180-degree turn and exited icing conditions...with 1 inch of ice on wheel pant and strut with windshield totally covered. Advised ATC that we were turning...towards visible sunlight and descending to warmer temperatures in VFR conditions, cancelled IFR, and requested VFR flight following...About 2 minutes later [satellite] weather updated to show 30 miles of mixed snow and ice, now behind me. Ice melted completely over next 20-30 minutes. Used...terrain mapping and continuous S-turns to maintain situational awareness regarding terrain...Remainder of flight VFR with no issue.

I have prided myself on good ADM...However, I allowed having [satellite] weather onboard to convince myself that I had enough data to conduct the flight. However, due to 5-10 minute delay in rapidly changing weather, the

[satellite] data was not current enough and is no substitute for radar, which I did not have onboard this aircraft. My switch back to good, positive ADM was to immediately deviate from my clearance and start the 180-degree turn as soon as I encountered icing conditions...We would never have survived had we taken the 'we can fly through this' approach. I don't believe the C182 would have stayed airborne...at the rate the ice was building...[Satellite weather display] is a great tool to look at weather, but it is not real-time and does come with the risk of over-dependence on the technology.

### "I ASSUMED THE ENTIRE RUNWAY HAD GOOD TRACTION"

A BE58 pilot took what seemed to be reasonable preflight precautions prior to taking off on a snow-covered runway at a non-Tower airport, but lost control of the aircraft during takeoff due to a combination of poor visibility and traction.

■ Much of the winter here there is snow, ice, or a combination of the two covering ramps, taxiways, and runways. However, it is relatively rare that this combination precludes operations for most aircraft, and I have taxied, taken off, landed many times with runway contamination once it's been determined that it's safe to do so. On the morning of departure, there had been about 1 inch of fresh snow on top of all paved surfaces that had been cleared the day prior, which usually gives improved (and good) traction. I drove a good portion of the ramp area, taxiway and runway in my car to test traction and braking and found both to be good. Brakes held fine during run-up, and aircraft did not slide or give any other indication of reduced traction during taxi into position on the runway. During warm-up and taxi-out, a thin layer (very thin fog with blue sky visible directly above) of reduced visibility moved in, although ASOS continued to report 10 miles visibility, 1,700 feet overcast. As the aircraft accelerated during the takeoff roll, however, the layer began visually to merge with the snow on the runway and the snow to the side, causing me considerable difficulty in perceiving the runway edges at increased speed. Since no pavement was visible, I used the marker poles that were placed at intervals to the inside of the snow banks to keep the aircraft centered on the runway. The combination of flat light and white on both runway surface and edges gave me the impression of being well within the plowed edges when, in fact, the aircraft had slid to the left of centerline. The left main contacted heavier snow at the edge of the cleared runway which quickly and uncontrollably pulled the aircraft to the left and into the snow bank.

A contributing factor, it turns out, was that I had assumed the entire runway had good traction from the roughly 1/3 (2,000+ feet) that I drove in my car to test it, but in fact there was an ice layer concealed by the snow that had persisted in the middle area of the runway...I recommend that traction tests done with test vehicles extend over the entire length of the runway, not just the landing and takeoff zones, as braking action can vary significantly over the runway length.

#### ASRS Alerts Issued in October 2008

Subject of Alert	No. of Alerts
Aircraft or aircraft equipment	21
Airport facility or procedure	7
ATC procedure or equipment	4
Company policy	2
<b>Total</b>	<b>34</b>

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#### October 2008 Report Intake

Air Carrier/Air Taxi Pilots	2609
General Aviation Pilots	894
Controllers	69
Cabin/Mechanics/Military/Other	329
<b>TOTAL</b>	<b>3901</b>

Many air carrier cold-weather incidents reported to ASRS involve inadequate de-icing procedures, or unexpected ice accumulation during flight due to system deferrals or malfunctions. This month's selection of air carrier incidents illustrates the importance of ground crew adherence to standard operational procedures – and air crew vigilance in ensuring that procedures have been performed properly.

## "ICE ON THE WING"

Timely communication from the cabin during pushback informed a B767 flight deck crew of deicing deficiencies.

■ *...Aircraft deiced with Type 1 to remove surface ice, followed by Type 4 fluid. Light freezing rain falling at airport, and aircraft was covered with ice from inbound flight...The deicer called via interphone with deice info. During pushback, flight attendant calls cockpit to report the passengers are concerned about 'ice on the wing.' After pushback, we receive another call from a flight attendant indicating she sees ice on the wing. Because our holdover window was fairly short, we initiated taxi toward Runway 01R. Prior to leaving the ramp, I asked the relief pilot to examine the wings because there was no sense going to the end of the runway if, in fact, there was ice on the wing. The First Officer returned to the cockpit and reported that the right wing was clean, but that the left wing had ice adhering to the leading edge. We returned to the gate for deicing, and this time it was performed properly.*

## "CELL PHONE AS THE ONLY SOURCE OF LIGHT"

In a number of incidents reported to ASRS, cell phones have provided safety redundancy and assisted in positive incident resolution. For the Captain of a SF 340B, however, the improper use of a cell phone by ground personnel during night-time deicing operations raised serious safety concerns.

■ *During preflight I noticed a large quantity of ice in the oil coolers of both engines, as well as ice in both 'bird catchers.' The remainder of the aircraft was free of contamination. After pushback we proceeded to the runway 30R deice pad to have the ice removed prior to takeoff. We advised the personnel in the deice truck that there was ice in the above locations, and that we would be conducting single-engine running deicing to remove this ice, starting with the right engine after shutdown. From my seat (Captain's) I observed the deice truck approach the right engine, and after a couple of minutes it backed away and we were advised to restart the right engine. We then shut down the left and I observed the truck approach the left side for deicing. The deice employee walked to the intake and I observed him 'inspect' the left intake using his*

*cell phone as the only source of light to look inside of the intake and oil cooler. It was night and we were on the unlit deice ramp. To see the oil cooler, you must look through an opening about 3 inches wide by 2 inches high and see about 18-24 inches inside. He then walked from the aircraft and advised us that the aircraft was free of contamination and we were cleared to start and taxi. I then advised him that there was a large amount of ice in the area, and that is why we were in the pad to begin with. I then asked them if they had sprayed the right engine and he said no, that it was also clear. After demanding that they get an actual flashlight and re-inspect, they found the ice and we began the whole process over again....*

*Had I not noticed that they had not actually cleaned the intakes the potential for 'fodding' both engines on takeoff could have resulted in a catastrophic failure of both engines. I can't believe [ground personnel] 'inspecting' our aircraft using a cell phone display as the only source of light.*

## "ICE FROM THE AIRPLANE"

Timely communication from the cabin during pushback informed a B767 flight deck crew of deicing deficiencies.

■ *We had an uneventful takeoff and climb to cruise. When the seatbelt sign was turned off, the flight attendant called to say the potable water was inoperative. We have no procedures airborne to fix that problem and told them there was nothing we could do until we got on the ground...We were cruising at FL380...in the middle of the ocean when the aircraft shuddered as if we ran through some wake turbulence or jet wash. All instruments were indicating normal and the plane appeared to fly normally. The flight attendants called and asked about the disturbance. We asked if they had just moved a beverage cart as the sound was similar to rough handling of a beverage cart. They said they had not. With everything appearing normal, we assumed it was shifting cargo or a pocket of turbulence. The First Officer made a PA and told the passengers the disturbance was turbulence. The flight continued on with an uneventful descent, approach, landing, and taxi in to the gate. Before the First Officer could do a preflight for the next flight, a non-revenue pilot told us she saw a piece of metal torn on the slat. The First Officer and I went out to the right wing and saw a vertical tear in the aluminum of the inboard right slat. The damage was clean, with no bird debris... Ground crew at the arrival station said the water service panel was leaking and service valves were not properly closed...On our preflight inspection, the potable water door was secured and not leaking. There are no controls for the potable water in the cockpit. The potable water door, fuselage, and slat cannot be seen from the cockpit.*

During a callback conversation with ASRS analysts, this pilot stated that he believed the leaking water panel developed an ice chunk that separated in cruise and struck the slat, causing the vertical tear.