CALLBACK

From NASA's Aviation Safety Reporting System

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Every season presents unique aviation weather hazards. Cold weather threats exist regardless of aircraft size, type, or nature of operation. Although some aircraft and operations are more robust than others, all are subject to additional risk during the winter months. Many kinds of cold weather incidents occur perennially and are often preceded by low temperatures, ice, snow, freezing rain, fog, wind, or other phenomena.

This month, *CALLBACK* shares reports of incidents that occurred across a range of aircraft types and operations. The reports reveal important lessons, and the incidents serve as continual reminders to be properly equipped and fully prepared for the challenging hazards of winter weather.

Maverick Waves

While in moderate turbulence, this B777 Captain began a climb to put more distance between the flight and the reported severe turbulence beneath them. The ensuing ride was both humbling and memorable.

■ *Several aircraft below our altitude had reported severe turbulence. We were at FL370 with moderate turbulence. We started a climb to FL390, [but] at FL378 we had lost positive control of the airspeed. No limits of airspeed were exceeded, either low or high. We started back down to FL370 with an immediate ATC clearance to descend. Upon attempting to start the descent, we discovered that we had no control of our altitude. In FLCH (Flight Level Change) with the throttles at idle, the aircraft would not descend. We were simply riding a mountain wave that prevented [us from] descending. After approximately one minute, the aircraft began a descent that rapidly took us back to FL370. No violent turbulence was encountered. We had no control of airspeed or altitude for about one minute. There was no WSI FPG (Weather Services International Flight Planning Guidance) for turbulence for our route of flight in this area. As I recall, the static air temperature seemed warmer than normal to me for that altitude and time of year.*

VFR in IMC

A solo student took off on a flight to practice landings. Although weather had been checked and no concern existed with either the departure or destination airport, unexpected changes resulted in a major challenge for the student.

■ *My student (Private Pilot candidate) was on a solo flight to do practice landings. METAR and TAF for [departure], and METAR for destination…showed ceiling and visibility well above minimums specified in [the student's] solo endorsement. No rain or freezing precipitation was forecast. According to the student: Shortly after departure, freezing rain began at approximately 2,500 [feet] MSL, partially obscuring forward vision. Student requested…vectors to return for landing. Vectors were given and clearance to land was issued. The student attempted to land twice without success, due to loss of visual contact with the runway. On the third attempt, the student landed successfully with no damage or injuries. After learning of the occurrence, the student and I reviewed the events to try to figure out how to avoid similar events in the future. I initiated additional weather and preflight training with the student, which was well received. I was informed that during the three landing attempts, a pilot deviation may have occurred.*

Last Minute Runway Change

While on vectors, this PA28 pilot experienced airframe icing. The ice and its consequences resulted in a stressful situation, but the pilot effectively exercised emergency authority given by FAR 91.3 to accomplish a successful, if unorthodox solution.

■ *On an IFR flight plan, I encountered unforecast icing conditions just north of ZZZ while on a vector to the ILS. I immediately requested a 180 turn-out, due to icing, toward my departure airport, which was also my filed alternate. Within a couple minutes, there was significant ice accumulation such that there were significant unfavorable flight characteristics. No longer able to maintain altitude, I requested a vector to the nearest airport. A vector was given to ZZZ1. Although ATC did not advise that the airport was closed, I already knew it was because I saw the NOTAM previously when I had considered this [as] an alternate airport for my flight plan. I made an emergency landing at the closed airport. I had no alternative but to use the long, plowed runway. I had no time to tune to CTAF or contact UNICOM, so I landed in the blind. The only activity was a plow truck at the far end of the runway, but I had no time or other options. I closed my IFR flight plan with Center when crossing the numbers and a safe landing was assured. After landing, I contacted UNICOM.*

Black Ice Ops

An A320 Captain repositioned an aircraft on an icy ramp. Procedures were followed and extreme care was taken, but existing conditions ultimately triumphed over procedures and precautions.

■ *Station Operations asked the flight crew to reposition the aircraft to the North Ramp due to no availability of gates due to irregular operations. I called the Chief Pilot [to report] what we were doing, per SOP. All safety precautions were taken on our part. I was told by Operations that other aircraft were going to be parked there. We received clearance by Ground Control and taxied slowly and carefully. Guide men and wing walkers met us at the North Ramp apron area and guided me in.… A transportation van, an airstair, and an external power unit [were] available there. We were guided in, and I taxied very slowly. The guide man signaled me to proceed forward with two lit batons, and the two wing walkers, also with lit batons, cleared me in. I stopped the aircraft on his signal and guidance, and [I] was going to set the brakes when suddenly the aircraft began to move forward on its own. Ahead of us was an airport perimeter metal wire fence and some other large objects on the other side. As the aircraft began to skid faster with the brakes set and the parking brake set, I had no other tool to use other than reverse thrust. This stopped the aircraft. But, it slid sideways, since there was no traction on the ramp. The aircraft's number two engine hit the external power unit.*

Icy Aerobatics

While on vectors, this Aero Commander 500 became a live classroom when the pilot encountered icing conditions and experienced its effects first hand.

■ *I was in cruise flight at 3,000 feet…following a radar vector…to the ILS. There was moderate to heavy rime icing. I had a high power setting, but my airspeed kept bleeding off until it got down to 120 knots. Turning became very sloppy, and it started to seem like I was in an uncommanded turn. It felt like there was no rudder response. I called…Approach and asked them if their radar showed that I was making a turn. Before they responded, the instruments showed the turn accelerating, and I realized…the symptoms of a stall spin scenario. I pushed in on the yoke and pressed opposite rudder to recover from the stall and climb back up to 3,000 feet. I lost about 700 feet of altitude before I recovered.*

I was using [deicing] fluid to get rid of the ice, but I had to ration my fluid because I used it heavily on the initial trip [earlier] that night. There was freezing rain from 4,000 to 6,000 feet on that leg. I departed with 12 gallons of… [deicing] fluid out of the 20 gallon limit.… On this night I chose to go with the minimum quantity for dispatch into known icing conditions.

I learned a few good lessons from this flight.… For future flights, I plan to fly at higher altitudes above the cloud ceiling. Altitude gives you more options and time.… I had time to observe the slow decrease in my airspeed, and I should have requested the quickest approach since the winds were under 10 knots. The next time,… I am going to add… fluid.… It is better to be fully prepared for any scenario.… In the future, [I will] always trust my instruments and…[advise ATC] right away.

Hazardous Air Quality

A CRJ200 was deiced prior to departure, and the taxi out was uneventful. The departure took a turn for the worse when cockpit and cabin air quality quickly deteriorated.

■ *We had the aircraft deiced and anti-iced at the gate with engines off and APU running. It was snowing at the time. After an uneventful taxi out and run-up of the engines, we departed. The takeoff profile was uneventful until a couple hundred feet off the ground, I noticed a burning smell coming from the vents.*

The Captain called out this burning smell as well and mentioned that it smelled like burning deice/anti-ice fluid. After a couple more hundred feet in our climb, the cockpit quickly filled with white smoke. The Flight Attendant also called us via the emergency button. She notified me that the cabin was quickly filling with smoke as well. We turned off the packs as the obvious corrective action to stop the smoke. After doing this, the smoke began clearing, and we finished our takeoff profile. At 4,000 feet, the Captain transferred the controls to me. I coordinated with Approach to return to the field, create time to run checklists, and set up for the approach. The Captain ran the QRH procedure, talked to the Flight Attendant, and briefed the passengers. At this time, the smoke had completely dissipated, and we returned to normal procedures. The Captain briefed the approach, and then I transferred the controls back to him to fly the approach. The approach and landing were uneventful. Emergency vehicles did an exterior inspection of the aircraft after clearing the runway and then followed us…to the gate.

Deice/anti-ice [fluid was] sprayed too closely to the APU inlet. Maybe [we should] remind…the iceman to avoid the APU inlet, especially when we are at the gate and deicing/ anti-icing with the engines off.

ASRS Alerts Issued in November 2018	
Subject of Alert	**No. of Alerts**
Aircraft or Aircraft Equipment	6
Airport Facility or Procedure	1
ATC Equipment or Procedure	4
TOTAL	**11**

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November 2018 Report Intake	
Air Carrier/Air Taxi Pilots	5,278
General Aviation Pilots	1,328
Flight Attendants	514
Controllers	492
Mechanics	259
Military/Other	255
Dispatchers	137
TOTAL	**8,263**