

# CALLBACK

From NASA's Aviation Safety Reporting System



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## In the Bleak Midwinter

Aircraft icing can be a major threat to all aircraft and aviators operating in icing conditions. Icing conditions are loosely described as occurring on the ground when the outside air temperature is 10° C (50° F) or below with visible moisture present, and similarly in flight, when total air temperature is 10° C or below with visible moisture present.

Hazards can be of several types. Weight, aerodynamic lift, drag, and controllability can be adversely affected, as can engines or cockpit visibility. Systems issues could multiply the effects of icing and may render a situation worse.

This month, *CALLBACK* has chosen to look at reported incidents from corporate, air taxi, fractional, and FBO operations that are caused or influenced by aircraft icing or icing conditions. We invite you to discuss the issues and consider appropriate lessons for your specific operation.

### Exiting the Runway

This corporate medium transport crew described an unwelcome consequence of their decision to land, which was made, in part, with erroneous field conditions they received.

From the First Officer's report:

■ *Approaching ZZZ on the NDB approach, we made visual contact with the field and the landing runway. Based off of the conditions, we observed that the runway appeared to have a bit of compacted snow to the side edges, however, the middle was observed to be clear. We requested the visual approach and flew it down to touchdown. Upon touchdown, we landed perfectly centered. As the main gear made ground contact, the speed brakes were extended. As the nose made ground contact, the thrust reversers were deployed and verified to be extended. At about 60 to 70 knots, the brakes were applied at the same time that the right main gear appeared to run over compacted snow. At that point, the aircraft began to veer to the left.... Corrective input was made, and simultaneously, the left gear appeared to run over compacted snow. At that point, the aircraft veered to the left and exited the runway about 20 feet before coming to a full stop. No one was hurt, nor was the aircraft damaged.*

*Based off of the NOTAMS and current METAR, which indicated dry snow along with braking action to be 3/3/3 (medium) and the observed visual conditions of the runway,*

*we had concluded that we could perform a safe landing. However, after we exited the aircraft, we personally observed the runway and taxiways to be nil. Had we known the surface conditions of the runway and taxiways prior to landing, we would have flown to our filed alternate airport.*

From the Captain's report:

■ *[Field conditions (FICON)] showed braking action to be medium (3/3/3) with dry snow. METAR showed VFR conditions, temperature above freezing, 10 statute miles visibility, light rain (no rain observed during pattern and landing), winds 180 at 16 gust 21, within crosswind component. A stable descent and approach [were made].*

### Carburetor Calories

An FBO C172 instructor and student alike received a practical reminder of the possible consequences of carburetor icing during this short, pre-solo training flight.

■ *My student and I decided to go out and practice VFR landings...before low ceilings arrived later that evening. The temperature was around 40 degrees F and the dew point spread about 4 degrees C [7.2 degrees F]. We taxied out to [Runway] XXL and flew two right VFR patterns, each landing on [Runway] XXR. I flew the first pattern to demonstrate, and the student flew the second pattern. As we came in on final for the second pattern, the engine RPM dropped, and the propeller came to a stop at the end of the ground roll of the second landing. We quickly used the momentum to exit XXR onto Runway XY and hold short of XXL. I stated to Tower that my engine just quit, and the Tower Controller confirmed observing this over the Tower frequency. My student and I were immediately able to get the engine started on Runway XY to taxi back to the ramp.*

*In hindsight, I realize what likely occurred, but it is speculation. As my student performed the run-up before I took off of XXL, I recall noticing a 200 RPM drop when the student tested the carburetor heat. Having flown a fuel injected C172 a couple times before this flight, I was not in the habit of turning the carb heat on.... I did forget to turn the carb heat on during my first pattern and mentioned this out loud to the student while on final for XXR during my demonstration. The student took the controls for the second pattern while on upwind for XXR. During the student's*

pattern, our downwind was extended for landing traffic, and he also forgot to turn the carb heat on as he configured for landing. I noticed this, but with this flight being a pre-solo evaluation, I decided to make a note of this for later and did not correct it immediately. While on final for his landing, he pulled the throttle to idle for the entirety of final approach. As we continued the ground roll after his landing, the prop stopped turning about halfway down the runway. I do not recall hearing the engine quit, just that the RPM began to get pretty low. With the weather conditions, I strongly suspect carb icing. The engine didn't have time to warm up, either, after two patterns in these conditions. To prevent further occurrence, I will be more diligent when switching between aircraft with different systems and identify differences before beginning a flight. I also need to emphasize the landing checklist while on downwind for myself and my students. I... am fully aware of the consequences of not turning on the carb heat in conditions where carb icing is prevalent.

## To Land or Not to Land

This air taxi transport pilot was surprised by an unexpected obstacle and forced to choose between two real threats.

■ *I was on an instrument approach...talking with...Center and picking up ice. Center asked me to cancel IFR clearance as early as possible because a (Company) plane was landing behind me. I changed to the CTAF frequency and made a 10-mile out announcement. I broke out around 2,000 feet MSL (1,200 feet AGL) and changed back to...Center and canceled my IFR clearance with ATC. I switched the [frequency] back to CTAF and continued the approach. However, the button push failed to change [the frequency] to CTAF and the radio stayed on...Center, and I missed that. During the approach, I was stunned to see a vehicle pull out onto the approach end of the runway and stop at the very end just beyond the runway end lighting. I was still...1 to 1½ miles out. I had to make a decision to land or go back up into the icing. As the runway was 8,000 feet long, I elected to extend and land in the second half of the runway as opposed to risk picking up excessive ice and endangering my aircraft.*

## I Can See Clearly Now

An air taxi twin Cessna pilot experienced a mechanical switch failure that occurred simultaneously with icing conditions and had significant consequences for the flight.

■ *We took off from ZZZ into what I knew would be consistent icing to our destination. From my pre-flight weather brief, I knew the icing was at all altitudes. After departing ZZZ, we actually got into the clear at about 5,000*

*feet with very little ice. About 15 minutes into the flight, we again entered the clouds and started picking up light to moderate ice. My windshield began picking it up, so I went to turn on the electric windshield [heat]. When I did, the switch broke off in my hand and the electric windshield [heat switch] was stuck in the off position. I decided to turn around immediately because I knew that it was clear behind me at 8,000 feet. I knew everywhere around me was overcast with an icing layer below me, so I decided to return to ZZZ. I notified ATC because I knew I was going to have to descend through ice and may get some on the windshield. I wanted to spend as little time in it as possible. We landed at ZZZ with no further incident. We only picked up a small amount of ice, but I was able to see just fine to land. The plastic switch broke, and I could not get the windshield heat on.*

## Believe It or Not

A fractional Citation 750 First Officer experienced dual erroneous airspeed readouts and hinted at an icing cause. Related were the deice and anti-icing procedures, and a discussion on the merits of those procedures was provided.

■ *This event had to do with both primary flight display airspeed indications giving crew error readouts. The aircraft had been sitting outside during the snowstorm we had in the Northeast. We followed deice and anti-ice procedures per the Cold Weather Operations Checklist. Passing through 210 knots, both IAS indications turned red, indicating we were in an overspeed indication. Both landing gear and flaps/slats were verified up by checklist usage and visually from the cabin. With our resources, we verified IASs were correct even though they were indicating in the red. We ran appropriate checklists and verified aircraft performance characteristics utilizing all aircraft instrumentation. We advised Maintenance (coordinating with Cessna) and agreed that continuing on to destination would be the right decision with our situation. Both of us agreed with the solution and agreed we were safe to continue... Slowing in to ZZZ at 210 knots, both primary flight display IAS indications returned to green normal color. We landed with all normal indications.*

*With my XX years of commercial aviation experience, I don't agree with the Cold Weather Checklist. It tells us to extend flaps to 35 for de-ice and 0 degrees for anti-ice. My experience has always kept flaps up during both of these procedures to prevent fluid getting on full flap area that sits under the wing when retracted. Selecting flaps once nearing the runway to prevent snow and slush from getting on full flap area would be a better practice, while protecting a major portion of flap area from icing conditions waiting to take off. Suggest looking at how we perform de/anti-icing procedures.*

ASRS Alerts Issued in November 2022	
Subject of Alert	No. of Alerts
Aircraft or Aircraft Equipment	3
Airport Facility or Procedure	6
ATC Equipment or Procedure	4
<b>TOTAL</b>	<b>13</b>

516  
 A Monthly Safety  
 Newsletter from  
**The NASA**  
 Aviation Safety  
 Reporting System  
 P.O. Box 189  
 Moffett Field, CA  
 94035-0189  
<https://asrs.arc.nasa.gov>

November 2022 Report Intake	
Air Carrier/Air Taxi Pilots	4,384
General Aviation Pilots	1,319
Flight Attendants	544
Controllers	357
Military/Other	205
Mechanics	195
Dispatchers	132
<b>TOTAL</b>	<b>7,136</b>