CALLBACK

From NASA's Aviation Safety Reporting System

Issue 454 November 2017

Weather – You're Prepared or Not

The arrival of winter weather brings an assortment of phenomena which manifest themselves in many predictable aviation hazards. Commercial and General Aviation are similarly affected. Winter storms, turbulence, low ceilings and visibilities, fog, freezing rain, ice, snow, and slippery surfaces all demand special attention. With increased workload, concentration becomes more fragmented, and situational awareness can suffer. Crews may exhibit more susceptibility to common or uncommon winter threats.

The FAA is attempting to reduce the risk of runway overrun accidents and incidents due to runway contamination caused by weather.[1] In October 2016, the FAA implemented Takeoff and Landing Performance Assessment (TALPA) procedures that include new tools such as the Runway Condition Assessment Matrix (RCAM). After just one season, TALPA has produced significant improvements to operational safety. A TALPA Stakeholders Feedback Review[2] was held in July 2017, and recommendations from this review are targeted to become procedural changes.

This month *CALLBACK* shares reported incidents spawned by typical winter weather. Even if you are not familiar with TALPA procedures, we encourage you to learn more, connect your dots, and glean the lessons in these reports.

The Winter Wing Ding

A Learjet Captain anticipated and experienced icing conditions during his descent. As a precaution, he turned on the nacelle heat, but he had not bargained for the surprise he received during the landing.

■ *Descending through FL180, I turned on the nacelle heaters, but did not turn on the wing and stab heat, as I anticipated a short descent through a shallow cloud layer to temperatures above freezing. The approach proceeded normally.… The aircraft entered the cloud tops at approximately 1,500 feet MSL and exited the bases at approximately 900 feet MSL. There were no indications of ice accumulation on the normal reference area during descent. During the landing flare (less than 10 feet AGL), as the flying pilot applied right aileron to counteract the right crosswind, the left wing abruptly dropped. I immediately took the controls, applying full right aileron as the left main landing gear contacted the runway, followed closely by deployment of spoilers, thrust reversers, and brakes to return the aircraft to the runway centerline.*

Upon exiting the aircraft, I observed a small amount (less than 1/4 inch) of rough, rapidly melting ice on the leading edges of the wings. Inspection revealed that the trailing edge of the left wingtip had contacted the runway surface, causing abrasion to the contact area. I believe the combination of the small amount of ice, aileron deflection, and mechanical turbulence from buildings on the upwind side of the runway caused the left wing to stall at a higher than normal airspeed, resulting in the uncommanded left roll. Contributing factors include my failure to turn on the wing and stab heat prior to entering the cloud layer.

Ever Present Proverbial Pitot Heat

This SR22 pilot experienced aircraft icing while IFR in IMC. He kept the wings, propeller, and windshield clear of ice, but the routine associated with his VMC habits caused another problem.

■ *I was on an IFR flight plan.… We had been in and out of the clouds picking up light rime ice.… Occasional use of the aircraft's ice protection system was easily keeping the wings, propeller, and windshield clear of ice buildups.… We were initially above the clouds at 10,000 feet, but soon realized we would again be in the clouds. Center gave us a climb to 11,000 feet MSL where we remained in IMC. The Controller reported another aircraft ahead of us was in VMC at 13,000 feet MSL and offered a climb to 13,000 feet MSL.*

As I considered the options of climbing to 13,000 feet (we had supplemental oxygen on board), I first noted significant ice accumulating on the windshield and wings, and then the airspeed began to fluctuate and suddenly dropped to 60 knots on the Primary Flight Display (PFD). I immediately recognized a Pitot-Static System failure, disconnected the autopilot, and began hand flying using the attitude indicator and standby instruments as primary references. I also immediately noted that, although the Ice-Protection Switch was on, the Pitot Heat Switch was in the OFF position. I turned on the pitot heat, selected alternate static air, and advised Center. The Center Controller cleared me for a descent to 8,000 feet, which I initiated slowly using only the attitude indicator as a reference. Within 2 minutes the airspeed indicator and altimeter began indicating normally.… We broke out into VMC at approximately 8,000 feet MSL.… The rest of the trip was uneventful, and a safe landing was completed.

In hindsight I realized that I traditionally do not turn on the pitot heat because most of my personal flying is VFR.… I will now…always turn on the pitot heat before takeoff, regardless of the flight conditions.

Clear and Present Danger

This BAe125 crew encountered widespread winter weather and elected to divert. Weather and aircraft consumables reduced their number of options and influenced decisions which could have had a much worse outcome.

■ *The entire New York City area was forecast for moderate to severe icing conditions, snow, and low visibility. Numerous PIREPs reported the presence of such icing conditions, which were further confirmed by an amber ICE DETECT light indication. We elected to divert to Morristown, NJ, which was reporting 2 miles visibility, adequate ceilings, and moderate snow.… At the time we began receiving vectors, the amber ANTI-ICE LOW QUANTITY annunciator illuminated, indicating that we had approximately 30 minutes of ice protection remaining.*

We were cleared for the approach and configured normally.… Upon reaching the MDA, I continued searching for the runway. The runway came into view, and I called, "Runway in sight, 12 o'clock."… It became clear to me that we did not have the required visibility for the approach and that we did not have the ability to achieve a normal rate of descent to a normal landing.… I called for a go-around, and the pilot flying responded something like, "I think I've got it, yeah, I've got it," and continued the approach. He immediately retarded the thrust levers to idle and called for full flaps. We immediately began an excessive descent rate and received ground proximity warnings that said, "SINK RATE, SINK RATE, PULL UP," and continued…until just before touchdown. We landed just about halfway down a snow covered runway that was 5,998 feet in length. The braking action was good and we stopped…on the runway. The next several aircraft behind us were not able to land… and diverted to an alternate.

Low Visibility White Out Taxi

After a successful approach and landing in traditional winter weather, this Large Transport Captain was surprised by an unexpected stop while taxiing to the gate.

■ *After landing, on the taxi-in, we turned westbound on the taxiway. Since it was snowing fairly hard and the wind was blowing, we made sure to identify the yellow centerline and confirmed it by noting the blue taxi lights to our right. Almost abeam [the turn point] to the gate, the right engine shut down. We stopped and requested a tug. When the snow let up, we determined that we were stuck on a snowdrift that had blown onto the taxiway.*

Icing the Puck

This Large Transport crew planned extensively for their approach and landing. The approach and touchdown were executed well, but procedures they used during the landing rollout were not as successful.

■ *Weather at our arrival time was forecast to have blowing snow, 2 SM visibility, winds gusting up to 24 knots out of the northwest, and ceilings between 800 and 1,500 feet. ATIS advertised arrivals to Runways 28C, 28R, and 4R at various times enroute.… We planned a primary approach to Runway 4R and pulled landing data for Runways 28C and 28R in case of further changes. ATIS advertised braking action of 5-5-5 for Runway 4R. The landing data calculation produced a 7,000 foot stopping distance for good braking action with Autobrakes 3 and flaps 30. Stopping distance declined to 6,500 feet for Autobrakes 4. We discussed both braking options. The Captain initially chose Autobrakes 4 while I favored Autobrakes 3. He ultimately chose Autobrakes 3.*

ATIS called the winds 340/23G29, which drove a target speed of 151 knots. Tower verified the same winds at initial check-in.… The landing was smooth and uneventful.

The Captain used full reverse thrust and stowed the reversers passing 80 knots. He called 3,000 feet runway remaining at the appropriate location and seemed to have complete control of the aircraft. At that point, he asked me to disengage the autobrakes. I noted the airspeed decelerating through 70 knots and stowed the speed brakes in order to disengage the autobrakes. I expected the Captain to use manual braking at that point to ensure control of the aircraft as we decelerated to taxi speed. The aircraft did not decelerate like I expected between 3,000 and 1,000 feet remaining. At that point, I could see the end of the runway approaching rapidly and told the Captain that he needed to come left to exit the runway. That was when I realized that he was trying to stop the aircraft and bring it left without success.

The runway end identifier and taxiway lights came up quickly, and we slid right as the right main gear departed the prepared surface. It took me a brief period of time to realize that the main gear had departed the prepared surface. I called…Tower to tell them that we had departed the runway and would not be able to clear Runway 4R. After our situation was clarified with Tower, I started the APU and shut down Number 2 Engine.

1. *https://www.faa.gov/news/updates/?newsId=88369*
2. *https://www.faa.gov/about/initiatives/talpa/update_meeting_July_2017/media/TALPA-Update-Meeting-2017-Stakeholder-Feedback-w-Notes.pdf*

ASRS Alerts Issued in September 2017

Subject of Alert	No. of Alerts
Aircraft or Aircraft Equipment	1
ATC Equipment or Procedure	1
TOTAL	**2**

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A Monthly Safety Newsletter from

The NASA Aviation Safety Reporting System

P.O. Box 189 Moffett Field, CA 94035-0189

http://asrs.arc.nasa.gov

September 2017 Report Intake

Air Carrier/Air Taxi Pilots	4,157
General Aviation Pilots	1,256
Controllers	515
Flight Attendants	335
Military/Other	302
Mechanics	188
Dispatchers	129
TOTAL	**6,882**