

Winter Stories

By Chris Hope, Master CFI

In the days before i-pods, u-tube, and television; in the days before radio and even electricity, families gathered together in the long dark days of winter and told stories. And even now, stories are important to us. We read them in books, and we watch them on TV. And pilots seem to love stories-especially stories where some other pilot does something stupid. It gives us all this feeling of smug self-righteousness as we say, "Wow, I would never do anything that stupid!" So let me share some winter stories with you.

Many years later, as an independent flight instructor, I was with a student in his Piper Seminole. He was a new multi-engine pilot, working on his instrument rating. Both of us had day jobs, so we met at the hangar at 6:00 in the evening for a couple of hours of instrument approaches.

The month was February, and the snow showers of the previous week had passed through, leaving snow on the ground, but clear, cold sky above. Scott was a large man, and always felt hot. He always dressed lightly. Fortunately, he stored the plane in a heated hangar. So, we could preflight with light and warmth, push the plane out, and be on our way, and heavy coats and gloves were never an issue.

This night's training was similar to previous lessons. We departed Kansas City Downtown airport (MKC), and asked Kansas City Approach Control for vectors to St.

Joseph (STJ) for multiple approaches. The tower at St. Joe had closed for the night, but we had weather information, and we knew that the primary runway and taxiways were plowed clean, but that the plows had left ridges of snow at the intersection of the cross-runway.

We made a couple of practice instrument approaches, ending in missed approaches, and then made a full-stop with then intent of taxiing to the airport restaurant for dinner.

We pulled off of the runway, and we could plainly see the taxiway lights. So we knew that the snow was not too deep. However, snow had drifted behind the windrows that plows had left. And though the primary runway and taxiways had been plowed, the cross runway had not. And before I could say anything, Scott made a shallow turn and was intending to use the intersecting runway as his path to the airport restaurant.

The Seminole sits low to the ground, and it does not take to much snow to bring it to a stop. So there we were – tower was closed, there was no FBO on the field, and we were stuck in the snow. And although I had a parka, warm hat and gloves, Scott had only a sport coat. And while I was wearing leather work boots, as I generally did, Scott had light loafers on his feet. And I did I mention that we made it about twenty feet into the snow before we came to a stop? And that we tried to turn and come

back to the runway? So, we were about an aircraft length from dry pavement, and our only alternative was to push the plane, by hand, back through the snow, to dry ground. And we could not push it straight back in our wheel tracks, because we had tried to make a turn in the snow

Lesson learned? In the winter, wear or carry clothes that you can walk outside in. You might be doing that.

Icing – One would think that with all that has been said or written on this topic, that there is nothing else to talk about. Think again.

Winter's day, cold and clear at home, but cold and overcast at Kirksville (IRK), about two hours away in a vintage Cessna 172. 84T was a comfortable airplane to fly, with dual nav-coms and a hand-held GPS. And although it was IFR legal, it had one characteristic that made it less than ideal for IFR use.

At the next airport open-house you attend, notice that some of the very old aircraft have one or two horn-looking devices mounted on the side of the fuselage. This is your indication that while the airplane has either an artificial horizon or heading indicator or both, it does not have an engine-driven suction pump to provide to provide the vacuum to drive the instruments. These horn-looking devices are called Venturi tubes, and they act exactly like the Venturi tube in the aircraft carburetor. That is, the air comes into the large end of the tube, and is forced into a smaller cross-section.

At that point, the air speeds up in order to push the same amount of air through a smaller diameter. And, as Signor Venturi proved many years ago, that increase in air velocity causes a corresponding decrease in air pressure.

Instrument designers learned long ago that they could take advantage of that pressure drop and create a suction that could be used to drive the gyros for the attitude and heading indicators. And there is a real advantage of this system over the engine-driven suction pump. No moving parts – nothing to break. There is also a disadvantage, however. The Venturi tubes require moving air to operate, so the gyros will not begin to work until after takeoff. And on this particular flight, I learned of another disadvantage to the simple-as-pie Venturi system.

On this particular day, my pre-flight planning indicated that I could take off VFR, but I was going to need to file an IFR flight plan somewhere along the route, as the weather at the destination indicated a surface temperature of about 20 degrees, calm winds, and a cloud layer about 1,000 ft thick, beginning about 1,000 feet above the ground. But the airport had a VOR instrument approach procedure, and the weather on top of the clouds was clear and gorgeous. So off we went.

Although icing was not forecast, any time there is visible moisture (clouds) and an air temperature below freezing, there is a chance for ice. So my plan was to stay above the clouds as long as possible, then

make as rapid a descent as safely possible for the approach procedure. This would minimize the amount of time that I was actually in the clouds, and should keep any icing that might be present to an absolute minimum. It was a good plan, and when I landed I saw that I had only a small trace of ice on the struts.

I discharged my passengers, put the plane in a warm hangar to melt what little ice I had and to dry off the resulting water. I did not want any water to freeze on the plane when I departed. So after a cup of coffee to make me as warm as the plane, it was time to climb back up through the muck and head home.

I had a departure plan that seemed sound to me. I planned to take off, level off and stay below the clouds while I accelerated to cruise speed, then climb quickly to my assigned cruise altitude of 6,000 ft for the flight back home. But as you might have guessed, while I could hold a descent rate 1,000 fpm coming into the airport, about the best my venerable 172 could do for the climb out was about 400 fpm.

There is one more aspect of the Venturi tube that all pilots, especially new pilots, have beat in their heads, and that is that when the air speeds up and the pressure drops in the Venturi tube, the air temperature drops as well. Thus, the reason for carburetor heat. The physics do not change just because the tube is mounted on the outside of the plane, and it is larger. The temperature dropped, the moisture in the air flowing through the tube froze, and

the suction line leading to the instruments ceased to provide suction. So, as I am making my slow, wings-level climb to the southwest, my attitude and heading indicators cease to work. What a nuisance.

So, it is time for my partial panel procedures to kick in – airspeed and altimeter to give me a sense of pitch, turn coordinator and mag compass to give me a sense of bank. And after a couple of minutes I came out of the top of the clouds, back into sunshine.

My flying experience and all of my weather reading has always indicated that once the plane is out of the visible moisture, any ice on the surface of the plane will slowly dissipate.. This is generally true, but no one ever mentioned that the only thing that is going to make the ice inside of an external tube melt is warmth. All the sunshine in the world, and 15 degree air is not going to work. So, all the way home with beautiful skies overhead, and no working gyros.

Lesson learned (again)? Ice comes along when the air is cold and moist, ice is a bad, thing, and unless the aircraft is equipped for flight into known icing, stay on the ground.

One final lapse in judgment that you would never make. Early one winter morning, I had a charter flight in which I was to pick some passengers up, take them to a meeting, wait and take them to a different airport, and then return home. The schedule that we had

worked out had me back home easily by late afternoon.

Of course, the schedule did not work out. The meeting ran long and scheduled, takeoff time is when the passengers show up. So the flight home was going to be in the dark

Now my flight bag, like most pilots' bags, is full of all sorts of necessary items. Like a flashlight. Actually, I generally carry several flashlights, with backup batteries. I used to carry a larger light that required two D-cell batteries – and that is the light that I used for pre-flight inspections. And then I carried one or two smaller lights that I could clip on my shirt or hang around my neck to use as a map light. But this plane had good interior lighting, and I was planning on being on the ground at home before dark so I did not check my bag before departure.

Lights never burn out when you don't need them. (Or if they do, would we ever know?) Anyway, the master rheostat for the interior lights failed

me on this particular evening. And this was the flight where I discovered that, while I had a variety of flashlights, only one worked – the large one.

Have you ever tried to fly, in the weather, for an extended period of time, with a large flashlight in your mouth? Yes, an autopilot would have been nice. But that was a luxury that this plane did not possess. And I figured out fairly quickly that there was no way that I could balance a large flashlight in my lap, under my arm, or any other way, and have it shine on the flight instruments. (It is also very hard to talk to controllers with a flashlight in your mouth.)

Difficult, but not impossible. And a valuable lesson learned. On a regular basis I check the contents of my bag, and ensure that all of the equipment that I think is in place, truly is in place – and working.

Fly safe.

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