

An Icing Encounter and Helpful Tips...

by John Fiscus

Over in the SR forums there's a good discussion going about icing. Plenty of stories, pictures, and advice. I thought I'd repost my response to that over here in my blog, but please do check out the thread:

<http://live.cirruspilots.org/forums/p/110493/421550.aspx#421550>

An excellent post about a subject matter that I find many pilots are fuzzy on, at best.

The rules of thumb Stuart posted are excellent too... you can get "stranded" when you're IFR in the mountains: can't go below the MEA to get out of the clouds (even when there's a wide valley far below you), can't climb for a number of reasons, and most pilots are unwilling to join an approach at a nearby airport to get out of the soup (though it's still a good way to bail out of the high-ish stratus layers). What with the lifting action of the terrain, a very sudden onset of serious icing is unpredictable and very possible.

I had an icing experience of my own back when I worked at the factory (circa 2001). Beautiful clear day with forecasts saying it would stay that way... and then the wind switched around and came out of the east. The 700 foot rise from Lake Superior up to DLH made for a nice lifter and the (certainly) humid air made a roughly 1,000 foot thick layer starting at about 600 or 700 feet. I was teaching a new owner (and airline pilot) when the stuff rolled in but it was near the end of the day... so we figured we'd just get a popup and ride the ILS to 27 in. The clouds looked quite benign and the temps above the clouds were above freezing by about 5 or 10 degrees.

Yes, it was a mistake. We were above the clouds the whole time until after glide slope capture... but the short form is that during the roughly 90 seconds where we were in IMC and coming down to DLH, we picked up about a half inch of ice. That's a LOT for a Cirrus to carry. We did not lower the flaps, kept the speed around 120, and didn't slow until our wheels were maybe a foot above the runway. It's a good thing we did that! The stall warning port was frozen over so it never chirped but the airplane did stall... at about 100 knots! Our touchdown was not particularly hard thanks to our close proximity to the ground before slowing... but we both knew what would have happened if we had put flaps down, slowed, or *shiver* had to go missed back into that stuff. We should have gone someplace else.

Things to remember about ice/clouds:

- The worst ice usually hangs out at the top of clouds
- Ice can form at temps above freezing
- Ice can form at temps well below freezing (I've seen it form at 5 degrees F)
- You cannot reliably predict how fast the ice will build
- Airmets and icing predictors are great, but fallible.

- -MEAs might not allow you get low enough to get out, even when the freezing level is "above" them (hint: freezing level can vary by thousands of feet, particularly in mountainous areas, over a short distance)

Things to do while flying:

- -Be ready to abandon whatever you're doing at any time. Always have an out and make sure you're mentally willing to execute that out.
- -Minimum Vectoring Altitudes are not published but a viable last-ditch method for getting lower (even than the MEAs). I hope nobody ever has to use this trick as it can be one step away from disaster.
- -NO FLAPS
- -Keep the speed up to 100 knots or more
- -Use no flap landing procedures. If you haven't done that in a while, get up there with a CFI and do it. Don't hit the tail.
- -Your stall horn probably won't work. Make sure you're hand flying because:
 1. You'll feel the buffeting
 2. You'll want to feel it if the elevator is bridging with ice
 3. In the event of a tail stall, you won't be confused that the autopilot did it
- -TKS is NEVER a viable reason to go "check it out". I don't care how much you paid for it or the plane, it isn't worth your life or that of your friends/family.
- -TKS is fallible. I have seen pilots flip the wrong switch (they turn on MAX and never turn the pump on - a separate switch), I have seen airplanes that haven't been primed take over 20 minutes to even get the wing partially covered with fluid, there's only one pump and it can fail, the reservoir might not be as full as you thought, etc etc etc.

Short form: If you flip the TKS switch on, you better be on your way to getting out of the air. When you land, ask yourself about the mistakes you just made... because you did make mistakes if it came to using that system, even as a precaution.

We need to stay vigilant in the coming months. Ice is out there and will nab you if you aren't prudent in your flight planning and mental state. Call your favorite CFI if you're sitting on the ground wringing your hands over a go/no go situation. If your favorite isn't available, call me as a runner-up.

Safe flying!
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Posted by John Fiscus at [Tips from CSIP's: Staying Proficient](#)