

## **FLYING LESSONS** for July 2, 2009

suggested by this week's aircraft mishap reports

*FLYING LESSONS* uses the past week's mishap reports as the jumping-off point to consider what *might* have contributed to accidents, so you can make better decisions if you face similar circumstances. In almost all cases design characteristics of a specific make and model airplane have little direct bearing on the possible causes of aircraft accidents, so apply these *FLYING LESSONS* to any airplane you fly. Verify all technical information before applying it to your aircraft or operation, with manufacturers' data and recommendations taking precedence.

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### ***This week's lessons:***

**The “runway temperature,”** or temperature of the air over a hot, paved surface, can be as much as 40F greater than the ambient air temperature. Pavement absorbs heat, and can heat air in the first few feet above ground level—where it affects the performance of wings, propellers and engines—to temperatures far above ambient temperature at airport sensors. This is a rarely-addressed factor in density altitude computations but has a very real effect on aircraft takeoff performance.

**On a hot, sunny day, compute density altitude and performance** based on reported weather, but make a second set of calculations for roughly 40°F or 20°C higher than the official temperature. Keep the results of both calculations at hand in the cockpit. In the run-up area or at the hold-short line, look at your indicated Outside Air Temperature (OAT) and see which of your calculations it most closely matches (or if it's somewhere between the two). Use performance figures for the temperature closest to the actual “runway temperature” as your expectations for takeoff and initial climb. If the “reported temperature +40°F/20°C” result is marginal for takeoff performance and the actual “runway temperature” observed at the hold line is near that value, taxi back and lighten the airplane or wait for cooler conditions.

**Medical self-certification** is a tenet of our flying privilege. It's easy to say: if you do not feel well, do not fly. In practice the decision is far greater if you've got an important trip planned, if you're away from home, or if you're mid-way through a trip. Four died recently after a pilot lay down because of a stomach ache during a fuel stop, with an apparent loss of control on takeoff a few minutes later that may be attributed to pilot incapacitation. If you don't feel well, do not fly.

**Are you really cleared?** The National Transportation Safety Board is investigating two runway incursions that occurred at Cleveland Hopkins International Airport (CLE) in Cleveland, Ohio. NTSB reports:

The most recent occurred at 8:56 a.m. EDT on Friday, June 26, 2009. Express Jet flight 2426, an E-145, was cleared by the tower developmental controller to cross runway 24L at taxiway S in order to depart from runway 24R. Approximately 19 seconds later, the same controller cleared CommutAir flight 8717, a DH8, for takeoff on runway 24L. The Express Jet flight crew saw the departing airplane and advised the tower controller they would not cross the runway. CommutAir 8717 rotated about 1,500 feet from where Express Jet 2426 was positioned.

The incident is the second of its kind at CLE in three weeks. On June 3, 2009, at 3:15 p.m. EDT, a runway incursion occurred in which a B-737 was cleared by a developmental controller to taxi into position the same runway on which an E-145 was cleared and entering for take-off. The E-145 crew saw the B737 and queried the tower controller. The two flights came within 500 feet of each other on runway 6L. This was the same developmental controller involved in the June 26 incident.

It would be easy to dismiss this because the same developmental controller was involved in both cases, but that's irrelevant to the *FLYING LESSONS* involved:

- Consider clearance onto (or across) a runway as clearance to **look** to see if the way is clear, and move only if it is.
- Actively monitor ground *and* tower frequencies to develop a mental image of where other airplanes are, and where you fit into the flow.
- At nontowered airplanes your responsibility is even greater—you don't have the extra eyes of ATC helping out, and you have to account for nonradio airplanes, pilots not reporting on the CTAF, and frequency congestion that obscures some radio calls.

I teach my students to look, and confirm out loud, these things before taxiing onto a runway:

1. The runway is clear
2. The approach is clear
3. We're cleared to go

**Be particularly cautious** about taxi-into-position-and-hold clearances, especially if you find yourself holding in position for a long period of time. My interpretation is that "position and hold" does not exist at nontowered airports—stay short of the hold-short line (or the airport's equivalent) until you're ready to take off and you have confirmed the runway and approach are clear.

Questions? Comments? Email me at [mastery.flight.training@cox.net](mailto:mastery.flight.training@cox.net)

## QUESTION OF THE WEEK

### July Question of the Week #1

- **Have you had a density altitude learning experience? What happened, and what did you learn?** Copy and paste the question with your response to [MFTsurvey@cox.net](mailto:MFTsurvey@cox.net).

One randomly selected reader in July will win his/her choice of a **Mastery Flight Training hat** or the MFT DVD **Those Who Won't: 10 Tips for Avoiding Landing Gear Mishaps**. Your email address goes in the drawing once every week you respond to a question. All responses will remain confidential, but I will publish a review of the results. Like PIREPs, this works best if *everyone* participates. So take a moment to answer this week's question... then come back to read the rest of *FLYING LESSONS*.

The June Question of the Week #2 was: **Have you ever had to abort a takeoff "for real"? What was the situation?** Here are some of your responses:

*I had to abort* a takeoff because of incorrectly configured elevator trim tabs. I was picking up my plane after having everything that faces up re-skinned after hail damage. The shop that did the work test-flew the aircraft (a couple of times) and told me it was in good working order. On my pre-flight inspection, the elevator trim tabs were bent up. I discussed this with the shop manager/owner and told him that I remember that they should have been bent down. He politely informed me that I was incorrect (and after all, they just test flew it that morning and several times before). I aborted my takeoff because the controls required excessive back pressure when I attempted to rotate. They had installed the elevator trim tabs upside down.

*Upon departing from* Spirit of St. Louis Airport (KSUS) in low IMC, the door popped open during the take off roll. As I was trained I aborted, taxied back, closed and secured the door and took off again uneventfully. This F33 Bonanza would typically take off with door unlatched and not have the "pop" happen until it leveled off at cruise altitude. If this occurred, I would be stuck with an IFE (in flight emergency) and be required to return with a full instrument approach to low minima. My guardian angel must have been with me that day.

*The passenger door* popped open in the first 800' of roll....plenty of runway left so it was no issue. I'd locked the door myself but obviously it wasn't locked. Over the past 27 years I've had the door come open in flight (once only about 400' AGL after takeoff) five times. It has never been an issue but has always been noisy until able to land and close it. If no one is sitting in that seat, don't lay anything on it you don't want to disappear!

***I have a vivid memory*** of my first aborted takeoff. I had my first paid flying job at age 19 (circa 1972), working for a bait shop operator in Fort Frances, Ontario. I was flying a J3 on floats, going into small lakes and baiting and emptying minnow traps. The airplane was equipped with a 30-gallon water tank in the back seat with a battery-powered aerator to keep the fish alive. There was one lake that was very productive, had high cliffs at one end, muskeg swamp at the other. I went in one morning, landing towards the cliffs over the muskeg, emptied and baited the traps, then could not get the engine to start. I drifted around the lake for about 3 hrs swatting mosquitoes, pulling at that prop with no success. My biggest concern was that I would lose my job for not getting back on time, second concern that maybe nobody would know where I was and I would get to spend the night in the bush with the bugs! Finally, I got the thing running, and proceeded to take off in the direction I had landed, not noticing that the wind had swung around about 180 degrees. I got halfway down the lake, figured I wasn't going to get airborne to soar gracefully over the Canadian Shield, and chopped the power about 100 yards from the end of the water. I slid gracefully across a mat of floating vegetation, knew enough to add full throttle as I turned around, and didn't break through and get stuck. Fortunately there were no rocks in the bog to puncture the floats, and I plunked back rather unceremoniously into the lake, now facing into the wind with the low end in front of me! At this point, I had the distinct impression that the old J3 was looking back at me with a high degree of suspicion, but I firewalled the throttle and we took off and flew home without incident. The boss asked me what took so long and I told him I had been fishing!

***I was riding*** with another instructor who was giving training in an Aztec. A pre-takeoff briefing was discussed between the student and instructor prior to taking the active (below this speed - this happens; after this speed - this happens; after this speed - we fly the airplane, take care of the situation and come back for a landing). Just as the aircraft rotated, the forward baggage door came open. The instructor shouted to abort but the student hesitated. The instructor forcibly closed the throttles and applied the brakes so as to stop on the runway. Other than an increase in heart rate and a thorough discussion with the student of the situation as we taxied off the runway to secure the door, nothing happened to the aircraft or occupants.

***I was on a multi leg flight***, Anchorage to Chicago Midway, in our Bonanza with a private pilot friend who flew a Cessna 172. We were departing Edmonton Municipal airport on an instrument flight plan, he was left seat and flying. Cleared to go, we headed down the runway. He tried to rotate the aircraft but it didn't want to fly. We were not accelerating. I grabbed the throttle and brought it all the way back. We braked and pulled off the runway, engine ticking over, looking at each other. I then realized that he was not used to a Vernier throttle control. He had turned the throttle until it seemed to him like take off power, when in fact we had been at partial power. He had screwed it halfway in and then put both hands on the yoke. Fortunately the runway was long enough to forgive our trespasses.

***About an hour into a training flight***, my student and I were departing for some touch and goes in a C172. About 1,000 feet into the takeoff roll, I told the student to increase to full throttle as I noticed RPM's were hovering at a mere 1900. He told me he was at full throttle about the time I saw the same for myself. He safely reduced throttle to idle and got us stopped with plenty of runway left. We later found that the air intake screen had come loose, leaning against the intake itself and suffocating the engine. Good training experience. Had a couple others for doors or cowlings popping open but nothing to end significantly. Summarize to say always be ready for anything and don't neglect the takeoff!

***I was starting a night takeoff*** in a high performance single when a deer ran out in front of me. I immediately pulled back the throttle and hit the brakes. The deer just stood there and looked at me (deer in the landing light syndrome). No damage, no harm, but scared me beyond belief. After what seemed like an hour (probably 30-45 seconds) the deer scooted and we called the tower and continued our takeoff.

***I dropped off a passenger*** at San Jose International (KSJC) and when I departed, at lift off I heard a rapid whap whap whap whap on the right side of the fuselage. I had plenty of runway left so reduced power to idle and landed on the remaining runway, informing the tower I was aborting the takeoff. Part of the right front seat's seat belt was outside the door, and upon lift off the air passing over the wing caused it to beat against the side of the airplane. Since then, I always fasten the seat belt to itself if the seat is vacant, so it cannot be outside the door!

***I advanced the throttle for takeoff***, and at full takeoff power the engine did not sound right, too loud, I aborted the take off, taxied back to the hangar and discovered a 2" square hole in the right side exhaust manifold. Didn't fly that day!

Thanks, everyone, for your inputs! It looks like if you check security of doors and windows, doublecheck the wind direction, know what power indications to expect on takeoff and confirm you meet your power target, and be ready to pull the throttle and abort if anything does not go as planned, and you'll have learned the *FLYING LESSONS* these readers present.

# When you'd least expect it

This is the time of year when you'd *least* expect to worry about ice. But what about ice *inside* your carbureted engine? FAA has issued a new Special Airworthiness Information Bulletin (SAIB) warning that we're in prime time for carb icing.

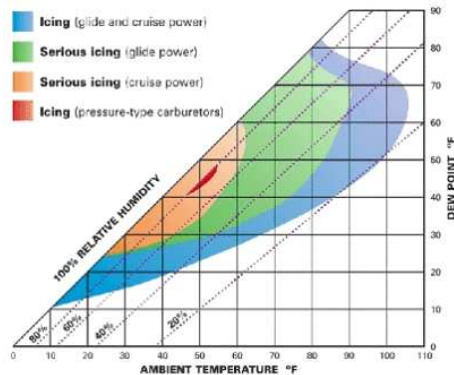


Figure: Carb ice probability in combinations of ambient temperature and dew point/relative humidity (from the SAIB)

Read the [Carburetor Icing Prevention](#) SAIB to avoid summertime engine failures.

See

[http://rgl.faa.gov/Regulatory\\_and\\_Guidance\\_Library/rgSAIB.nsf/\(LookupSAIBs\)/CE-09-35?OpenDocument](http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgSAIB.nsf/(LookupSAIBs)/CE-09-35?OpenDocument)

## OSHKOSH!

Flying to the Experimental Aircraft Association's [AirVenture](#) at Oshkosh? My hiatus causes me to bunch up reminders this year, but consider these Flying to Oshkosh-series articles to help you prepare for your big arrival:

- [Know the NOTAM](#) (Note: The 2009 Arrival NOTAM appears [here](#).)
- [Have a Backup](#)
- [Airspeed Control](#)

See:

[www.airventure.org/](http://www.airventure.org/)  
[www.aero-news.net/news/featurestories.cfm?ContentBlockID=E1FEE301-00FA-4BC9-9B2A-A114EDAA14D6&Dynamic=1](http://www.aero-news.net/news/featurestories.cfm?ContentBlockID=E1FEE301-00FA-4BC9-9B2A-A114EDAA14D6&Dynamic=1)  
[www.airventure.org/flying/notam2009.pdf](http://www.airventure.org/flying/notam2009.pdf)  
[www.aero-news.net/news/featurestories.cfm?ContentBlockID=11B5B140-1161-457B-BE89-3AA633B059B8&Dynamic=1](http://www.aero-news.net/news/featurestories.cfm?ContentBlockID=11B5B140-1161-457B-BE89-3AA633B059B8&Dynamic=1)  
[www.aero-news.net/news/genav.cfm?ContentBlockID=2AA8E421-F426-4450-A28A-E6A665891317&Dynamic=1](http://www.aero-news.net/news/genav.cfm?ContentBlockID=2AA8E421-F426-4450-A28A-E6A665891317&Dynamic=1)

### Mastery Flight Training seminars at Oshkosh

Please join me and your fellow *FLYING LESSONS* readers for:

- *Keep it on the Runway: Mastering Directional Control* Wed., 7/29 at 2:30 pm in EAA Forum Pavilion 4.
- *The First 60 Seconds: Performance in Transition* Sat., 8/1 at 1 pm in EAA Forum Pavilion 4

See you at Oshkosh!

Questions? Comments? Send your insights to [mastery.flight.training@cox.net](mailto:mastery.flight.training@cox.net)

### *Fly safe, and have fun!*

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2008 FAA Central Region CFI of the Year



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