

FLYING LESSONS for May 20, 2010

suggested by this week's aircraft mishap reports

FLYING LESSONS uses the past week's mishap reports 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.

If you wish to receive the free, expanded *FLYING LESSONS* report each week, email "subscribe" to mastery.flight.training@cox.net.

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This week's lessons:

My instrument student was disappointed when I called three hours before his 6 pm lesson to cancel. He had two IFR lessons under his belt and had done a very good job at the beginnings of basic attitude flight. He still took coaching, of course, and he still deviated from heading, altitude and bank angle when I'd introduce simple distractions like a frequency change or a simulated radio call...which meant he was doing great for where he was at the time.

Weather was forecast to be "actual"—which is what IFR is all about—with lowering ceilings and occasional heavy rain and scattered imbedded thunderstorms. We'd already discussed that the possibility existed the lesson would be scrubbed, so my student was expecting my 3 pm call. Still, the disappointment was strong in his voice when I advised the ceiling was 900 overcast and gradually lowering, which would be perfect training conditions if only he were three or four more lessons into his training. We confirmed our next lesson time and called it a weekend.

We could have had a great lesson, even at his stage of training, if we'd filed a flight plan between two or three reasonably close-by airports, took off into IMC, and flown approaches at each before recovering, IFR, at the home airfield. We'd file under my name, I'd act as pilot-in-command, and he'd get a good (albeit a little premature) introduction to "working in the system."

What I didn't say, but should have, was what the famous radio announcer (and personal aviation advocate) Lowell Thomas called "the rest of the story." I'd been suffering a worsening head and chest cold all week, and was to the point I could not be serving as pilot-in-command. I was at risk of becoming disoriented in the clouds, even with solid IFR experience and currency on the basis of recent experience (although we were near the personal limit my last CFII and I recently established, because I'd not flown a lot of IFR lately). Weather conditions were perfect for approach training but were expected to worsen; the thick, juicy clouds meant it would be getting dark during the course of our lesson, and as typical for me, my headcold symptoms were getting worse as evening approached and I wrote of the day's experience. IMC, a student too soon in the syllabus, forecasts of worsening weather, growing darkness and a sick CFII—way too much risk to voluntarily accept just because we both *wanted* to be in the air.

One of the hardest things to teach is when *not* to fly. I should have explained the whole situation to my student—I'm usually pretty quick on the uptake when it comes to "teachable moments—and maybe that itself confirms I was off my game and should not have flown. Each takeoff begins with an honest evaluation of the full set of pilots (the [I'M SAFE](#) model) and the operation (the [PAVE](#) example)...and the discipline to cancel if the risk is too great.

See www.faa.gov/library/manuals/aviation/pilot_handbook/media/PHAK%20-%20Chapter%2017.pdf (pg. 17-6)

My student and I have a goal of completing his instrument training, and more so, of getting as much actual IMC time as possible along the way. But as pilot training giant John King

says in his landmark *FLYING* magazine interview "[The Big Lie](#)," pilots "don't like to give up on goals. That attitude is one of the big risk factors involved. So what's the antidote to that? That there are days when [even] the airlines don't fly. There are a lot of days that people don't do what they planned to do because it's just not the day to do it. And it's not a shame to say, 'No....'"

See www.kingschools.com/news/BigLie.htm.

Perhaps this was a positive lesson in making a no-go decision that'll stick when you are faced with taking someone eager to fly aloft when you are not at your best. The more I think about it the better I feel about the decision, and only wish I had made my student a bigger part of the decision process. Meanwhile, we're still on for next weekend...

Comments? Questions? Tell us what you think at mastery.flight.training@cox.net.

Debrief: Readers write about recent *FLYING LESSONS*

About the recent American Airlines event where a pilot declared an emergency in order to use a runway more aligned into the wind, reader Woodie Diamond writes:

I read your piece on the recent American Airlines flight into JFK, along with the incredible outpouring of Monday morning quarterbacking that is all over the web about the event. I am certainly not a jet driver, have neither the skill nor experience to be one, but my best friend Rock Skowbo is. He drives an Airbus for United. A couple of months ago, he told me, United emphasized to its pilots that the Captain should not fear personal decisions for the sake of safety. The spirit seems to vilify the American Airlines captain's actions [as well].

Out of everything that I have learned from Rock, the single most important item that he constantly reverts to is "no matter what you do in an airplane, don't hurt anyone." Though he has thousands of hours in more airplane types than I can count, he still holds dear that one very basic commitment to the safety of others. No matter what people may think about the actions of the American Airlines captain at JFK, he didn't hurt anyone. Isn't that what is really important?

Thanks, Woodie.

Reader Rich Graham requested research on gust factors I'll try to get to in coming weeks, but in the meantime I'll print his kind remark only to suggest to you that *FLYING LESSONS* comes to you so you may forward and share it with others:

I thoroughly enjoy your weekly *FLYING LESSONS*. I highly recommend it to all my student pilots as well as certificated pilots.

Thanks, Rich. I'll get working on your request.

Reader Kirby Ortega addressed recent *FLYING LESSONS* about changes to turbulent air penetration speeds with changes in airplane weight. Kirby adds:

Have you heard of V_0 ? We [Cessna Aircraft; Kirby is a Cessna employee] have a V_0 speed posted to four of our airplanes - the Corvalis, Mustang, CJ4 and believe it or not, the 162 Skycatcher. No doubt the listed models have all been recently certified and meet the requirements in Part 23. Kinda of a hard number to explain since a lot of pilots will not understand the difference between V_a and V_0 .

Indeed, 14 CFR 23, which governs certification of light airplanes (below 12,500 pounds maximum gross weight certificated since the mid-1960s) stipulates:

Sec. 23.1507 Operating maneuvering speed.

The maximum maneuvering speed V_0 , must be established as an operating limitation. V_0 is a selected speed that is not greater than V_s established in Sec. 23.335(c).

Note a couple of terms: V_o is a *selected* (not necessarily *computed*) speed that must not exceed a value related to stalling speed. According to 23.1507, V_o is a speed where the airplane will stall in a nose-up pitching maneuver before exceeding the airplane structural limits. This is actually closer to the definition of “maneuvering speed” than the common usage of V_a , but is distinguished from “turbulent air penetration speed” by being related to a control force, not a force imparted by outside forces, i.e., wind shear.

I don't have access to Corvalis, Mustang, CJ4 or Skycatcher Pilot's Operating Handbook. But my brother Tracy Turner (also, understandably, a *FLYING LESSONS* reader) owns a Cirrus SR20, and I have a copy of the Cirrus POH. It contains this table:

Airspeed Limits	V_{NE}	Never Exceed Speed	200 KIAS
	V_{NO}	Maximum Structural Cruising Speed	165 KIAS
	V_O	(2900 lbs) Operating Maneuvering Speed	135 KIAS
	V_O	(2600 lbs) Operating Maneuvering Speed	126 KIAS
	V_O	(2200 lbs) Operating Maneuvering Speed	116 KIAS
	V_{FE}	Maximum Flap Extension Speed	100 KIAS
	V_{PD}	Maximum Parachute Deployment Speed	135 KIAS

The SR20 “book” lists *multiple* V_o speeds, based on changes in airplane weight—exactly what we talked about with V_a . The difference is that by definition V_a is determined at maximum gross weight, and we unofficially estimate reductions based on the “ V_a effect” of reduced weight. In Part 23 airplanes, the work's done for us...at least in some POHs. Note that the reduction closely matches the estimated 2% per 100 pounds below maximum weight, comparing the 2900 pound figure to V_o for 2200 pounds. For most of us, two *knots* per 100 pounds is an easily estimated target figure. Remember in turbulence (or aggressive maneuvers) you need to aim for a speed well below this target, so any airspeed increases due to gust encounters or maneuvering are still below V_o /adjusted V_a at their maximum.

Thanks, Kirby. I'd appreciate any further insight you and other readers can provide.

Question of the Week

This week's question:

What's your best go/no-go decision-making story?

Last week's question was:

Have you ever refused to accept an ATC clearance because you felt attempting to comply was unsafe? Tell us your story at mftsurvey@cox.net.

Here are your responses:

I live in the mountains of Western North Carolina and am based at AVL [Asheville]. We have some challenging requirements for IFR minimum vectoring altitudes that typically keep us high on downwind. It is not uncommon to be at 6000 feet on downwind [about 4000 feet above runway elevation]. One night I was arriving from the south to land on Rwy 16 on an IFR flight plan in VMC. I was at cruising altitude of 6000 feet on a heading of 320 and was held there until abeam the numbers on downwind. ATC gave me a heading of 270 about 1 mile past the end of the runway for an apparent left base for 16. I radioed back to say I was turning to 270 but was curious what they intended for me to do after that because there was no way for me to safely make the runway. This would have required me to descend almost 4000 feet in one mile to make the numbers. Diving for the runway in the dark is unsafe and the controller asked ME what my intentions were! I told them I expected to land at some point and asked for a descending right 360 [degree] turn for a few miles and then join final and land. I was cleared as requested and landed without incident. I know many of the controllers in the tower and at a pilot's association meeting cajoled one of my controller friends about this. He said that our field was a training facility and likely a controller in training handled my flight. It is

important to understand that not all controllers have vast experience and some have never been in an airplane! As pilots we have the final say as to what we accept from ATC and ultimately it is our responsibility to be safe.

Departing IFR from White Plains Airport (New York) on an August morning in a Baron 58, the ATC clearance (in contrast to our requested route which was also an ATC preferred route) would have routed us directly through a nearby area of heavy, convective activity on our departure out of the NY area. We declined the clearance, telling ATC why. After approximately twenty-five minutes, they came back and gave us a different routing [that] was away from the convective activity. While instinctively, all good pilots wish to avoid being a "pain" to ATC, particularly in busy airspace, it's better to be a "pain" than a statistic.

No. I've actually never received a clearance I felt was unsafe.

Great question, Tom. This is a point that doesn't get enough attention. In my opinion, especially during training for the instrument rating, pilots should be explicitly taught not just *when* but *how* to reject a clearance. **The key lesson is that if you don't want a clearance, don't read it back** [emphasis added]. Instead, present your preferred alternative. The most common reason I have had to renegotiate a clearance has been when it would have put me into unacceptable weather. For example, on several occasions I have been cruising in the clear above a cloud layer that I had good reason to believe contained icing. Nearing my destination, the controller wanted to step me down, issuing a clearance a few thousand feet lower, right in the icing layer, many miles from my destination. Rather than read back the clearance, I have on each occasion responded that, "to avoid icing, I would prefer to stay at my current altitude until able to make a continuous descent to xxx altitude", which I was confident would be free of icing. This counterproposal has always been accepted, a few times with the warning that it would entail some extra vectoring, which I have accepted.

Yes, I have refused ATC's direction with "Unable." It was based on reading an [AOPA Pilot](#) column, where a pilot had been vectored into a storm for spacing. On my way back to Illinois from dropping off a friend at Lake of the Ozarks [in central Missouri], I had clear signs on my Insight Strikefinder that a storm was lurking to the right as I was going past St. Louis. When ATC directed a right turn 90 degrees for traffic (and into the center of the activity), I responded with "Unable due to convective weather in that area, can you provide an alternate vector?" ATC provided me with an altitude change and a left turn, which took me away from the weather. While I couldn't see the weather, I could see the strikes and the accumulation rate - my answer was made possible by the good words in *AOPA Pilot!* It was something my instructors (which included a VFR instructor who had required me to accumulate several hours of instrument time before he would sign me off) had never covered.

I've personally never felt I had to refuse an ATC clearance, but it brought to mind this exchange which I believe was in *Flying* magazine about 1970 (pre-Mode C), approach controller to BOAC (now British Airways):

ATC: "Speedbird 309, what is your altitude?"

BOAC: "Level at 17,000."

ATC: "Speedbird 309, Can you descend to 8,000 in the next 20 miles?"

BOAC: "Well, I can, old chap, but I can't bring the aeroplane with me."

Thought you might enjoy that.

Thanks, readers!

Fly safe, and have fun!

Thomas P. Turner, M.S. Aviation Safety, MCFI
2010 National FAA Safety Team Representative of the Year
2008 FAA Central Region CFI of the Year



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