



FLYING LESSONS for December 20, 2012

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. You are pilot in command, and are ultimately responsible for the decisions you make.

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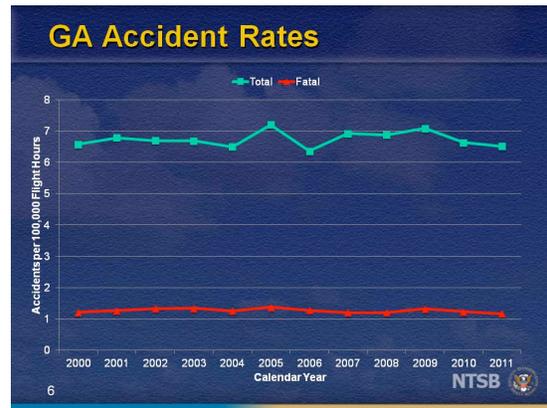
This week's lessons:

"General aviation is safer now than it has ever been." "The rate of fatal accidents is very low, and consistent." "There are always going to be pilots who crash. Flying is as safe as it's ever going to get, and there's not much we can do to make it safer." These quotes, and many more like them, have appeared in aircraft publications in recent months, some written by persons holding very prominent positions in aviation safety.

Some of the data, however, differs from the overall message the industry and media have portrayed for years. Without the full picture of crash statistics, these reports have been, unintentionally, misleading.

This is the chart we usually see (figure 1). It shows a fairly consistent rate of total GA crashes each year since 2000, and a very consistent rate of fatal events—a little over one fatality for every 100,000 flying hours each year for more than a decade.

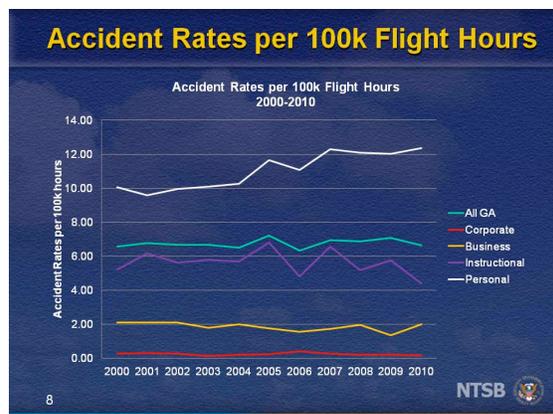
Figure 1: GA accident rates per estimated 100,000 flying hours (NTSB)



What we usually don't see, however, is a breakdown of the fatal accident rates by type of general aviation operation (figure 2). Noncommercial (US Part 91) flying encompasses a lot of very different things, including instructional flight, professionally flown corporate jets and turboprops, business flying (by pilots not employed specifically as pilots) and the personal/recreational flying most of us do. The data reveal some significant differences between these categories of general aviation, and some trends that the mainstream media have missed.

Note that while the overall GA accident rate has remained steady, as we've seen before (the turquoise line), the rate of corporate flying is almost nil, the business flying rate has held low and steady, and instructional accidents are actually down per estimated 100,000 flying hours. The rate of accidents among personal flying, however, has actually **gone up 20%** in the last decade. Have you read *that* recently in the aviation press?

Figure 2: GA accident rates per estimated 100,000 flying hours, by category (NTSB)

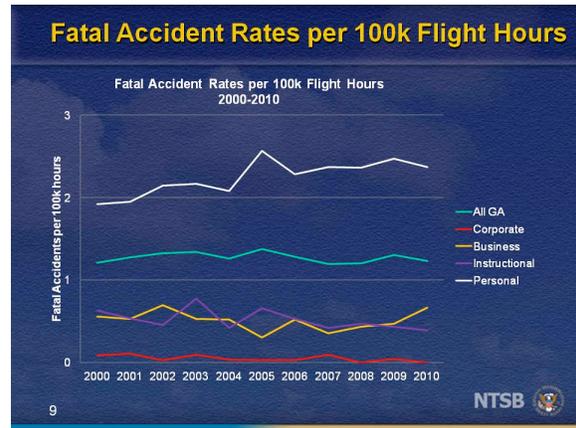


The chart of fatal crash rates by type of GA operation (Figure 3) shows a similar pattern. While the overall fatal rate has held very steady since 2000, corporate flying fatalities are almost nil, the business flying record has varied but

averaged low and steady, and the instructional fatal crash rate has trended slightly down, the rate of fatalities per estimated 100,000 flying hours in personal aviation has **increased about 25%** in the last decade.

Figure 3: Fatal GA accident rates per estimated 100,000 flying hours, by category (NTSB)

Why has personal aviation become demonstrably less safe in the past decade? What are the differences between personal flying—recreational and non-business aerial transportation—and the very similar business aviation category that makes personal flying's record so much worse?



We can speculate the worsening personal aviation record it has to do with the cost of flying and the average age of the pilot population. When we fly less we become less proficient; as we age our reactions slow, and we may become more susceptible to fatigue. This may be an oversimplification, but certainly both these factors play a part in the increased crash and fatal crash rates.

The irony is that *when we can fly less, we need to train more.*

Many FLYING LESSONS readers are “business” pilots, or fly as part of a corporate flight crew. Your professional record is good, but even it can be better. And even corporate and business pilots tend to do at least some personal flying.

It's natural we've been complacent, with most of the aviation media telling us the general aviation mishap rate is declining and the rate of fatalities very low and steady. A closer look at the statistics, however, reveals we've got to do things differently than we've been doing them if we want to continue to safely enjoy the tremendous benefits of personal aviation.

Next: The leading causes of personal aviation fatalities, the differences between personal and business flight that affect the crash record, and what we're going to do in 2013 to reverse this awful trend.

Questions? Comments? Let us know, at mastery.flight.training@cox.net

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Debrief: Readers write about recent *FLYING LESSONS*:

Reader Jim Quinlin writes about the [list of 15 tasks](#) a student pilot must experience before being permitted to solo (under U.S. rules), and a recent *LESSON* suggesting that list serves as a good regimen for any pilot's continuing education:

With regard to tales of soloing after only 4 or 5 hours back in the day, it's important to understand that the current political and legal climate today doesn't even resemble what it did back then. For example, fifty or sixty years ago, making an off-field landing in a field would get you an audience of curious onlookers and maybe a helping hand. Today, depending upon location, you might be greeted by a SWAT team or, at the very least, slapped with a lawsuit by the property owner. At the risk of sounding cynical, these are the realities of general aviation in the 21st century.

That may indeed be a factor, Jim. If so, it's more a reality of the late 20th century—the regulation requiring exposure to 15 tasks and a written test before solo went into effect in 1989. I suspect the litigious component was due more to serious crashes among very inexperienced solo pilots leading up to the rules change, which went into effect just after I began instructing. Do any *FLYING LESSONS* readers have first-hand knowledge of environment in which the list of 15 presolo requirements came about?

See <http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&sid=40760189a03dfea0b501608f33820a45&rgn=div5&view=text&node=14:2.0.1.1.2&idno=14#14:2.0.1.1.2.3.1.4>

Reader Woodie Diamond addresses last week's *LESSONS* about landing in radiation, or ground fog.

I was always told that ground fog acts just like a convex mirror, "things in the mirror are closer than they appear". Thus a normal approach leads to a nasty surprise when the runway is actually closer than it appeared. Is this not true?

I don't know, Woodie, and I could not find anything in the literature. Perhaps a reader better versed in optics will answer your question for us, at mastery.flight.training@cox.net.

Reader Karl Thomas continues:

Wow, right on point for me. My son is moving to Del Rio [Texas] and I flew there last Saturday evening to pick him up and take back to Houston. TAF for Sunday am (my original arrival time) was 300ft & 0.5mi in fog. Following the TAF for the last week or so shows this to be a common event for the area. We actually left DRT at midday with 700ft & 1mi visibility. Thankfully I'm IFR current and with the excellent lighting @ DRT, I don't think it will be much of an issue, just interesting!!

Thanks, Karl. Light twin owner and retired airline captain Larry Olson writes:

Good page about fog, and a great review.

I'd like more discussion about how to "fly the fog". Your cautions in the article are great, and there is risk in "fog flying". However, I believe there's some options that make it doable.... to a point.

Often one has a situation where the airport is "half or three quarters" socked in but the runway end is visible. It can be awkward to maneuver for a landing on an IFR flight plan, especially in controlled airspace. One cannot [request or] accept a contact approach because the ground visibility is probably below a mile. However, one could accept any approach with a circle[-to-land maneuver], regardless of ground visibility, as long as flight visibility [was] one mile (or what was required for the circle). They could really be above the fog, in good visual conditions during the circle, and really circle until lined up with the runway where a safe landing could be made.

Of course, one has to consider the roll out, if it takes one into the fog, could be very limiting. And your point about "glowing" runway lights are a good clue of reduced visibility, which we need to take into consideration. Thoughts?

The Beechcraft Bonanza mishap that led to last week's fog *LESSON* was a VFR-pattern arrival. All appeared normal for the night landing until the pilot descended into the fog on final approach. Visibility went to near zero and the pilot became disoriented and lost control.

Although an IFR arrival to circling minimums, and as I presume from your post, using the circling maneuver to evaluate runway conditions and, ultimately, to descend for landing, the foggy-weather arrival would not differ much when compared to the visual pattern. In either case, the fog may be invisible until the airplane enters it.

In the case where fog partially covers the airfield, but permits landing outside of the fog bank—I've done that very thing once, in a turbocharged Baron at a rural New Jersey airport just east of Philadelphia. I could not see the fog in the dark; we touched down normally but as I rolled to a stop the Baron entered a very thick fog.

The first problem was that the Beechcraft's two cowling-mounted landing lights nearly blinded me in the sudden plunge into fog—it was like driving a car in fog with your bright headlights on. Luckily I was nearly stopped, and had the clarity of thought to immediately snap off the landing lights. Now in a silky, pitch dark, I could barely see the runway lights to either side of my wingtips. I turned around, and taxied until I found the blue glow of taxiway lights. Turning onto the taxiway, I suddenly thought about the airplanes on the ramp ahead I could not see. So I shut down the engines where I was and got out.

I was meeting a friend who had seen us land. He walked out with a flashlight, followed by the FBO manager. We got the airplane into the first available tiedown off the runway. Strangely, as I finished securing the airplane the fog completely cleared, a mounting wind swirling the moisture back into suspension.

Back to Larry's comments: a circling approach does not provide better protection from a low-lying, dark fog than a visual traffic pattern. Either maneuver, however, gives the pilot time to evaluate the surface conditions, with a glow around runway and taxiway lights being the telltale sign of ground fog. If ground fog is present, reported or strongly suspected, my experience landing the Baron (and the incident that spark last week's discussion) is that it's time to divert to another runway in air known to have acceptable visibility. Overly conservative? Perhaps. But I know how easily I could have lost directional control when rolling into the fog, and how tempted after landing I was to taxi to parking when it was so very likely I would have driven right into another airplane.

Thank you, Larry.

Something to add? Mastery.flight.training@cox.net

*"I'm just one of 1000s that enjoy your weekly FLYING LESSONS, and thought it time I contributed a little!
Feel free to pass this on; perhaps more will do the same!!!!"*

- Richard Benson, Bend Oregon

It costs a great deal to host *FLYING LESSONS Weekly*. Reader donations help cover the expense of keeping *FLYING LESSONS* online. **Please support *FLYING LESSONS* through the secure PayPal donations button at www.mastery-flight-training.com.**

Thank you, generous supporters .

FLYING LESSONS friend Gene Benson is offering a three-session, online Human Factors ground school in January. Sessions will be recorded and available for later online viewing. The course will serve as a fundraiser to help support Gene's safety initiative in 2013. Learn more at www.genebenson.com.

Flying home for the holidays? Give yourself plenty of time and options. Make it home for (and back from) the holiday.

Question of the Month

What makes a great instructor? Readers continue to write:

Maybe after initial training, it is the ones who have the ability to make you sweat! "Nice" instructors are just that, they don't teach you much. Flying lessons costs a lot of money and the training follows you the rest of your life. In aviation a relaxed mindset and poor training can kill you.

Did I enjoy flying with the one nameless instructor that I remember? Not at all! I was a bundle of nerves. But the lessons taught have stayed with me until today. Like he said, "I haven't had any of my students kill

themselves yet, and you aren't going to be the first"!

This is an easy one. I used to put on a FAASTeam presentation on how to find and keep a good instructor. We were three Master CFI's who put the presentation together. One of the presenters said he wouldn't fly with a CFI that had less than 1000 hours instruction given. My position is very clear. **Your best instructor is one that truly wants you to learn.**

When getting my rotorcraft rating, I had an instructor with less than 300 hours total time and was literally half my age. He was fantastic because he was motivated to teach me. Our lessons were never completed until he felt that I learned something, whether it be in the helicopter or on the ground.

If you find a CFI that truly wants to teach you, that's your guy/gal!!!

The consensus continues: when it comes to superior flight instructors, challenging beats chummy, and the ability to teach is independent of hours in a logbook.

What's your experience? Let us know, at mftsurvey@cox.net.

Share safer skies. Forward *FLYING LESSONS* to a friend.

Personal Aviation: Freedom. Choices. Responsibility.

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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