

FLYING LESSONS for November 24, 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. You are pilot in command, and are ultimately responsible for the decisions you make.

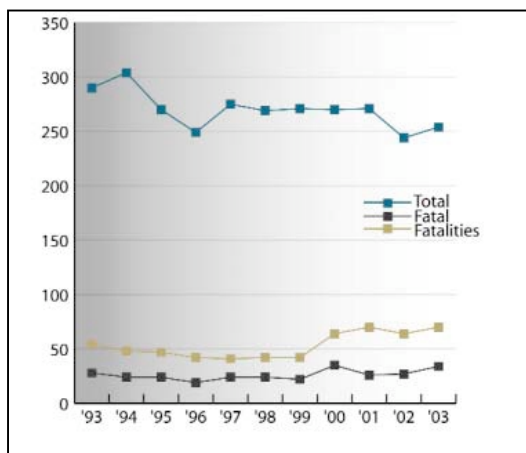
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This week's lessons:

We all take flight instruction. Many FLYING LESSONS readers provide instruction as well. Flight instruction is considered one of the safest types of piston-airplane flying, in large part because instructor can usually control whether the flight dispatches or not based on weather and other criteria, where other types of flying, especially cross-country personal or business use, provide much more temptation to "go."

AOPA's [Flight Instruction Safety](#) report tells us "the good news is that your chance of having an accident while training for a pilot certificate or rating is still less than having an accident in other types of GA flying, especially personal flights by already-certificated pilots, based on the



proportion of flying in each category. However, there are definitely some areas for improvement. The bad news is that the fatality rate for GA instructional accidents has risen in recent years, from a low of eight percent in 1996 to a high of 13 percent in 2000."

See www.aopa.org/asf/publications/topics/instructional.pdf.

(left) *Accidents during instructional flight, 1993-2003*
AOPA Air Safety Institute

Nonetheless flight instruction sees a disproportionate number of mishaps and reportable accidents for the number of hours flown. For example, my 12-year study of piston Beechcraft accidents shows that consistently about 10% of all accident take place with an instructor on board. Certainly most pilots of these business/cross-country of airplanes don't spend 10% of their flying time each year with an instructor on board.

Still, the 2009 Nall Report states: "Instructional flights...occupied 20% of [all piston airplane] flight time [in 2008] but we only involved in 15% of the accidents, and only 10% of instructional accidents were fatal compared to 20% of accidents on other types of flights."

See www.aopa.org/asf/publications/09nall.pdf.

Why the discrepancy? I think in part it's because not all mishaps are "reportable." For instance, this week's Mastery Flight Training [Beech Weekly Accident Update](#) lists two instructional accidents this week, one reportable (and consequently in next year's *Nall Report*),

one not. From my experience I figure there are four or five non-reportable instructional mishaps to every reportable incident or accident—loss of directional control or hard landings causing damage but not meeting reporting thresholds, and gear up and gear collapse mishaps are exempt from NTSB reporting but arguably the most common cause of “totaling” retractable-gear airplanes.

So what are the instructional hazards? Instructional mishaps come in several varieties, but most are variations of pilot and/or instructor distraction. The potential for distraction comes in two forms I call *CFI complacency* and *instructor-induced stupidity*.

It's easy for an instructor after the third or fourth student of the day, or the fifth or sixth trip round the traffic pattern, or with a student you've flown with several times, to become complacent. Trust me, I've been there. It's a nasty wake-up call for a CFI for the student to do something unexpected, or to find yourself thinking something besides what you're doing at the moment. Just because the student has a lot of time in the airplane, has professional credentials (in and outside aviation) or a strong personality does not mean that the instructor can be any less vigilant...

From the student's standpoint it's easy to think, "My instructor will take care of me," or that the CFI has somehow manipulated aircraft indications or maneuvered the student into a decision-making position (such as the need for a go-around) as part of the instructional process...

...[read more](#) about these real-world instructional hazards, and techniques for managing the risk both as an instructor and as a pilot-receiving-instruction, in my 2007 *Leading Edge* feature on AVweb.

See www.avweb.com/news/leadingedge/leading_edge_instructional_hazards_195386-1.html

An abnormal procedure like an electrical malfunction or inoperative flaps or landing gear calls for dedicated attention to troubleshooting. You can only provide this attention away from the approach environment. Miss the approach, get and altitude and a vector, then deal with the problem before returning to the airport...all so you can concentrate on the problem without having to fly the approach, *then* fly the approach while trying to focus on the problem.

To avoid running into the ground, especially if abnormal indications or an emergency distracts you, observe what I call “**Altitude Critical Areas**.” An ALTITUDE CRITICAL AREA (ACA) is a pilot-defined block of airspace where the airplane is close to the ground, or close to leveling off from a climb or a descent. For most privately flown airplanes, an ACA should be defined as airspace:

- **Always: from the surface to 1000 feet** above ground level (AGL);
- **Climb: from 1000 feet below level-off** cruise altitude and until trimmed at that altitude -- whether it's an intermediate level-off or the final cruising altitude;
- **Descent: from 1000 feet above level-off** altitude until trimmed level at that altitude, again whether it's an intermediate level-off or some new, “final” cruising altitude;
- **IFR: from 1000 feet above “final approach course inbound”** of an instrument approach and until the approach is complete; and
- **VFR: from 1000 feet above pattern altitude** and until the landing is complete.

If you're in an ACA when an abnormal situation occurs:

- **Get out of the ACA.** Climb to greater than 1000 feet AGL before you troubleshoot. Faced with a distraction? Delay dealing with it if you're close to the ground or nearing a level-off altitude. System failure during a visual or instrument approach? Break off the landing; go around, climb out of the ACA, then tackle the challenge.
- **Always use your best judgment.** There may be rare situations when it's safer to continue the approach or make an immediate return to the airport. But if you can safely get out of the ACA, do it.

Do not enter an Altitude Critical Area until you've addressed the problem.

Enter the area only when you can concentrate fully on flying the airplane. Landing gear won't go down? Use the emergency extension procedure before entering the ACA. Instrument problem? Identify the failure and transition to back-ups or partial-panel flight before tackling an altitude change. Radios not set up or airplane not fully configured for takeoff or checklist incomplete? Get away from the ground, deal with the situation and get set up properly before you return.

For more on ACAs, including a visual presentation of the concept, see my 2002 article "[Big Ground Theory and the ACA Defense](#)."

See www.ipilot.com/learn/article.aspx?ArticleID=586

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

Debrief: Readers write about recent *FLYING LESSONS*:

Several readers wrote about what was really a parenthetical statement in a recent *LESSON*, about avoiding slips with full flaps extended in some high-wing Cessnas. Peter Molman wrote:

Correct me if I am wrong, I believe that slipping with full flaps prohibition only applies to the Cessna 172 series, not the other high wing Cessnas. I enjoy your weekly emails, please keep up the good work.

Thank you, Peter. I recall the limitation applies to C150s and 185s also. I don't have any POHs for those models—can a reader help?

Reader Michael Szczepanski writes:

Not to always criticize, but high wing Cessnas (at least the 172) don't prohibit slips with flaps. The placard reads "avoid slips with flaps extended." My understanding of the concern (from the POH that I don't have in front of me) is that there can be disturbed air over the tail causing a buffet. There is no indication of any blanking of the tail where you lose control effectiveness. If the wing is on fire I'd think you be in one of the cases which explain why they said "avoid" rather than "prohibited."

Hi, Michael. I enjoy constructive criticism. There is apparently some control effectiveness issue with a full-flaps slip in the C172, or the limitation wouldn't exist. My point wasn't a concern for violating a limitation, it was avoiding adding controllability to the list of your problems if you're coming down in an emergency descent. As you say, however, limitations may have to go out the window in order to safely respond to an emergency. Just be ready to minimize the slip if any control feel changes.

Wichita-based FAA Safety Team Program Manager Verle Engle writes:

I just listened to your [Podcast](#) on Turbo Troubles and some of the questions that were asked following your presentation. Your presentation was extremely well done and informative, and gave me a good refresher on turbos. Thanks for all you do for pilots everywhere and the FAAS Team!

Thank you, Verle!

Podcast: <http://bonanza.org/documents/Turbo%20Troubles.mp3>

Slides: http://bonanza.org/documents/Turbocharger_Simplified.ppt

Frequent *FLYING LESSONS* debriefer Lew Gage worries about my health:

I still do not see how you are able to do the good job you do at [[American Bonanza Society](#)] and also put together this news letter. I know that there must be a great deal of time spent answering e mails, gathering data, etc. that do not readily show up to those seeing the results of your work. Nothing beats youth to get things done. When do you sleep?

Hi, Lew. You guessed it, I work on *FLYING LESSONS* mainly at night and in the mornings before work, and it usually takes 3 to 4 hours on Wednesday nights to finish it up. It helps to be up waiting on two teenage boys to come home in the evenings. All told I spend 10-12 hours a week on *FLYING LESSONS*. Thanks for reading, and for your own significant contributions to flying safety.

Questions? Comments? Write us at mastery.flight.training@cox.net.

Attitude Flying

For the past few weeks *FLYING LESSONS* has been discussing pilot expectations for the utility of their airplanes, expectations that are sometimes unrealistic, and not at all apparent to newer pilots coming into the fold. Much is made of the “five hazardous pilot attitudes” as they affect risk evaluation. These attitudes are:

- [The anti-authority pilot](#)
- [The impulsive pilot](#)
- [The invulnerable pilot](#)
- [The macho pilot](#)
- [The resigned pilot](#)

Each of these “hazardous” attitudes is also a *necessary* trait for a successful pilot, in measured amounts. It’s when we let one or more of these “natural” pilot attitudes to dominate our thinking that we find ourselves in trouble, making safety-of-flight decisions through subjective eyes. We’ve focused on the anti-authority pilot, who feels that the rules simply don’t apply to him (or her), the impulsive pilot, who acts without regard for the consequences of that action, the invulnerable pilot, he/she who thinks “it can’t happen to me,” and the macho pilot who thinks he (or she) can do things better than other pilots. This week let’s look at: “[Bad Attitude: The Resigned Pilot](#).”

See:

www.aero-news.net/news/featurestories.cfm?ContentBlockID=77CC38DE-5D20-4F28-A455-C21D53FCBDF&Dynamic=1
www.aero-news.net/news/featurestories.cfm?ContentBlockID=F1E272C4-2B29-4BBD-8155-F6C4FFD6BB63&Dynamic=1
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Share safer skies. Forward *FLYING LESSONS* to a friend.

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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